

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

April 7, 1981

Mr. Cleon B. Feight, Director
State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116
Attn.: Mr. Jim Smith

Dear Mr. Feight:

Enclosed herewith please find two copies of Tower Resources, Inc., Ventilation and Roof Control Plans. This information was requested during the March 18, 1981 meeting between Tower Resources and the Office of the District Mining Supervisor. These plans are M.S.H.A. approved and should officially be made a part of Tower's Mining and Reclamation Plan (Centennial Project) submitted January 19, 1981.

If you have any questions or comments, or require additional information, please contact this office.

Thank you.

Sincerely,



Allen D. Emmel
Environmental Planning Coordinator

ADE/ac

Enclosures

cc: File

RECEIVED

APR 13 1981

DIVISION OF
OIL, GAS & MINING

U.S. DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

Mailing Address:
P.O. Box 25367, DFC
Denver, Colorado 80225

Street Address:
730 Simms
Lakewood, Colorado

Coal Mine Health and Safety
District 9



September 25, 1978

Samuel C. Quigley, Manager
AMCA Coal Leasing, Inc.
P.O. Box 1027
Price, Utah 84501

Re: Pinnacle Mine
I.D. No. 42-01474
Ventilation Plan

Dear Mr. Quigley:

A review of the ventilation system and methane and dust control plan for the subject mine has been completed by MSHA in accordance with the provisions of Section 75.316, 30 CFR 75. The review indicates that revisions are necessary to formulate a plan to insure the health and safety of the miners. The following items should be revised in or added to the plan:

1. Line brattice or any other approved device used to ventilate the working face where coal is being cut, mined or loaded shall be installed and maintained at a distance no greater than 10 feet from the point of deepest penetration to which any portion of the face has been advanced.
2. Methane examinations must be made with an approved methanometer. A flame safety lamp is valid only as a supplemental testing device.
3. Please submit a mine map with mining projections in detail for one year and all other required information that can be supplied at this time.
4. Permanent stoppings shall be erected between the intake and return aircourses and shall be erected to and including the third connecting crosscut outby the faces of the entries. Whenever the third connecting crosscut is broken through, work shall be started as soon as possible and shall be completed by the end of two working shifts after the shift in which the crosscut was broken through.

Please make the appropriate changes and submit a revised plan with a map as soon as practicable. Be advised that all plans must be approved

prior to startup.

If assistance is needed, please contact Bill Knepp at this office
(phone 303/234-2293).

Sincerely yours,


Harold E. Dolan
Supervisory Mining Engineer

Enclosure

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

March 26, 1980

Mr. John Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Co. 80225

RE: Pinnacle Mine
I.D. No. 42-01474
Ventilation Plan

Dear Mr. Barton,

As per your letter dated Sept. 25, 1978, I have made the revisions to the enclosed Ventilation Plan to show:

- a) Line brattice advanced and maintained within 10 ft. of the point of deepest penetration.
- b) Eliminated a flame safety lamp as a methane testing device.
- c) Enclosed a map showing the mine projections in the Gilson seam.
- d) Provided for the erection of permanant stoppings up to and including the third connecting crosscut outby the working faces.

Again I have changed the name of the operator to Tower Resources which is the operating affiliate within our group. Thank you.

Sincerely,

Samuel C. Quigley
Samuel C. Quigley
Western Project Manager

Enclosures

SCQ/lm

AMCA COAL LEASING, INC.

P. O. BOX 1027

PRICE, UTAH 84501

801-637-5385

March 27, 1980

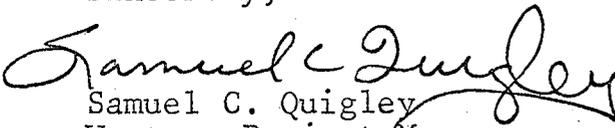
Mr. John W. Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Co. 80225

RE: Pinnacle Mine
I.D. No. 42-01474
Ventilation Plan

Dear John,

Enclosed are three copies of the ventilation scheme
which applies to Tower Resources Ventilation Plan.

Sincerely,


Samuel C. Quigley
Western Project Manager

Enclosures

SCQ/lm

The operator of the Pinnacle Mine hereby adopts and will follow the following ventilation system and methane and dust control plan and any approved supplements and/or revisions thereof:

Signatures

Company Representative

Samuel C. Quigley

MESA Investigator _____

A. General

1. Company name Tower Resources, Inc.
Mine name Pinnacle Mine
Post Office address (Town, County, State) P. O. Box 1027, Price, Carbon, Utah
Telephone number (801) 637-5385
Identification number MSHA# 42-01474
Operator's name Samuel C. Quigley
Operator's title Manager
Operator's address P. O. Box 1027, Price, Utah 84501
Operator's telephone number (801) 637-5385

2. Indicate if life of mine is _____ less than one year
X greater than one year

3. Number of employees: Surface 5)
Underground 30) Estimated
Total 35)

4. The type of face equipment used on each section in the mine and all diesel equipment used throughout the mine.

Face Equipment used will be:

Joy 12CM Continuous Miner

Joy 10SC Shuttle Cars

Lee Norse - Top Dog - Roof Bolter

Diesel Support Equipment:

Material Tractors

John Deere

Kabota

LHD Scoops:

Emico

Wagner

5. The name and height of the coal seam being mined:

Coal seam is the Gilson seam- approximately 6.6 ft. thick.

B. Main Fan Installation

The mine will be ventilated with a main fan located on the surface, installed in fireproof housings and connected to the mine opening by fireproof air ducts. The fan will be equipped with a pressure recording gauge and an automatic signal device which will give alarm in the event the fan slows or stops. This signal will be placed in such a way that it can be either seen or heard by a responsible person on duty so that immediate action can be taken.

The fan will be offset 15 feet from the nearest side of the mine opening and equipped with explosion doors or a weak wall. The cross sectional area of the explosion doors or weak wall will be equal to or greater than the connecting entry. These doors will be in direct line with explosive forces.

The fan will be driven with an electric motor which will be provided with an independent power circuit separate from any other mine circuit.

The fan will continuously operate except during scheduled maintenance or fan failure.

All main fan installations shall meet or exceed all criteria established in Sections 75.300-2 and 75.300-3, 30 CFR 75.

C. Dust Control Plan Outby Areas

1. The following dust control practices will be adhered to at the indicated locations:
 - a. Transfer points will be cleaned and rock dusted as needed. Excessive dust created by belt haulage will be controlled by water sprays if necessary.
 - b. Loading points will be kept clean and rock dusted at all times.
 - c. There will be no underground crushers.
 - d. There will be no underground dumps.
 - e. All beltways will be cleaned and rock dusted as necessary.
 - f. Roadways and shuttle car haulageways will be kept clean, well rock dusted and wetted down as necessary.
 - g. All other problem areas will be cleaned, rock dusted, and wetted down as necessary.

D. Methane and Dust Control Practices at Face Areas

1. Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined, or loaded shall be installed at a distance no greater than 10 feet from the area of deepest penetration, to which any portion of the face has been advanced.
2. A minimum quantity of 3000 cubic feet a minute of air shall reach each working face from which coal is being cut, mined, or loaded.
3. The minimum mean entry face velocity as specified in Section 75.301-4, 30 CFR 75, shall be 60 feet a minute in all working places where coal is being cut, mined, or loaded.

4. The minimum quantity of air reaching the last open crosscut in any pair or set of developing entries or rooms shall be 9000 cubic feet a minute and the minimum quantity of air reaching the intake end of a pillar line shall be 9000 cubic feet a minute.
5. DOES NOT APPLY
6. At least 90% of the sprays indicated for dust suppression on each piece of equipment shall be maintained and operated at the indicated water pressure and flow rates.

<u>Equipment Type</u>	<u>No. of Sprays</u>	<u>Minimum Water Pressure</u>	<u>Minimum Flow Rate</u>
Continuous miners	27	90 psi	16 gal. min.

7. Working faces where roof bolting is being done will be ventilated in the same manner as working faces. Idle faces and dead-ended entries will be ventilated by a perceptible air movement as the minimum quantity.
8. Methane examinations of the face will be made by a qualified person at the last permanent or temporary support using either an approved methaneometer.

E. Methane Control in Outby Areas

1. The methane content in any return aircourse other than an aircourse returning the split of air from a working section (as provided in Sections 75.309 and 75.310, 30 CFR 75) shall not exceed 2.0 volume per centum. The methane content in the air in active workings shall be less than 1.0 volume per centum. If at any time the air in any active working contains 1.0 volume per centum or more of methane, changes or adjustments

shall be made at once in the ventilation in the mine so that the air shall contain less than 1.0 volume per centum of methane.

2. Bleeder entries, bleeder systems, or equivalent means shall be used in all active pillaring areas to ventilate the mined areas from which pillars have been totally or partially extracted so as to control the methane content in these areas." All such bleeder systems shall meet or exceed the criteria established in Sections 75.316-2(e) through (i), 30 CFR 75."
 - a. At the six month review Tower will submit a detailed map of the proposed ventilation pillaring areas. This map will include detail describing expected air quantities and methane concentrations and methods used to keep the bleeder system open.
3. Whenever a working section is completed and the operator does not wish to ventilate the area, the area will be sealed.
4. If the operator wishes to ventilate pillared or abandoned area a request for permission to ventilate these areas will include;
 - a. a detailed history of the methane content determined throughout the mine and when available, the volume of air in which such methane determinations were made.
 - b. A description of the method by which the areas from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated, and such maps and drawings as may be required to illustrate such method and to indicate existing or proposed air volumes to ventilate such areas.
 - c. The signature and title of the person who submits the application for the operator.

F. Section and Face Ventilation System

1. Typical section and face ventilation systems are shown on the attached maps. As the mining operation commences detail of the ventilation system will be submitted on an appropriate scale map and updated regularly.
2. Ventilation in the belt entries will be controlled by regulators and check curtains and will be maintained as a separate split of air.
3. Coal will not be allowed to accumulate at the outby end of the face equipment to the extent that ventilation of the working face is restricted.

G. Permanent Stoppings

1. All ventilating devices such as stoppings, overcasts, undercasts, and shaft partitions shall be of substantial and incombustible construction installed in a workmanlike manner and maintained in a condition to serve the purpose for which they were intended, and any stopping leaking air excessively shall be repaired immediately.
2. Permanent stoppings shall be erected between the intake and return aircourse and shall be erected to and including the fourth connecting crosscut outby the faces of the entries. Whenever the third connecting crosscut is broken through, work shall be started on building the stopping as soon as possible and shall be completed in a timely manner which would be consistent with good ventilation practices.
3. Metal stoppings supported with approved fire retardant treated wood or metal angles may be used in short lived entries such

as panels, rooms, or butts as belt or intake escapeway separation stoppings only. Timber laid longitudinally "skin to skin", and packed with rock dust, may be used in heavy or squeezing areas if the timbers are treated with an approved fire retardant.

4. A complete list of materials used in the construction of stoppings is as follows:

(1) Block Stoppings - Materials Used: (6" x 3" x 16") cinder or cement blocks, mortar or cement mix. The stoppings are laid up on clean substantial bottom, tied into the ribs with staggered courses.

(a) Blocks with mortared joints will be plastered with mortar mix around the periphery to make it airtight.

(b) Blocks stacked without mortared joints will be plastered in its entirety on one side.

(2) Permanent Stoppings - Will be used for belt isolation, return airways, intake airways, and any other separate approved aircourse.

H. Diesel Equipment

The use of diesel equipment underground shall comply with the following requirements:

1. All diesel equipment used underground will be operated and maintained according to the manufacturer's instructions.
2. The atmosphere in the operator's compartment and the atmosphere returning from any working place where diesel powered equipment is being used shall be tested at least once a week while the

the equipment is in operation, and if the analyses of these samples exceeds five parts per million NO₂ or 50 parts per million CO, or both, corrective measures shall be taken immediately.

3. If any unusual discoloration of the exhaust occurs, the atmosphere in the operator's compartment and the atmosphere returning from the diesel equipment will be tested immediately. If levels of NO₂ and CO are detected approaching those stated in paragraph 2; samples will be taken every shift until such levels are reduced to normal operating levels.
4. If for any reason the levels specified in paragraph 2 are exceeded, corrective measures will be taken immediately. Samples will be taken every hour thereafter until the corrective measures are shown to be effective.
5. The date, time of sampling, machine identification and the results of the analyses shall be recorded in a book maintained for that purpose.

I. Use of Auxiliary Fans and Machine-Mounted Diffusers Underground

1. The fan shall be of a permissible type, maintained in permissible condition, so located and operated to avoid any recirculation of air, and examined once every four hours when in use. The examiner shall place his initials, date, and time near the fan.
 - a. Fans operated blowing shall be installed in the positive intake current of the place to be ventilated by the fan, and the volume of such positive intake air current shall be greater than the free discharge capacity of the fan.

- b. Fans operating exhausting shall be installed in the return air current from the place to be ventilated by the fans, and the volume of positive intake air current available at the entrance to the place (at the crosscut or other point of entry) to be ventilated with exhaust fans shall be greater than the free discharge capacity of the fan.
2. All face ventilation systems using auxiliary fans and tubing or machine-mounted diffusers shall be approved under the provisions of Section 303(o) of the Act. (Subsection 75.316 of the Federal Register).
3. If a machine-mounted diffuser is used in conjunction with fan tubing or exhaust line brattice, the intake end of the diffuser shall be located outby the intake end of the exhaust tubing or line brattice.

J. Mine Maps

A mine map of the appropriate scale shall be submitted and updated at six month intervals and will include the following:

1. Mine maps shall be coded with symbols provided in a detailed legend on every map, showing the scale and orientation of the map, including property, ventilation, and face system maps; and such symbols shall be standard for the entire ventilation plan.
2. Limits of the mine property, on a suitable scale (may be smaller than 500 feet to the inch) and type of map to show entire limits. Indicate location of present workings.
3. Location of all oil and gas wells, active and abandoned, or if none, so stated. Also include any other drill holes that penetrate the seam.

4. All known underground workings adjacent, above and below the mine; and all water pools above; if none so state. Include any surface or auger mines.
5. Mine fan data for all main fans including: location, manufacturer's name, type, size, speed, water gage, quantity, and blade setting at present operating point; and name plate date from fan motor including horsepower, voltage, and ampere rating, in addition to any stand-by motors and fans where applicable.
6. Location of all surface mine openings including direction of air flow and air quantities.
7. Any faults, wants, or slips that may affect ventilation, including any abnormal conditions, such as entries blocked by water or roof falls.
8. Mining projections in detail for at least one year showing ventilation controls, crosscut and entry center distances, and proposed bleeder systems in areas where second mining will be done.
9. All underground workings with active section delineated.
10. Locations of stoppings, overcasts, regulators, seals, air-lock doors, and man-doors; a statement of location may be allowed for certain areas.
11. Measured volumes and directions of air entering and leaving each split, and the volume, direction, and percent methane of air inreturn airways and bleeders. Such data to be representative of conditions immediately prior to date of submission.

12. Show location and average height, width, and air velocity in each conveyor belt haulage entry, every place where trolley haulage systems are maintained, and every place where trolley wires and trolley feeder wires are installed.
13. Velocities of air at any abnormal or restricted location.
14. Location of areas which have been abandoned and areas from which pillars have been wholly or partially removed.
15. Locations of proposed or new shafts, slopes, or drift openings, either intake or return, including the direction, anticipated volume of air, and expected date for completion and operation.
16. Locations of proposed seals in all new areas developed after March 30, 1970.
17. Contour lines or spot elevations of coal seam as required by Section 75.1200-1(m), or 75.1200-1(k), including elevations of all main and cross or side entries.
18. Escapeways designated by means of symbols. The physical layout of escapeways must meet the criteria of 75.1704-1, 30 CFR 75.
19. Dip of coalbed.
20. All drill holes that penetrate the coalbed being mined.
21. The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown.
22. The location and elevation of any body of water dammed in the mine or held back in any portion of the mine.

23. The location and description of at least two permanent base line points coordinated with the underground and surface mine traverses, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys.
24. The elevations of tops and bottoms of shafts and slopes, and the floor at the entrance to drift and tunnel openings.

TYPICAL MINING SEQUENCE

FACE VENTILATION

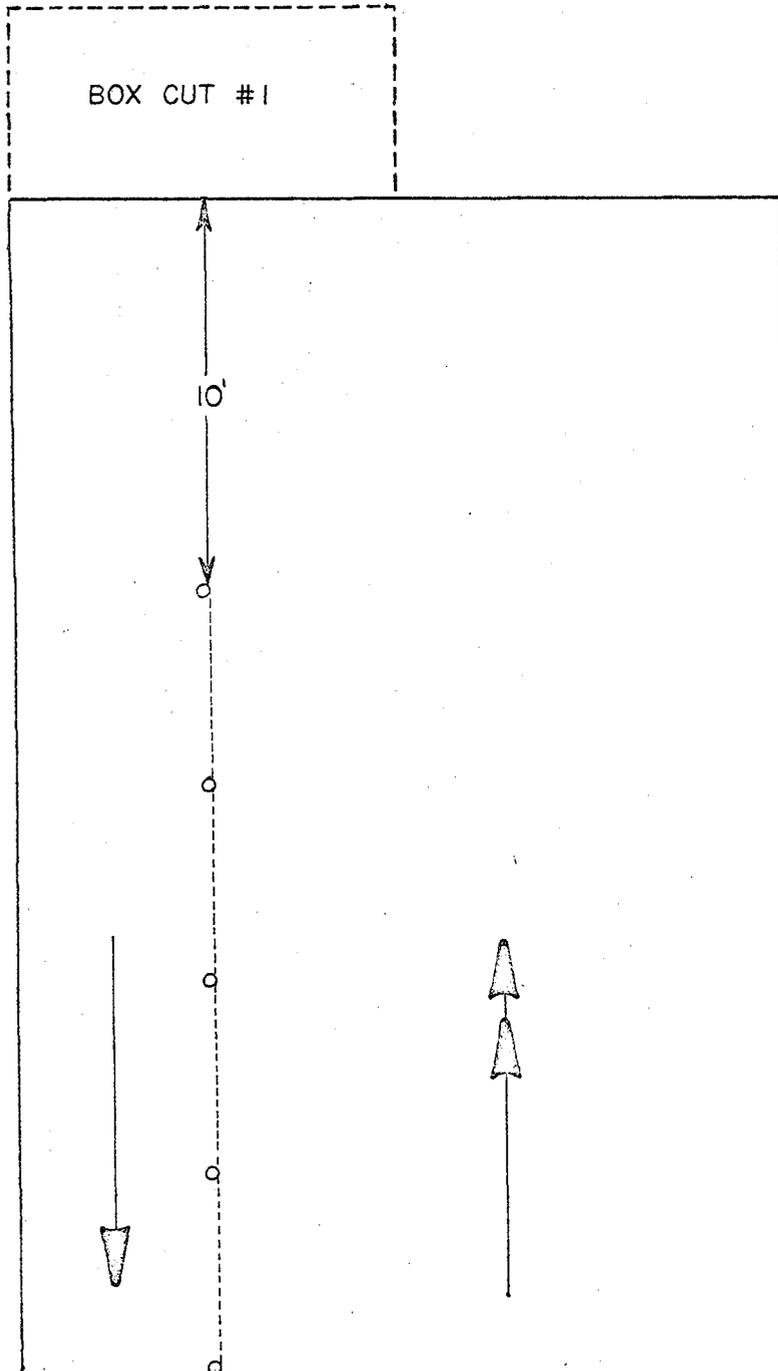
BOX CUT #1

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1" = 5'



In preparation of 1st box cut, line curtain is extended to within 10 ft. of the face.

-  Intake Air
-  Return Air
-  Timber with Cappiece
-  Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

PREPARATION FOR

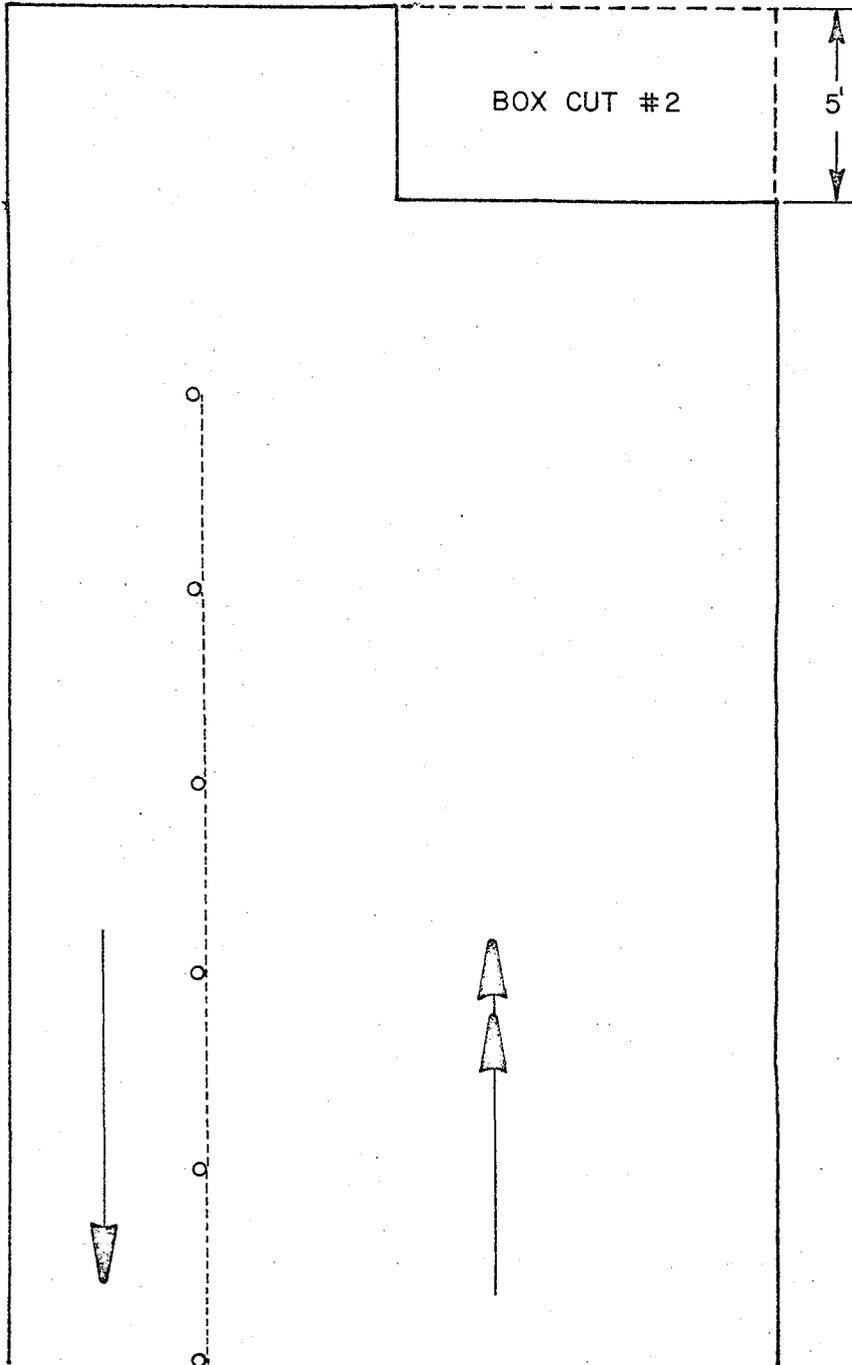
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



Box Cut #1 is complete and preparation for Box Cut #2 is to install a post with capping and advance the line curtain by five feet.

→ → Intake Air

→ Return Air

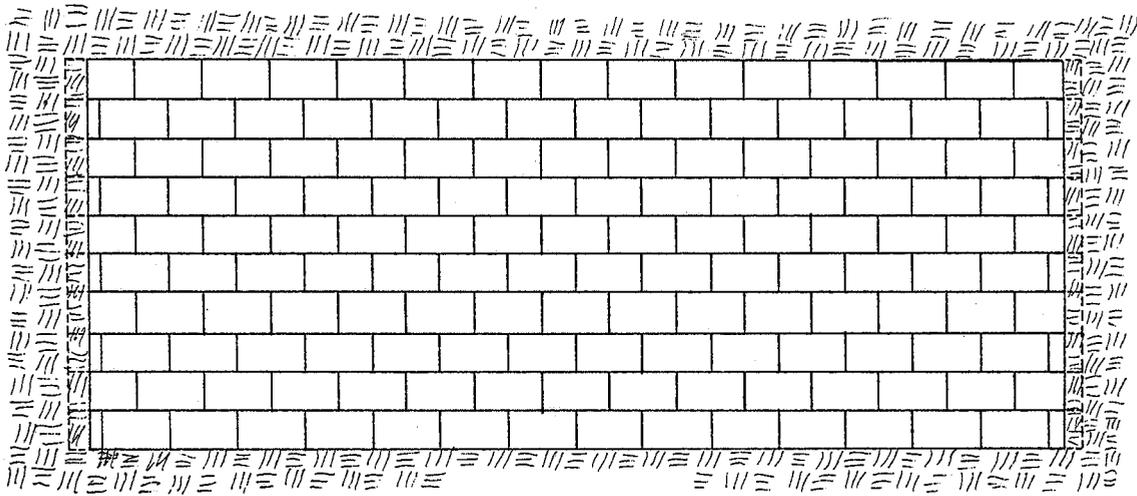
o Timber with Capping

----- Brattice

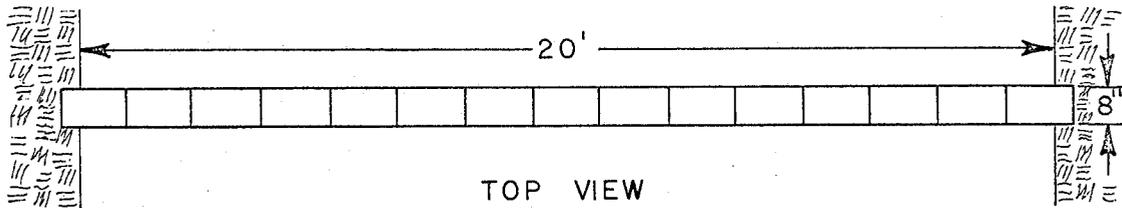
CONSTRUCTION OF
PERMANENT STOPPING

TOWER RESOURCES, INC.
PINNACLE MINE
MSHA #42-01474

SCALE 1" = 4'



FRONT VIEW



TOP VIEW

TYPICAL MINING SEQUENCE

FACE VENTILATION

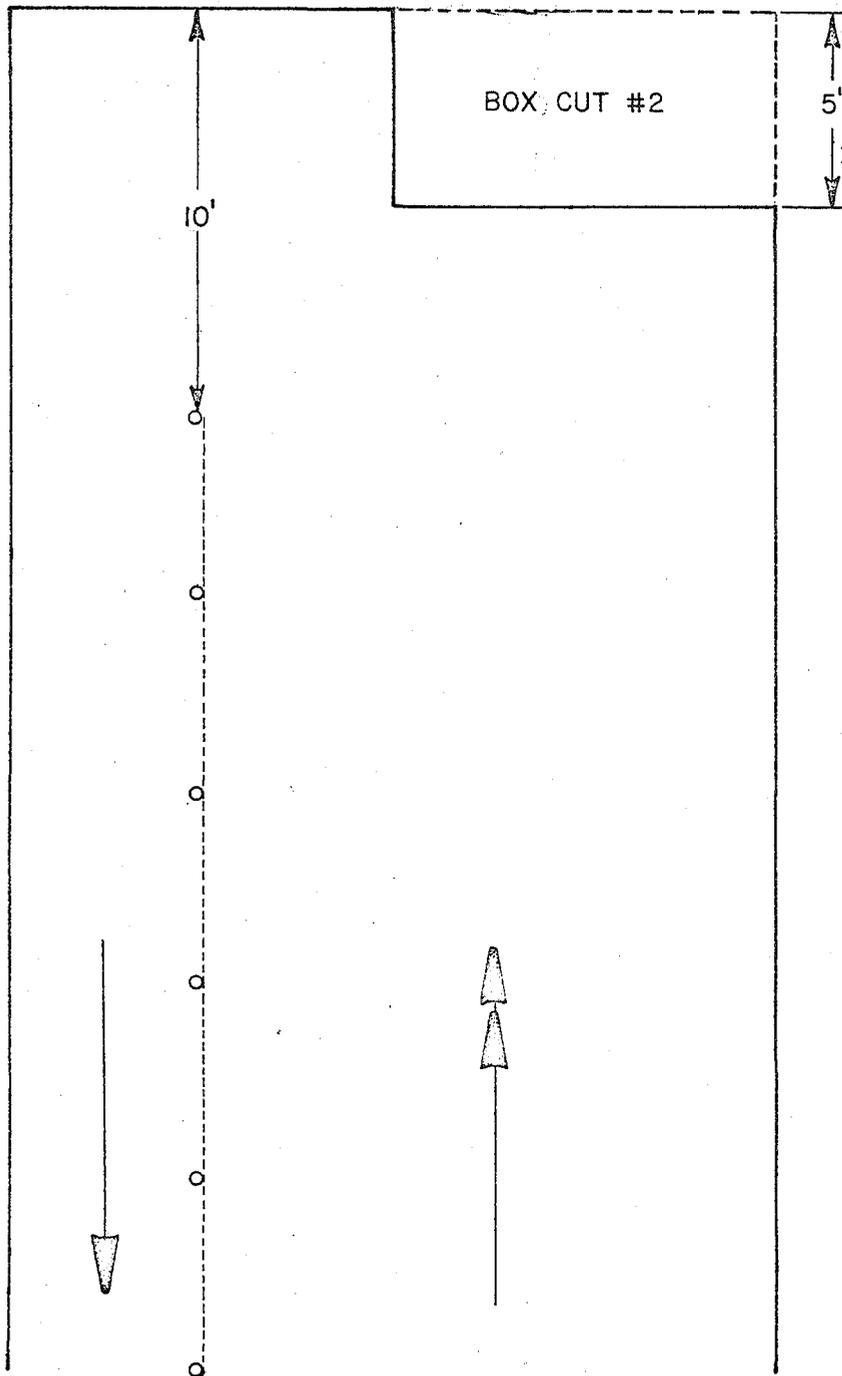
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



Post with capping and line curtain has been advanced. The face is now prepared for Box Cut #2.

- Intake Air
- Return Air
- Timber with Cappiece
- Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

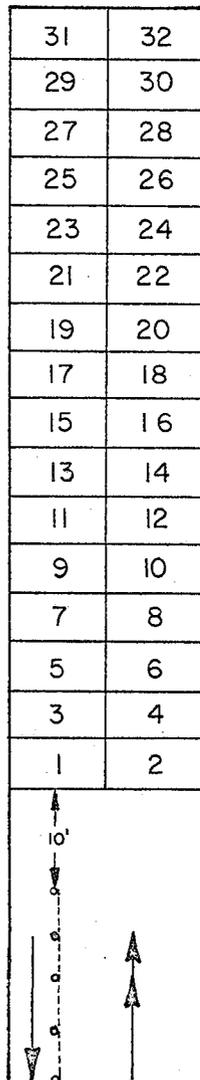
BOX CUT SEQUENCE

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=20'



The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

TYPICAL MINING SEQUENCE

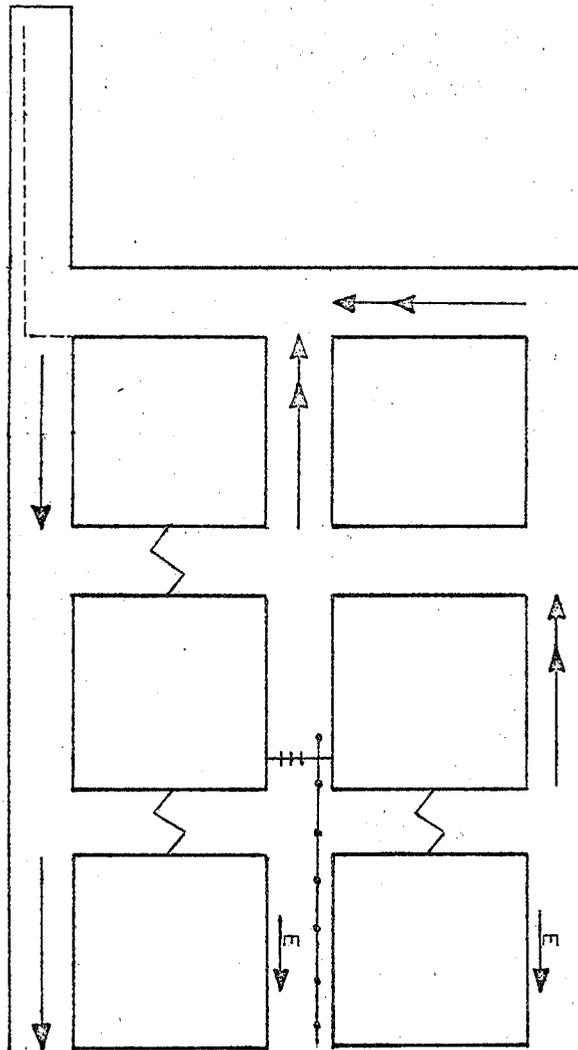
3 ENTRY SYSTEM-CUT I

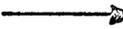
TOWER RESOURCES, INC.

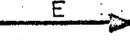
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



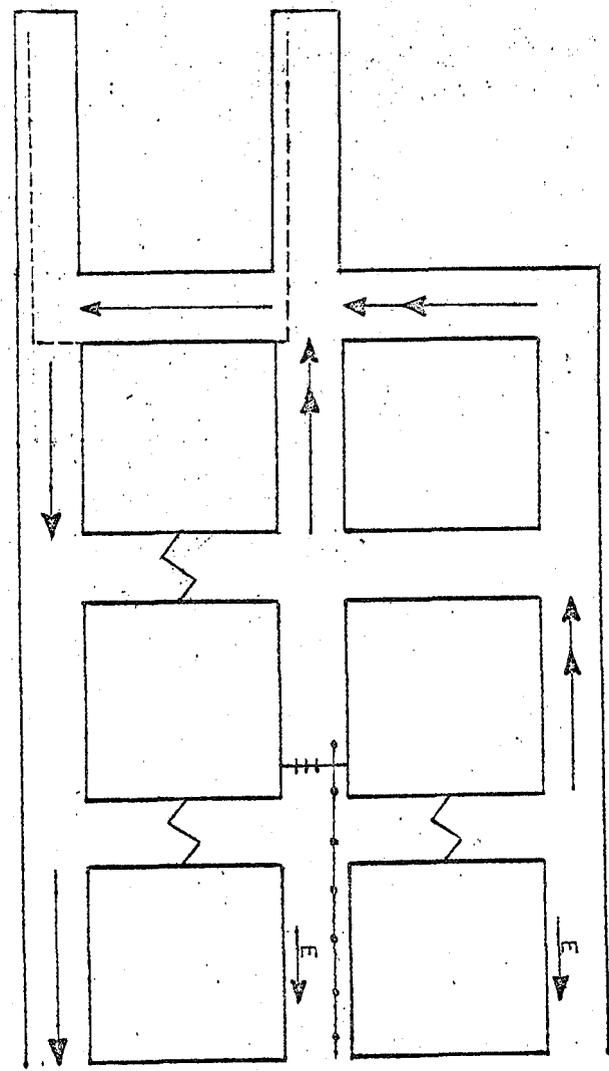
-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

TYPICAL MINING SEQUENCE
 3 ENTRY SYSTEM-CUT 2

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1"=60'

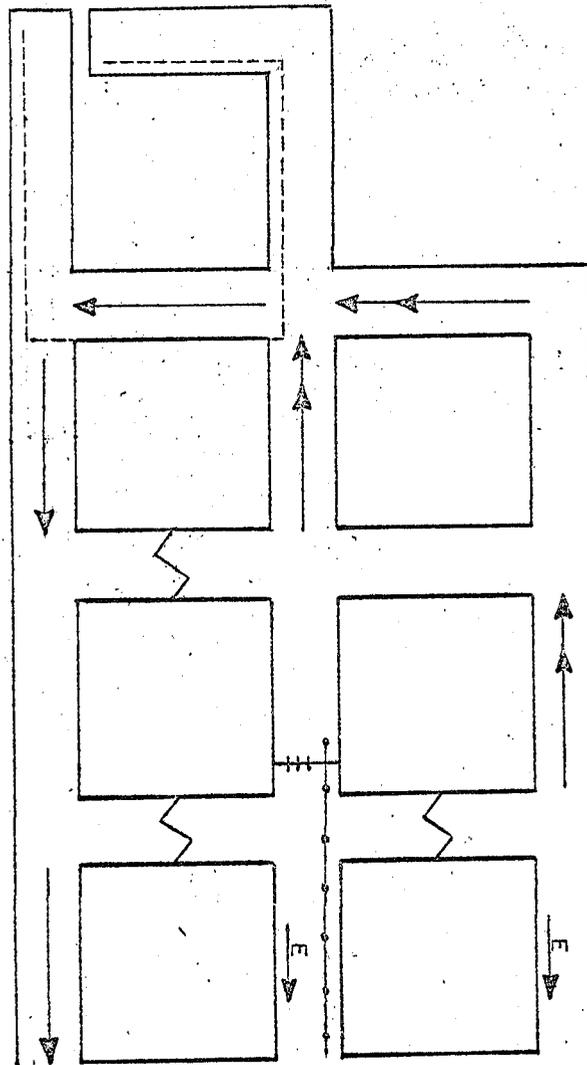


- | | | | |
|--|---------------|--|------------------|
| | INTAKE AIR | | TRAVEL CURTAIN |
| | RETURN AIR | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
 3 ENTRY SYSTEM-CUT 3

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1"=60'



- | | | | |
|--|---------------|--|------------------|
| | INTAKE AIR | | TRAVEL CURTAIN |
| | RETURN AIR | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE

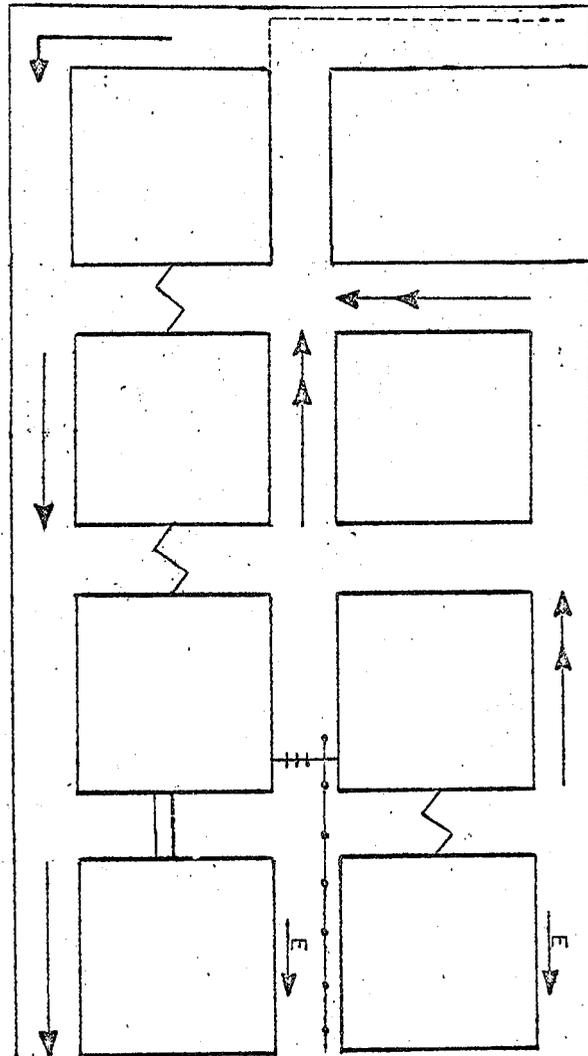
3 ENTRY SYSTEM-CUT 4

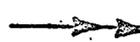
TOWER RESOURCES, INC.

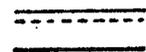
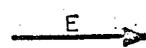
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

TYPICAL MINING SEQUENCE

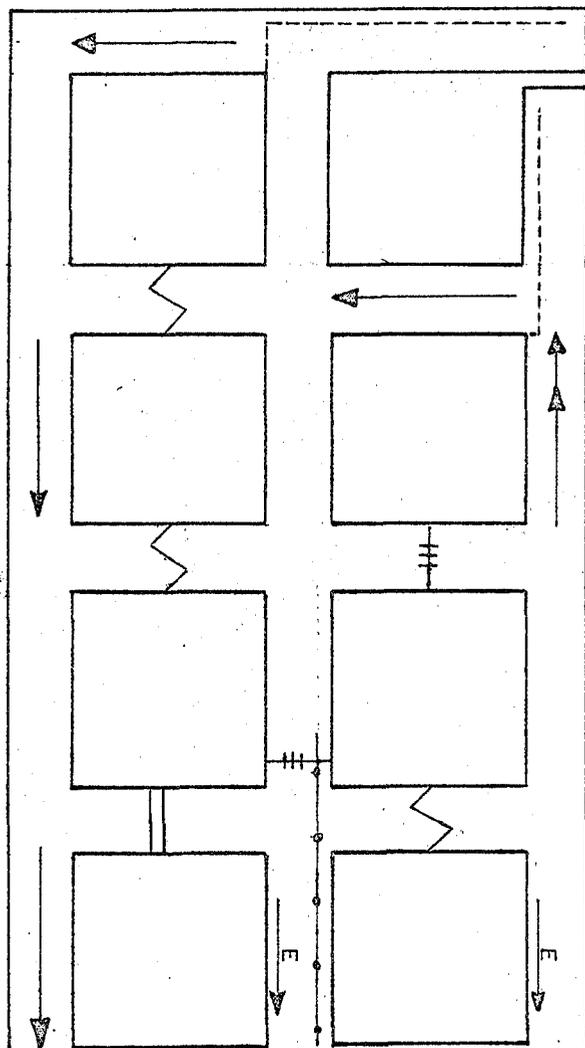
3 ENTRY SYSTEM-CUT 5

TOWER RESOURCES, INC.

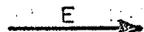
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

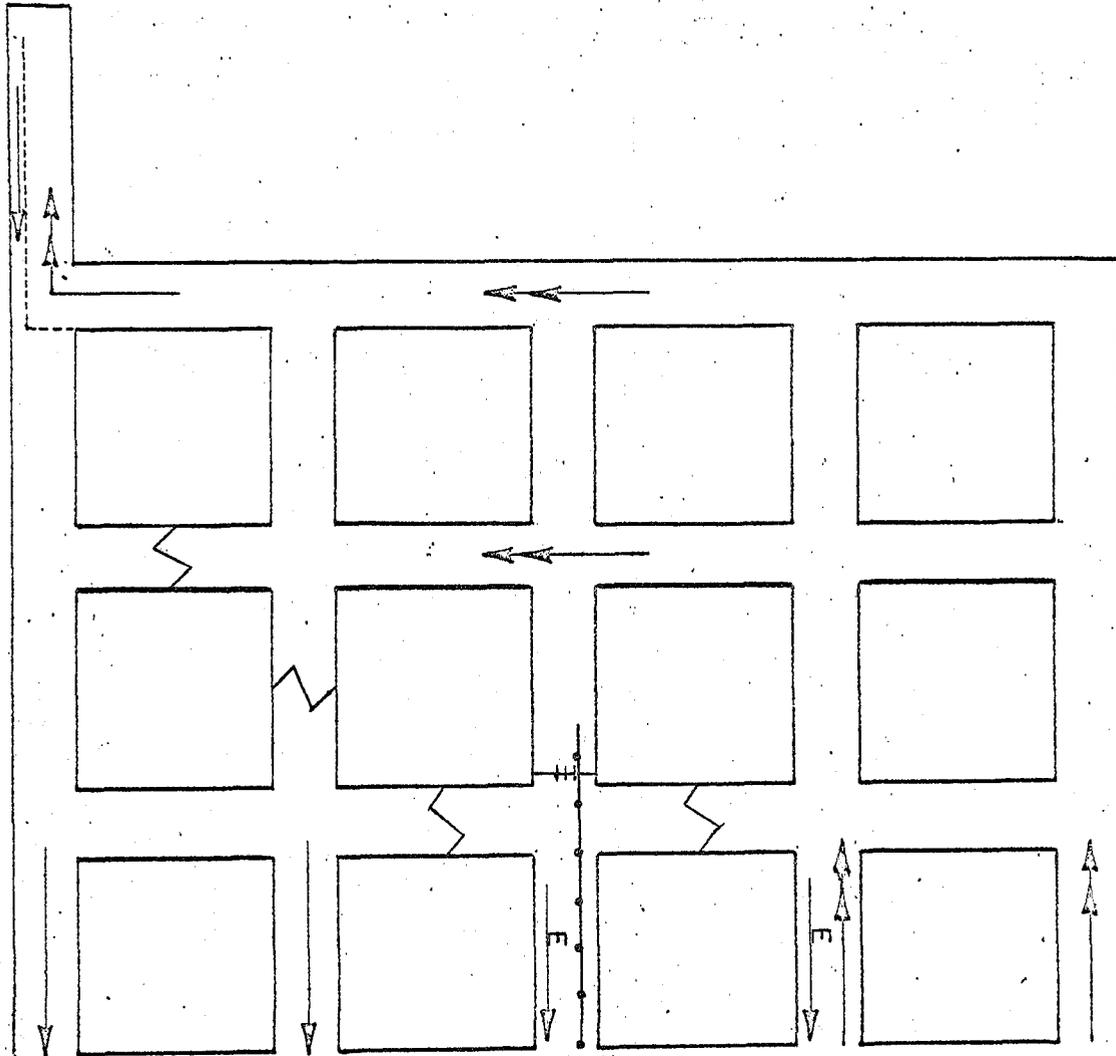
-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

TYPICAL MINING SEQUENCE
 5 ENTRY SYSTEM - CUT 1

TOWER RESOURCES, INC.
 PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'



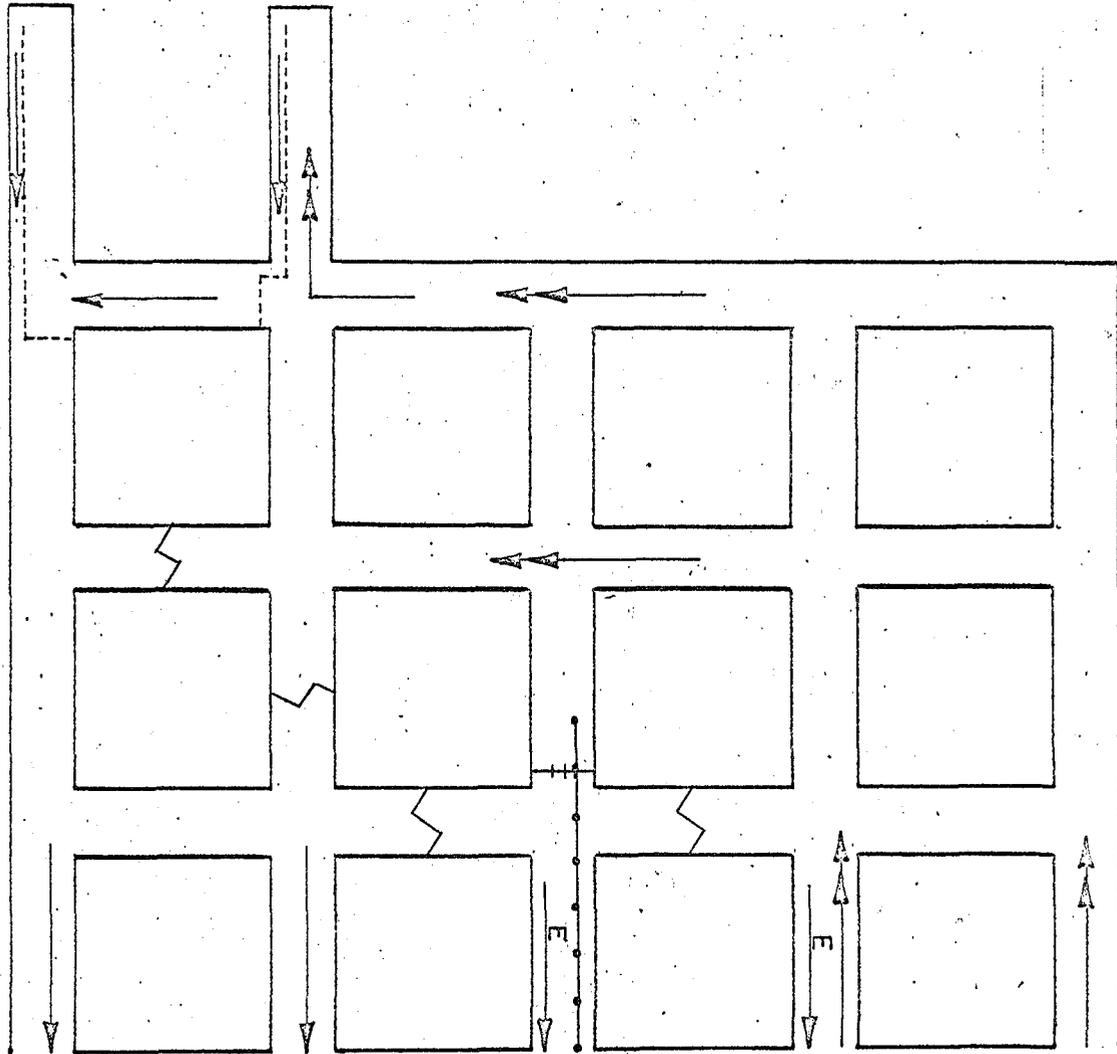
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM - CUT 2

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'



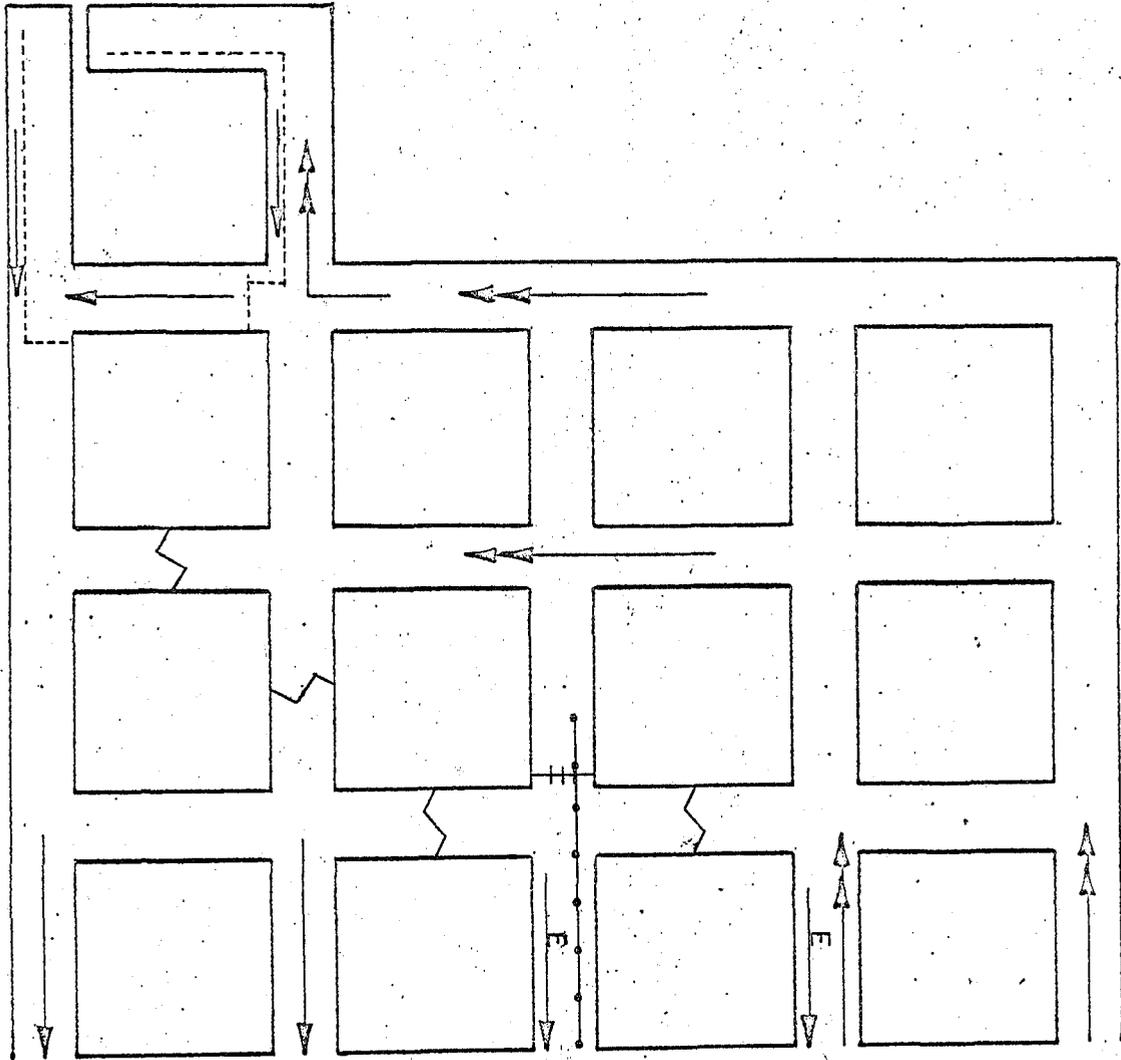
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 3

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'



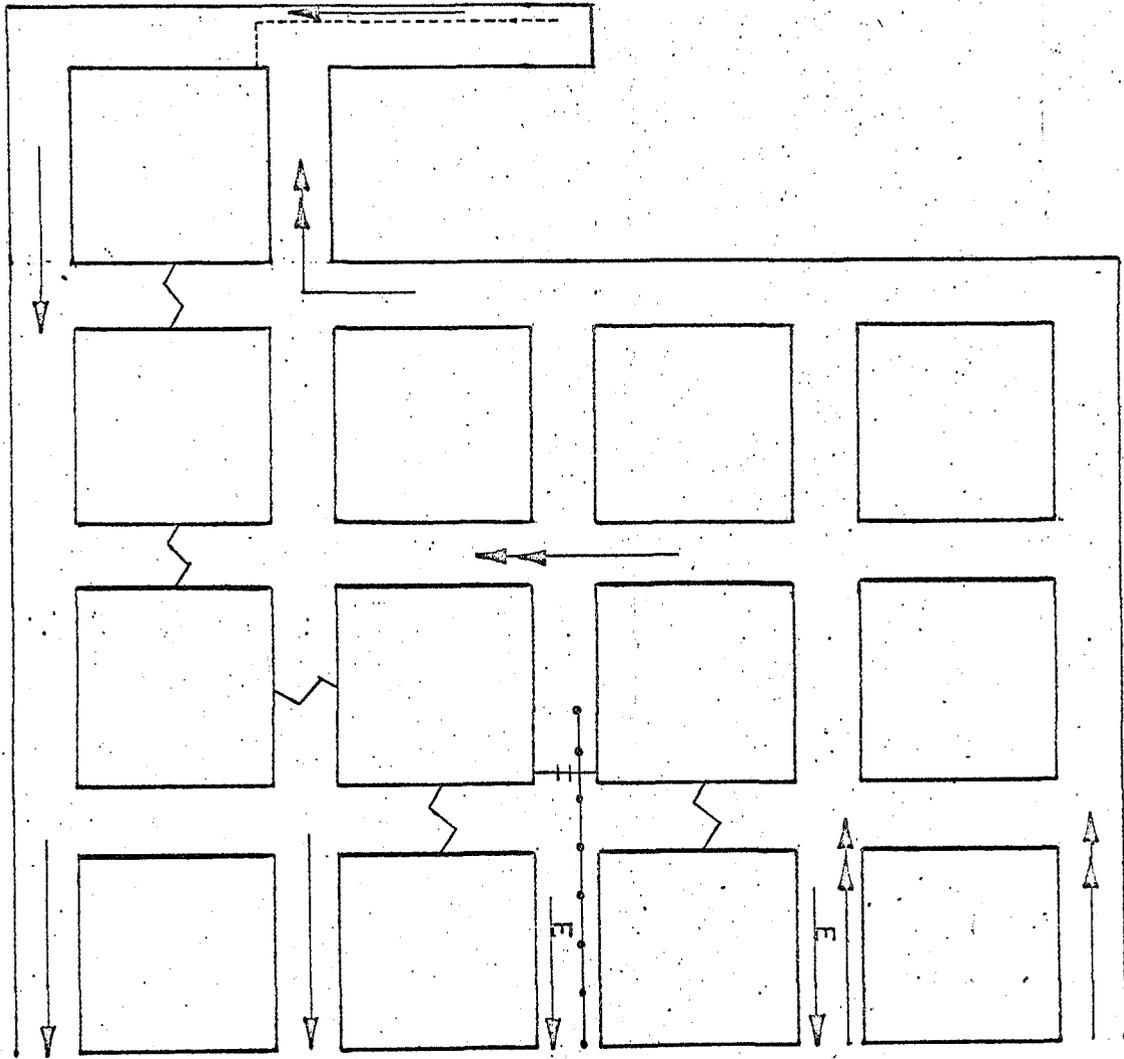
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

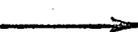
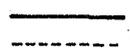
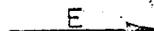
TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 4

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'



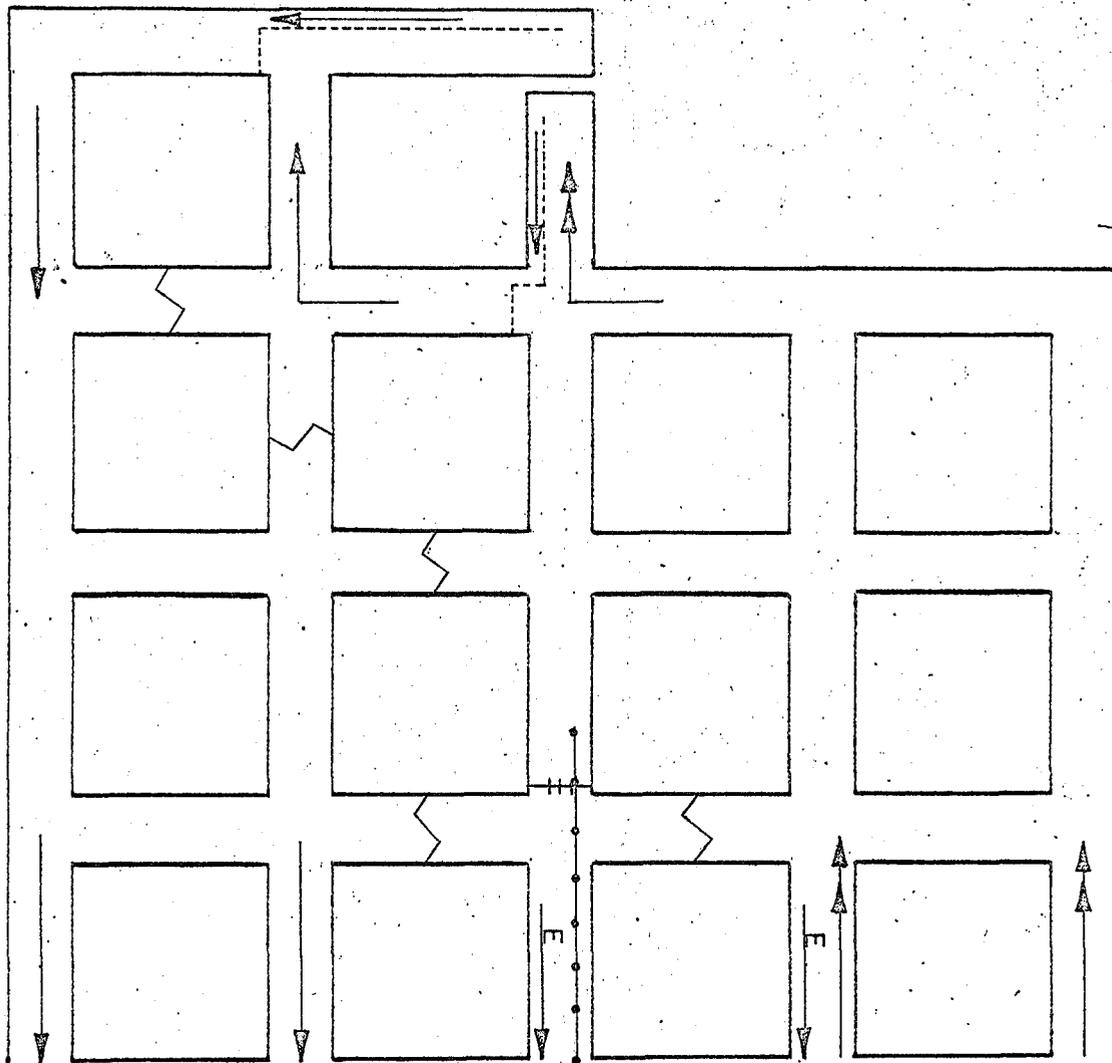
- | | | | |
|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MINING SEQUENCE
 5 ENTRY SYSTEM-CUT5

TOWER RESOURCES, INC.
 PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



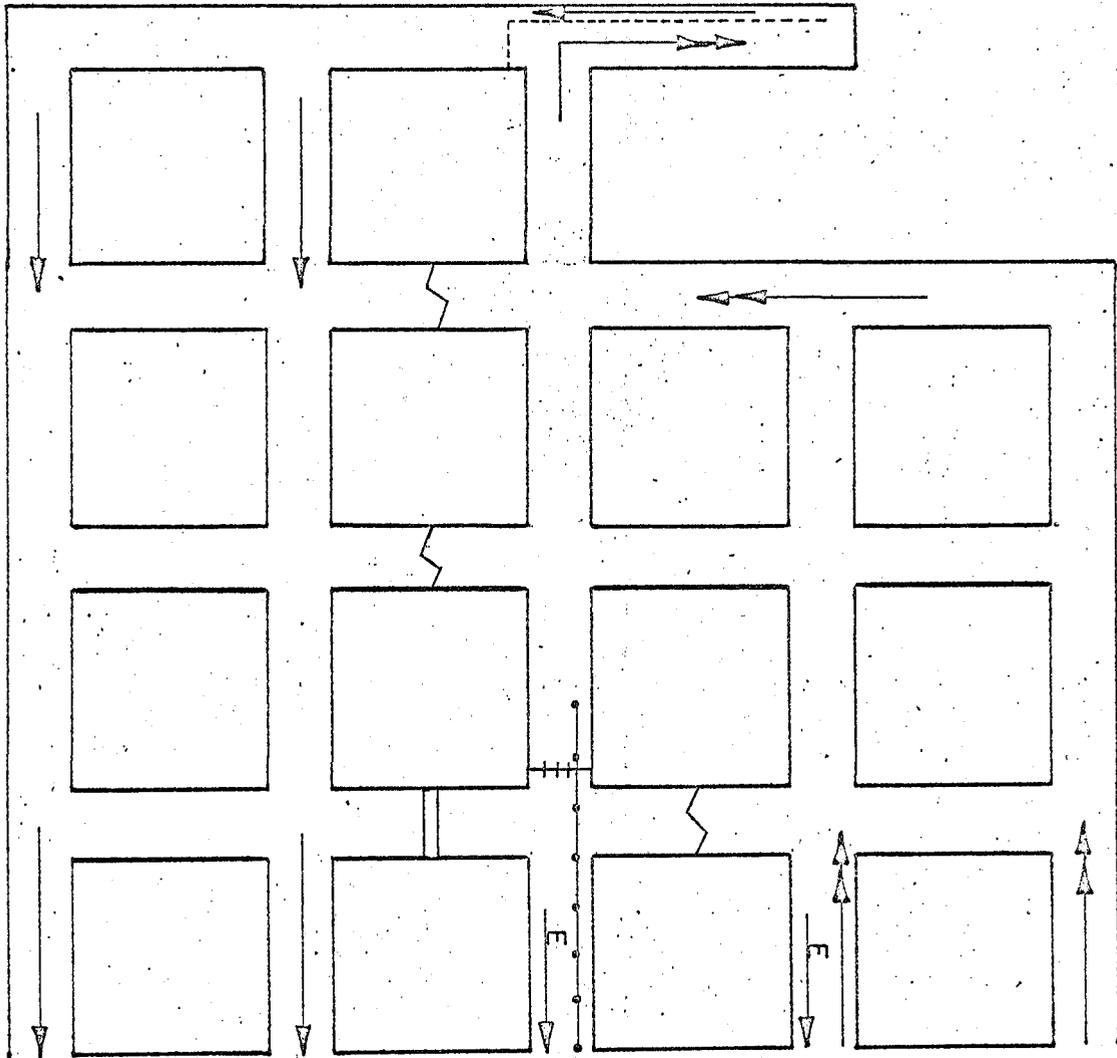
- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 6

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'



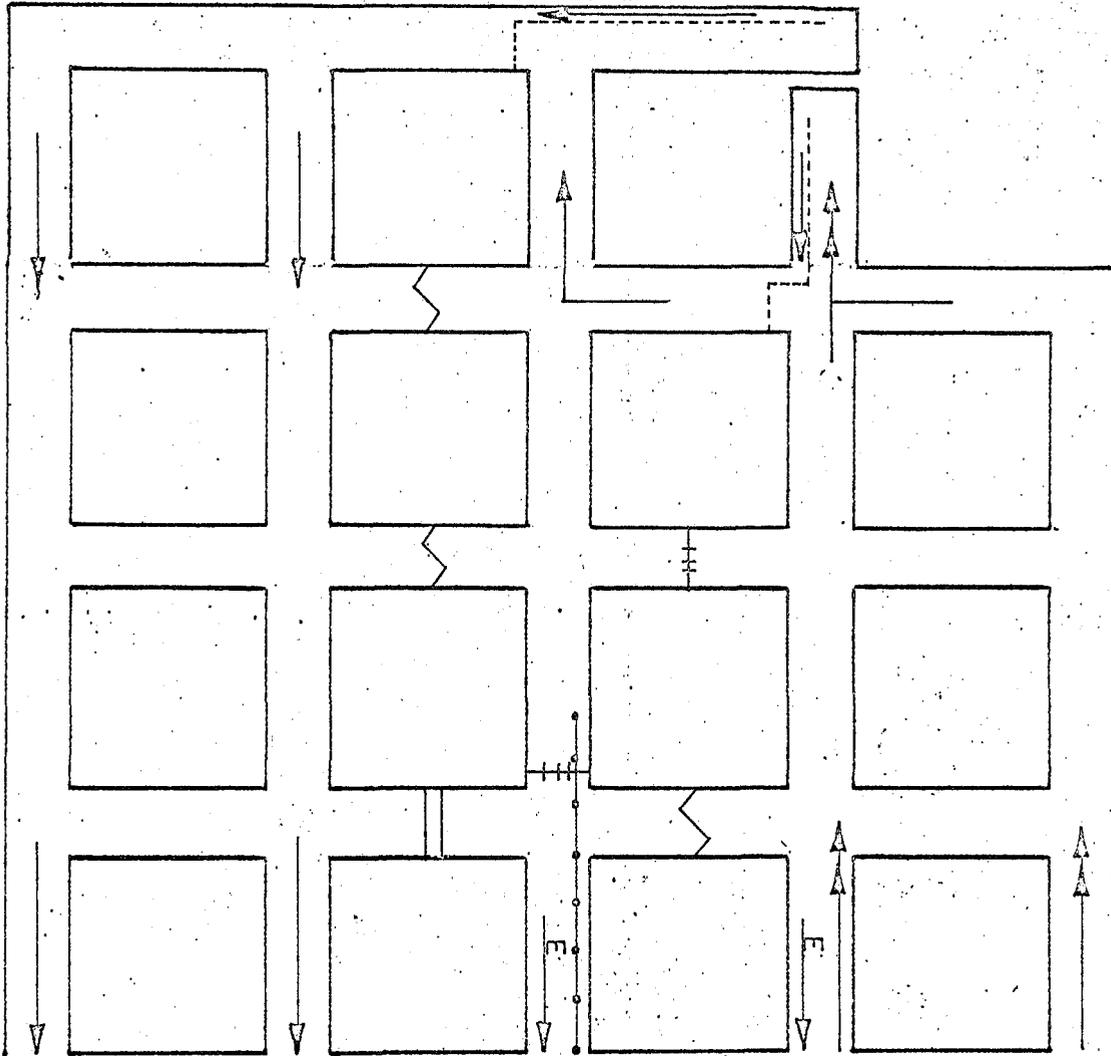
- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

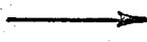
TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 7

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



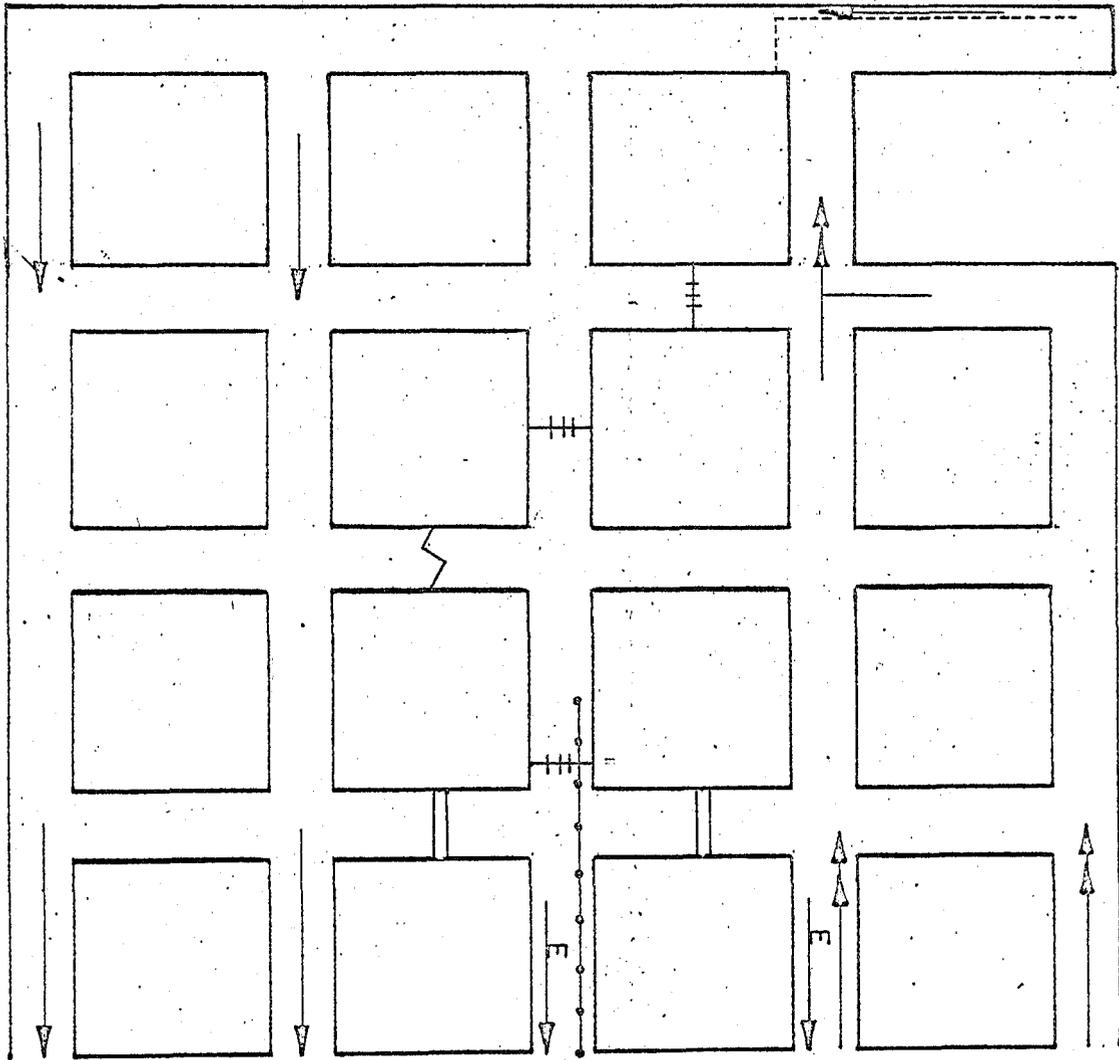
- | | | | |
|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 8

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'



- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE

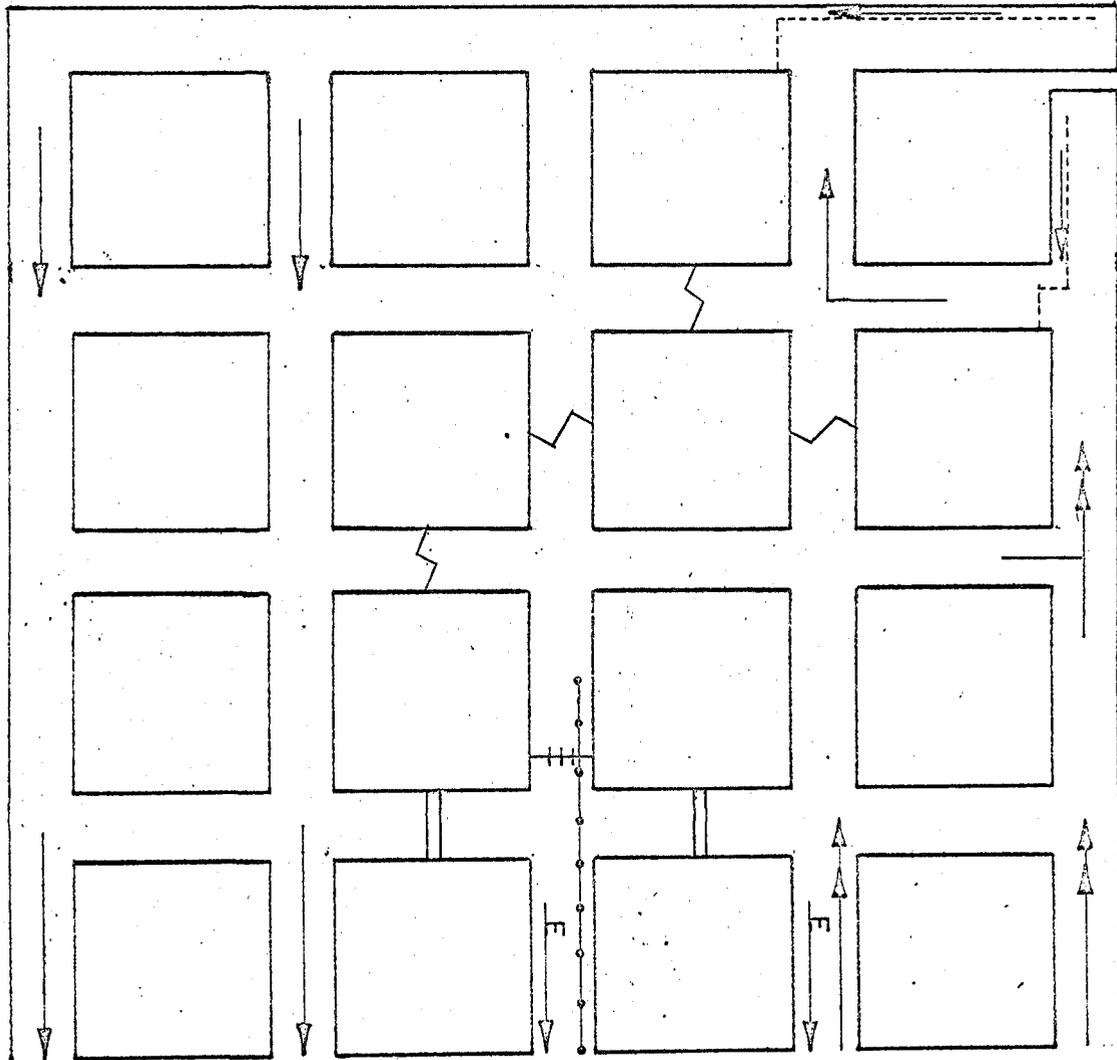
5 ENTRY SYSTEM-CUT 9

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'



INTAKE



RETURN



CHECK CURTAIN



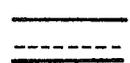
STOPPING



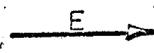
TRAVEL CURTAIN



CONVEYOR BELT



BRATTICE CURTAIN



ESCAPEWAY

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

August 4, 1980

Mr. John W. Barton
District Manager
MSHA
P.O. Box 25367
Denver, Co. 80225

Re: Pinnacle Mine
I.D. No. 42-01474
Ventilation Plan

Dear Mr. Barton,

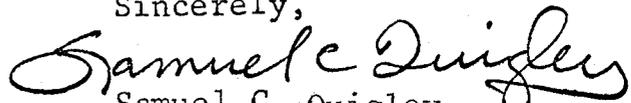
As a clarification to the approved ventilation plan for the Pinnacle Mine regarding the operation of auxiliary ventilation fans I would like to submit the following:

1. The fan will be run continuously during times which men are underground.
2. In the event the fan is not run continuously on a 24 hour basis, in other words shut down after the working shift and restarted prior to the next working shift, the fan shall be restarted and operated 15 minutes prior to the preshift examination.

It is our intention to complete the rehabilitation during dayshift hours and hence discontinue the fan operation at night.

Upon your approval of this ammendment to our plan I shall make this a part of our approved Ventilation Plan which is posted at the minesite. All personnel will be instructed and informed of this change. Thank you.

Sincerely,


Samuel C. Quigley
Western Project Manager

SCQ/lm

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225

Coal Mine Safety and Health
District 9



August 4, 1980

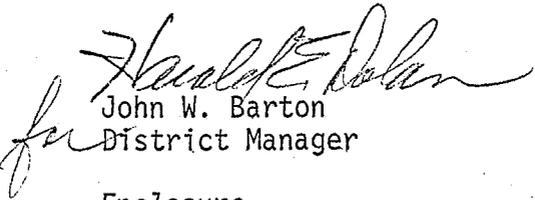
Samuel C. Quigley
Western Project Mgr.
Tower Resources, Inc.
PO Box 1027
Price UT 84501

Re: Pinnacle Mine
I.D. No. 42-01474
Temporary Fan Installation

Dear Mr. Quigley:

The enclosed amendment, dated August 4, 1980, to the ventilation plan for the subject mine is hereby approved. The amendment shall apply only to the temporary fan installation and the main fan should be installed as soon as possible.

Sincerely yours,


John W. Barton
District Manager

Enclosure

POWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

August 4, 1980

Mr. John W. Barton
District Manager
MSHA
P.O. Box 25367
Denver, Co. 80225

Re: Pinnacle Mine
I.D. No. 42-01474
Ventilation Plan

Dear Mr. Barton,

As a clarification to the approved ventilation plan for the Pinnacle Mine regarding the operation of auxiliary ventilation fans I would like to submit the following:

1. The fan will be run continuously during times which men are underground.
2. In the event the fan is not run continuously on a 24 hour basis, in other words shut down after the working shift and restarted prior to the next working shift, the fan shall be restarted and operated 15 minutes prior to the preshift examination.

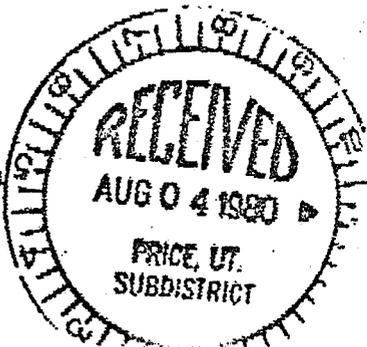
It is our intention to complete the rehabilitation during dayshift hours and hence discontinue the fan operation at night.

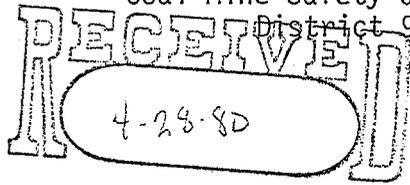
Upon your approval of this amendment to our plan I shall make this a part of our approved Ventilation Plan which is posted at the minesite. All personnel will be instructed and informed of this change. Thank you.

Sincerely,

Samuel C. Qugiley
Samuel C. Qugiley
Western Project Manager

SCQ/lm





April 22, 1980

Samuel C. Quigley
Western Project Manager
AMCA Coal Leasing, Inc.
PO Box 1027
Price, UT 84501

Re: Pinnacle Mine
ID No. 42-01474
Ventilation System and Methane
and Dust Control Plan

Dear Mr. Quigley:

A review of the ventilation system and methane and dust control plan for the subject mine has been completed by MSHA in accordance with the provisions of Section 75.316, 30 CFR 75. The review indicates that revisions are necessary to formulate a plan suitable to the present conditions and mining systems of the mine and to insure the health and safety of the miners. The following items should be revised in or added to the plan.

1. Phrases such as "if needed", "as necessary", and "when necessary" are dubious and obscure, and render the provisions of the Ventilation Plan ambiguous and unenforceable. In order to formulate an acceptable plan such phrases should be omitted. Under Section C, "Dust Control Plan - Outby Areas": the ventilation and dust control plan can not be approved without your indicating the circumstances in existence at which time the indicated suppression methods will be initiated.
2. Under Section G, "Permanent Stoppings" (#2); whenever the third connecting crosscut is broken through, work should be started on building the stopping as soon as possible and should be completed by the end of two working shifts after the shift in which the corsscut was broken through.
3. Under Section H, "Diesel Equipment" (#2); the atmosphere in the operators compartment should be sampled daily with the engine running; and if the analysis of these samples exceeds five parts per million NO₂ or fifty parts per million of CO, or both, corrective measures must be taken immediately.
4. In addition, the atmosphere returning from any working place or outby working area where diesel-powered equipment is being used should be tested at least once each shift while the equipment is in operation and if the analysis of these samples exceed the above concentrations, corrective measures must be taken immediately.

The mine maps appear acceptable and will be distributed as such.

Please make the appropriate changes and submit a revised plan by May 13, 1980.

If assistance is needed in developing an acceptable plan, please contact Bill Knepp at this office. Phone 303-234-6298.

Sincerely yours,



John W. Barton
District Manager

Enclosure

The operator of the Pinnacle Mine hereby adopts and will follow the following ventilation system and methane and dust control plan and any approved supplements and/or revisions thereof:

Signatures

Company Representative Samuel C. Quigley

MESA Investigator _____

A. General

1. Company name Tower Resources, Inc.
Mine name Pinnacle Mine
Post Office address (Town, County, State) P. O. Box 1027, Price, Carbon, Utah
Telephone number (801) 637-5385
Identification number MSHA# 42-01474
Operator's name Samuel C. Quigley
Operator's title Manager
Operator's address P. O. Box 1027, Price, Utah 84501
Operator's telephone number (801) 637-5385

2. Indicate if life of mine is _____ less than one year
X greater than one year

3. Number of employees: Surface 5)
Underground 30) Estimated
Total 35)

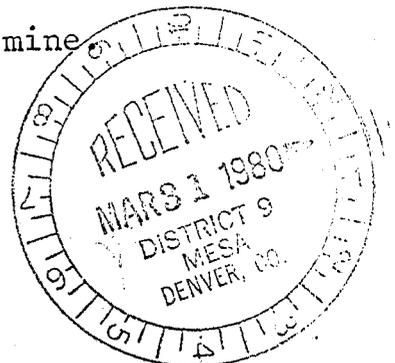
4. The type of face equipment used on each section in the mine and all diesel equipment used throughout the mine

Face Equipment used will be:

Joy 12CM Continuous Miner

Joy 10SC Shuttle Cars

Lee Norse - Top Dog - Roof Bolter



Diesel Support Equipment:

Material Tractors

John Deere

Kabota

LHD Scoops:

Emico

Wagner

5. The name and height of the coal seam being mined:

Coal seam is the Gilson seam- approximately 6.6 ft. thick.

B. Main Fan Installation

The mine will be ventilated with a main fan located on the surface, installed in fireproof housings and connected to the mine opening by fireproof air ducts. The fan will be equipped with a pressure recording gauge and an automatic signal device which will give alarm in the event the fan slows or stops. This signal will be placed in such a way that it can be either seen or heard by a responsible person on duty so that immediate action can be taken.

The fan will be offset 15 feet from the nearest side of the mine opening and equipped with explosion doors or a weak wall. The cross sectional area of the explosion doors or weak wall will be equal to or greater than the connecting entry. These doors will be in direct line with explosive forces.

The fan will be driven with an electric motor which will be provided with an independent power circuit separate from any other mine circuit.

The fan will continuously operate except during scheduled maintenance or fan failure.

All main fan installations shall meet or exceed all criteria established in Sections 75.300-2 and 75.300-3, 30 CFR 75.

C. Dust Control Plan Outby Areas

1. The following dust control practices will be adhered to at the indicated locations:
 - a. Transfer points will be cleaned and rock dusted as needed. Excessive dust created by belt haulage will be controlled by water sprays if necessary.
 - b. Loading points will be kept clean and rock dusted at all times.
 - c. There will be no underground crushers.
 - d. There will be no underground dumps.
 - e. All beltways will be cleaned and rock dusted as necessary.
 - f. Roadways and shuttle car haulageways will be kept clean, well rock dusted and wetted down as necessary.
 - g. All other problem areas will be cleaned, rock dusted, and wetted down as necessary.

D. Methane and Dust Control Practices at Face Areas

1. Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined, or loaded shall be installed at a distance no greater than 10 feet from the area of deepest penetration, to which any portion of the face has been advanced.
2. A minimum quantity of 3000 cubic feet a minute of air shall reach each working face from which coal is being cut, mined, or loaded.
3. The minimum mean entry face velocity as specified in Section 75.301-4, 30 CFR 75, shall be 60 feet a minute in all working places where coal is being cut, mined, or loaded.

4. The minimum quantity of air reaching the last open crosscut in any pair or set of developing entries or rooms shall be 9000 cubic feet a minute and the minimum quantity of air reaching the intake end of a pillar line shall be 9000 cubic feet a minute.
5. DOES NOT APPLY
6. At least 90% of the sprays indicated for dust suppression on each piece of equipment shall be maintained and operated at the indicated water pressure and flow rates.

<u>Equipment Type</u>	<u>No. of Sprays</u>	<u>Minimum Water Pressure</u>	<u>Minimum Flow Rate</u>
Continuous miners	27	90 psi	16 gal. min.

7. Working faces where roof bolting is being done will be ventilated in the same manner as working faces. Idle faces and dead-ended entries will be ventilated by a perceptible air movement as the minimum quantity.
8. Methane examinations of the face will be made by a qualified person at the last permanent or temporary support using either an approved methaneometer.

E. Methane Control in Outby Areas

1. The methane content in any return aircourse other than an aircourse returning the split of air from a working section (as provided in Sections 75.309 and 75.310, 30 CFR 75) shall not exceed 2.0 volume per centum. The methane content in the air in active workings shall be less than 1.0 volume per centum. If at any time the air in any active working contains 1.0 volume per centum or more of methane, changes or adjustments

shall be made at once in the ventilation in the mine so that the air shall contain less than 1.0 volume per centum of methane.

2. Bleeder entries, bleeder systems, or equivalent means shall be used in all active pillaring areas to ventilate the mined areas from which pillars have been totally or partially extracted so as to control the methane content in these areas." All such bleeder systems shall meet or exceed the criteria established in Sections 75.316-2(e) through (i), 30 CFR 75."
 - a. At the six month review Tower will submit a detailed map of the proposed ventilation pillaring areas. This map will include detail describing expected air quantities and methane concentrations and methods used to keep the bleeder system open.
3. Whenever a working section is completed and the operator does not wish to ventilate the area, the area will be sealed.
4. If the operator wishes to ventilate pillared or abandoned area a request for permission to ventilate these areas will include;
 - a. a detailed history of the methane content determined throughout the mine and when available, the volume of air in which such methane determinations were made.
 - b. A description of the method by which the areas from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated, and such maps and drawings as may be required to illustrate such method and to indicate existing or proposed air volumes to ventilate such areas.
 - c. The signature and title of the person who submits the application for the operator.

F. Section and Face Ventilation System

1. Typical section and face ventilation systems are shown on the attached maps. As the mining operation commences detail of the ventilation system will be submitted on an appropriate scale map and updated regularly.
2. Ventilation in the belt entries will be controlled by regulators and check curtains and will be maintained as a separate split of air.
3. Coal will not be allowed to accumulate at the outby end of the face equipment to the extent that ventilation of the working face is restricted.

G. Permanent Stoppings

1. All ventilating devices such as stoppings, overcasts, undercasts, and shaft partitions shall be of substantial and incombustible construction installed in a workmanlike manner and maintained in a condition to serve the purpose for which they were intended, and any stopping leaking air excessively shall be repaired immediately.
2. Permanent stoppings shall be erected between the intake and return aircourse and shall be erected to and including the fourth connecting crosscut outby the faces of the entries. Whenever the third connecting crosscut is broken through, work shall be started on building the stopping as soon as possible and shall be completed in a timely manner which would be consistent with good ventilation practices.
3. Metal stoppings supported with approved fire retardant treated wood or metal angles may be used in short lived entries such

as panels, rooms, or butts as belt or intake escapeway separation stoppings only. Timber laid longitudinally "skin to skin", and packed with rock dust, may be used in heavy or squeezing areas if the timbers are treated with an approved fire retardant.

4. A complete list of materials used in the construction of stoppings is as follows:

(1) Block Stoppings - Materials Used: (6" x 3" x 16") cinder or cement blocks, mortar or cement mix. The stoppings are laid up on clean substantial bottom, tied into the ribs with staggered courses.

(a) Blocks with mortared joints will be plastered with mortar mix around the periphery to make it airtight.

(b) Blocks stacked without mortared joints will be plastered in its entirety on one side.

(2) Permanent Stoppings - Will be used for belt isolation, return airways, intake airways, and any other separate approved aircourse.

H. Diesel Equipment

The use of diesel equipment underground shall comply with the following requirements:

1. All diesel equipment used underground will be operated and maintained according to the manufacturer's instructions.
2. The atmosphere in the operator's compartment and the atmosphere returning from any working place where diesel powered equipment is being used shall be tested at least once a week while the

the equipment is in operation, and if the analyses of these samples exceeds five parts per million NO₂ or 50 parts per million CO, or both, corrective measures shall be taken immediately.

3. If any unusual discoloration of the exhaust occurs, the atmosphere in the operator's compartment and the atmosphere returning from the diesel equipment will be tested immediately. If levels of NO₂ and CO are detected approaching those stated in paragraph 2, samples will be taken every shift until such levels are reduced to normal operating levels.
4. If for any reason the levels specified in paragraph 2 are exceeded, corrective measures will be taken immediately. Samples will be taken every hour thereafter until the corrective measures are shown to be effective.
5. The date, time of sampling, machine identification and the results of the analyses shall be recorded in a book maintained for that purpose.

I. Use of Auxiliary Fans and Machine-Mounted Diffusers Underground

1. The fan shall be of a permissible type, maintained in permissible condition, so located and operated to avoid any recirculation of air, and examined once every four hours when in use. The examiner shall place his initials, date, and time near the fan.
 - a. Fans operated blowing shall be installed in the positive intake current of the place to be ventilated by the fan, and the volume of such positive intake air current shall be greater than the free discharge capacity of the fan.

- b. Fans operating exhausting shall be installed in the return air current from the place to be ventilated by the fans, and the volume of positive intake air current available at the entrance to the place (at the crosscut or other point of entry) to be ventilated with exhaust fans shall be greater than the free discharge capacity of the fan.
2. All face ventilation systems using auxiliary fans and tubing or machine-mounted diffusers shall be approved under the provisions of Section 303(o) of the Act. (Subsection 75.316 of the Federal Register).
3. If a machine-mounted diffuser is used in conjunction with fan tubing or exhaust line brattice, the intake end of the diffuser shall be located outby the intake end of the exhaust tubing or line brattice.

J. Mine Maps

A mine map of the appropriate scale shall be submitted and updated at six month intervals and will include the following:

1. Mine maps shall be coded with symbols provided in a detailed legend on every map, showing the scale and orientation of the map, including property, ventilation, and face system maps; and such symbols shall be standard for the entire ventilation plan.
2. Limits of the mine property, on a suitable scale (may be smaller than 500 feet to the inch) and type of map to show entire limits. Indicate location of present workings.
3. Location of all oil and gas wells, active and abandoned, or if none, so stated. Also include any other drill holes that penetrate the seam.

4. All known underground workings adjacent, above and below the mine; and all water pools above; if none so state. Include any surface or auger mines.
5. Mine fan data for all main fans including: location, manufacturer's name, type, size, speed, water gage, quantity, and blade setting at present operating point; and name plate date from fan motor including horsepower, voltage, and ampere rating, in addition to any stand-by motors and fans where applicable.
6. Location of all surface mine openings including direction of air flow and air quantities.
7. Any faults, wants, or slips that may affect ventilation, including any abnormal conditions, such as entries blocked by water or roof falls.
8. Mining projections in detail for at least one year showing ventilation controls, crosscut and entry center distances, and proposed bleeder systems in areas where second mining will be done.
9. All underground workings with active section delineated.
10. Locations of stoppings, overcasts, regulators, seals, air-lock doors, and man-doors; a statement of location may be allowed for certain areas.
11. Measured volumes and directions of air entering and leaving each split, and the volume, direction, and percent methane of air inreturn airways and bleeders. Such data to be representative of conditions immediately prior to date of submission.

12. Show location and average height, width, and air velocity in each conveyor belt haulage entry, every place where trolley haulage systems are maintained, and every place where trolley wires and trolley feeder wires are installed.
13. Velocities of air at any abnormal or restricted location.
14. Location of areas which have been abandoned and areas from which pillars have been wholly or partially removed.
15. Locations of proposed or new shafts, slopes, or drift openings, either intake or return, including the direction, anticipated volume of air, and expected date for completion and operation.
16. Locations of proposed seals in all new areas developed after March 30, 1970.
17. Contour lines or spot elevations of coal seam as required by Section 75.1200-1(m), or 75.1200-1(k), including elevations of all main and cross or side entries.
18. Escapeways designated by means of symbols. The physical layout of escapeways must meet the criteria of 75.1704-1, 30 CFR 75.
19. Dip of coalbed.
20. All drill holes that penetrate the coalbed being mined.
21. The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown.
22. The location and elevation of any body of water dammed in the mine or held back in any portion of the mine.

23. The location and description of at least two permanent base line points coordinated with the underground and surface mine traverses, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys.
24. The elevations of tops and bottoms of shafts and slopes, and the floor at the entrance to drift and tunnel openings.

TYPICAL MINING SEQUENCE

FACE VENTILATION

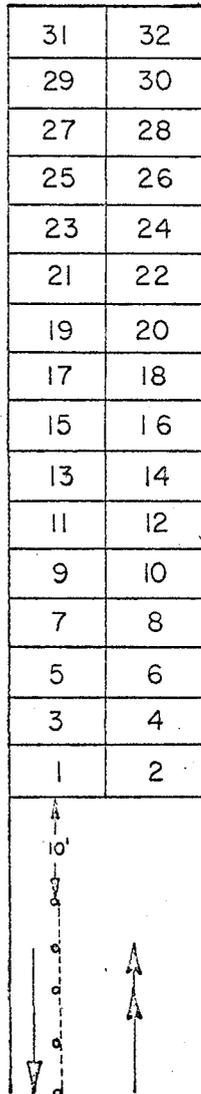
BOX CUT SEQUENCE

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=20'



The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

TYPICAL MINING SEQUENCE

FACE VENTILATION

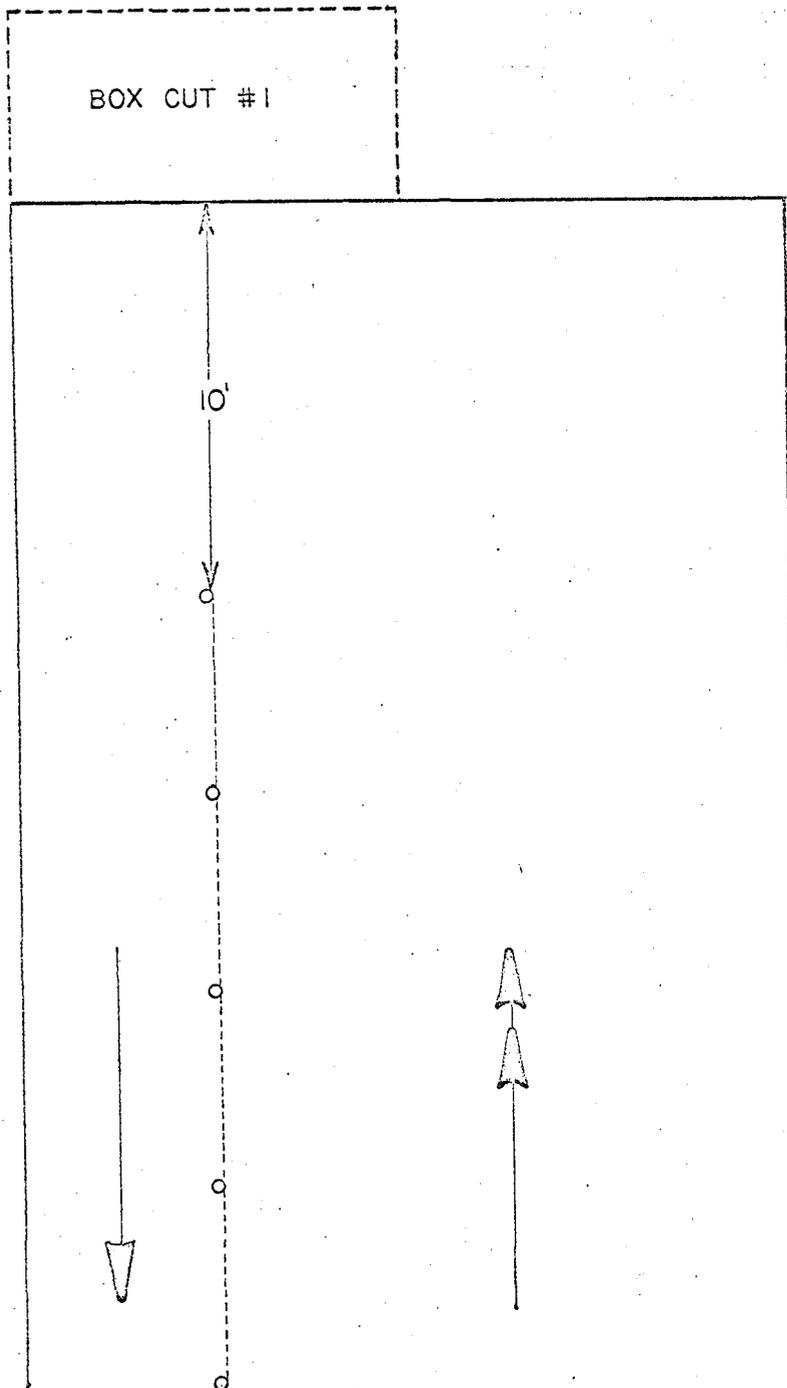
BOX CUT #1

TOWER RESOURCES, INC.

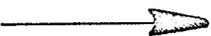
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 5'



In preparation of 1st box cut, line curtain is extended to within 10 ft. of the face.

-  Intake Air
-  Return Air
-  Timber with Cappiece
-  Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

PREPARATION FOR

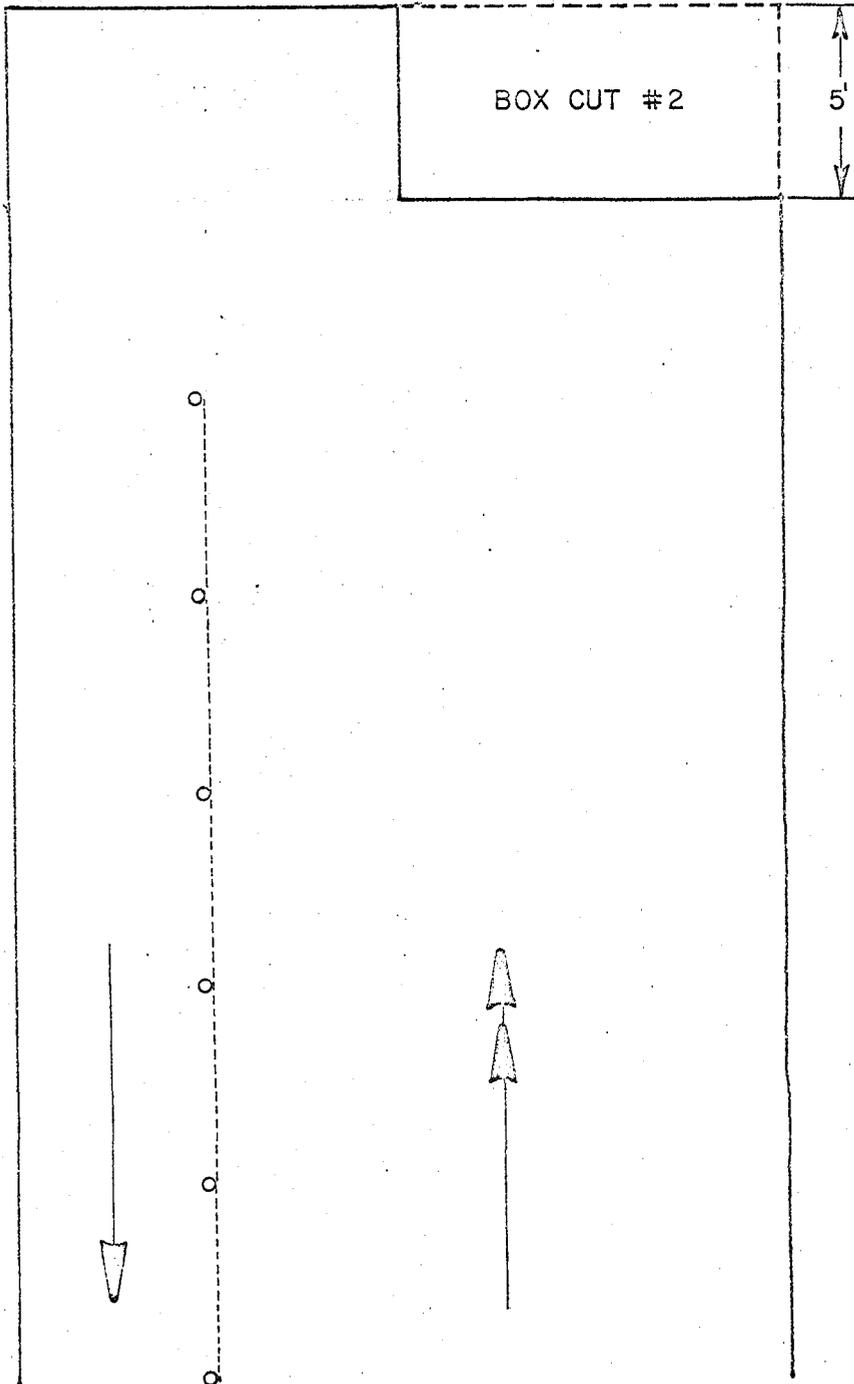
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



Box Cut #1 is complete and preparation for Box Cut #2 is to install a post with capping and advance the line curtain by five feet.

→ Intake Air

→ Return Air

o Timber with Cappiece

----- Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

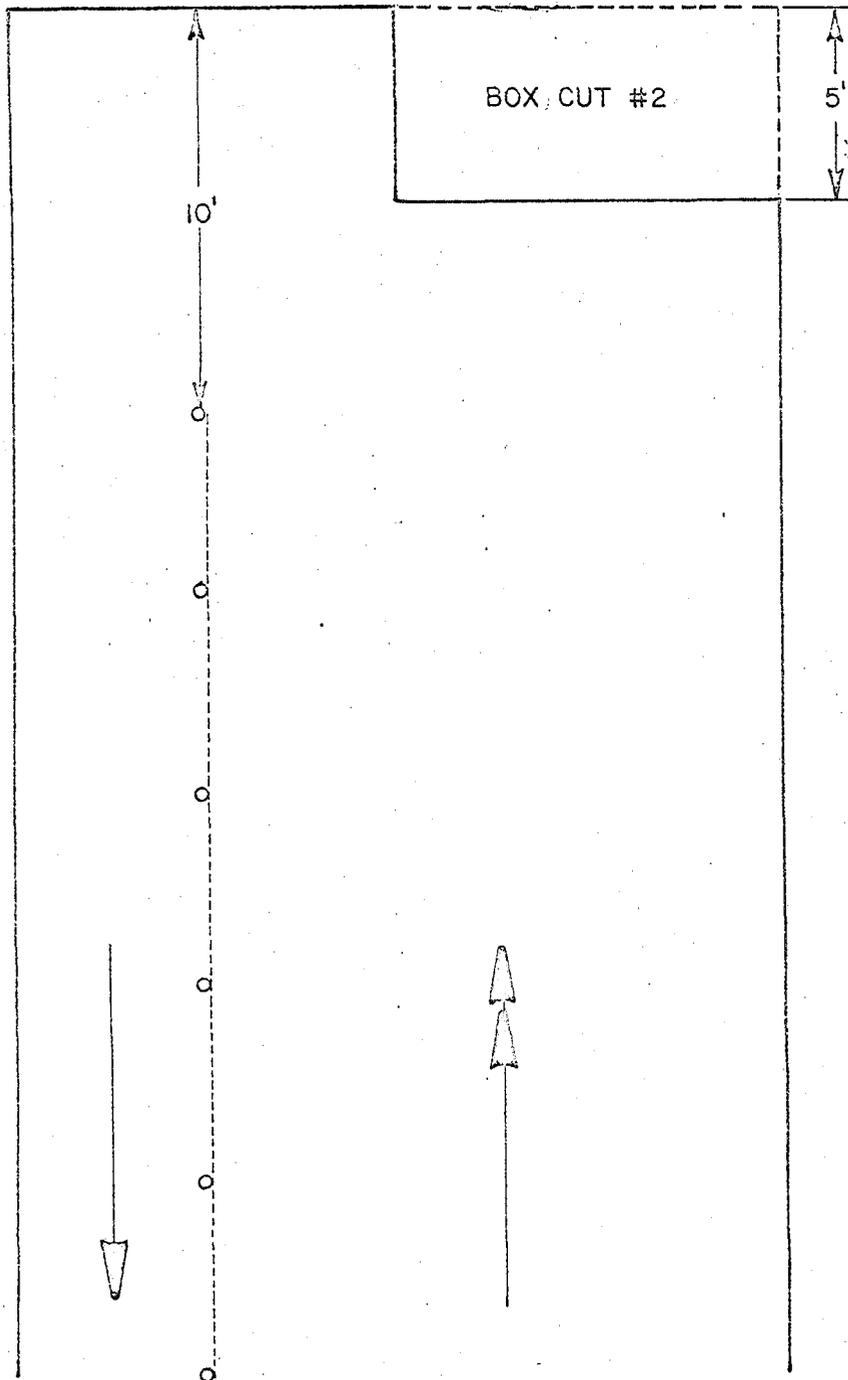
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



Post with cappiece and line curtain has been advanced. The face is now prepared for Box Cut #2.

-  Intake Air
-  Return Air
-  Timber with Cappiece
-  Brattice

TYPICAL MINING SEQUENCE

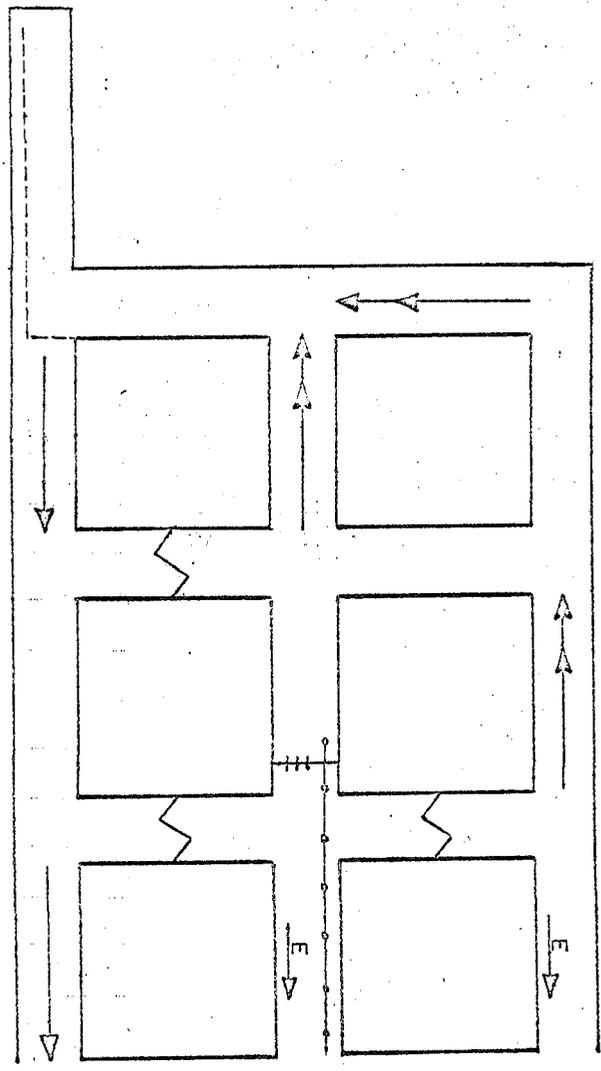
3 ENTRY SYSTEM-CUT I

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

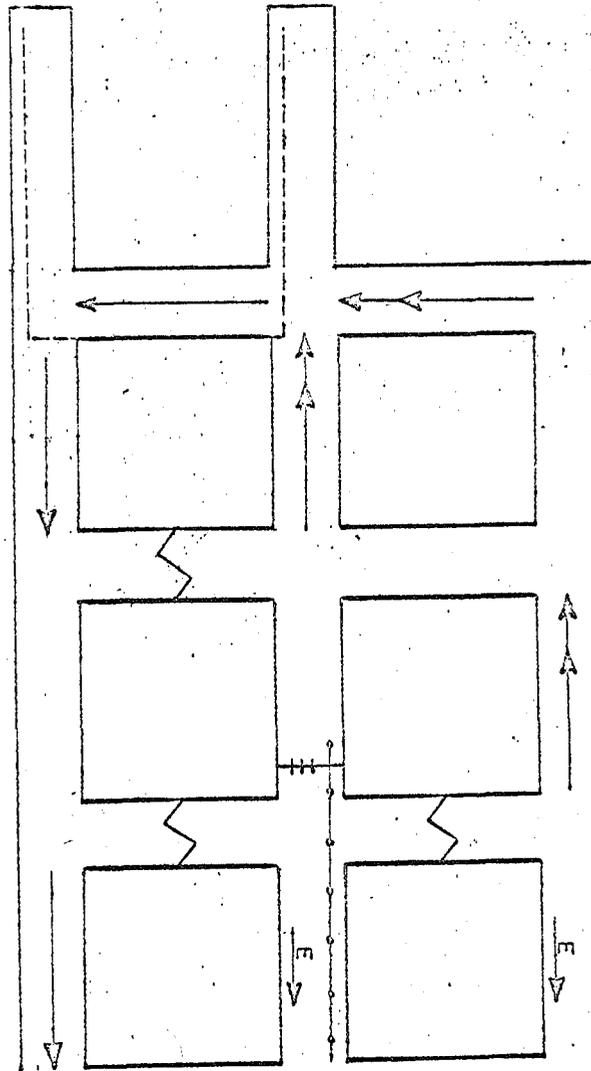


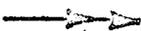
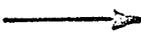
- | | | | |
|--|---------------|--|------------------|
| | INTAKE AIR | | TRAVEL CURTAIN |
| | RETURN AIR | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

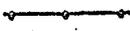
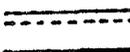
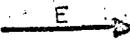
TYPICAL MINING SEQUENCE
 3 ENTRY SYSTEM-CUT 2

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1"=60'



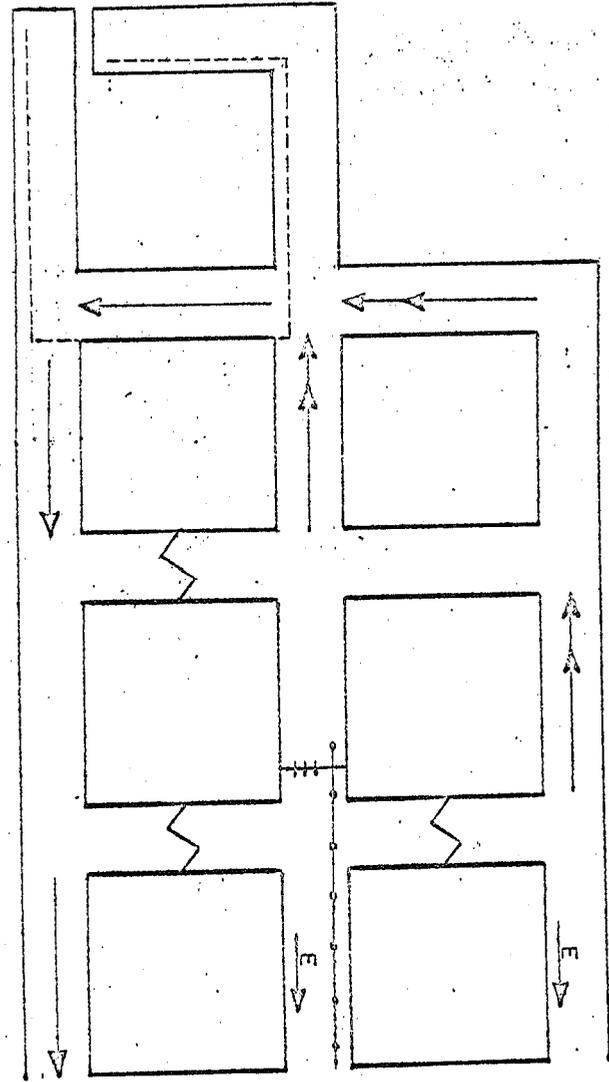
-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

TYPICAL MINING SEQUENCE
 3 ENTRY SYSTEM-CUT 3

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1" = 60'



- | | | | |
|--|---------------|--|----------------|
| | INTAKE AIR | | TRAVEL CURTAIN |
| | RETURN AIR | | CONVEYOR BELT |
| | CHECK CURTAIN | | STOPPING |
| | | | |
| | | | ESCAPEWAY |

TYPICAL MINING SEQUENCE

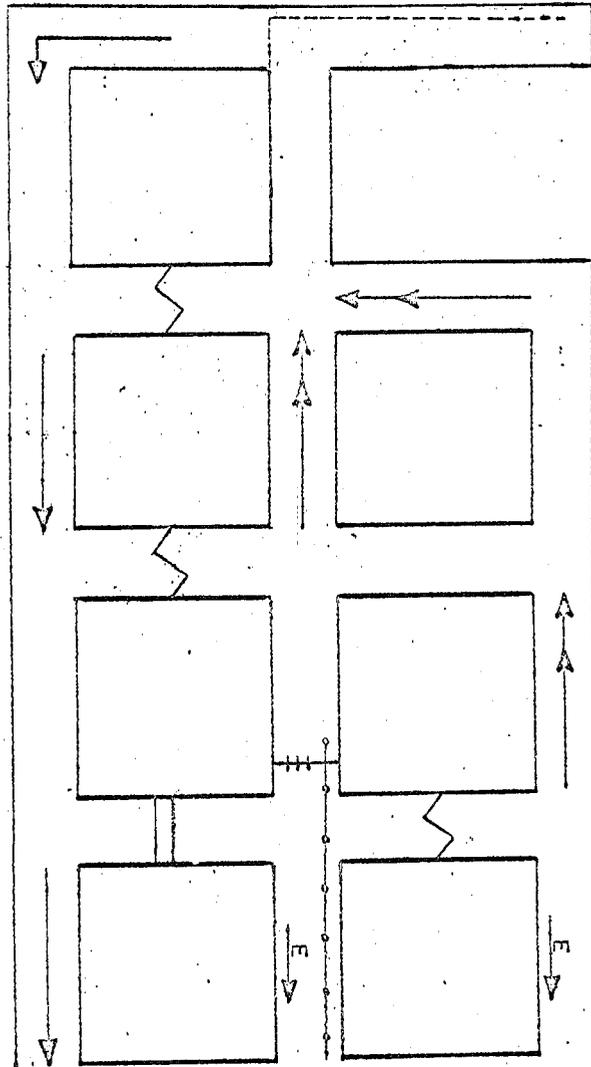
3 ENTRY SYSTEM-CUT 4

TOWER RESOURCES, INC.

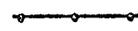
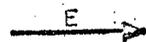
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

TYPICAL MINING SEQUENCE

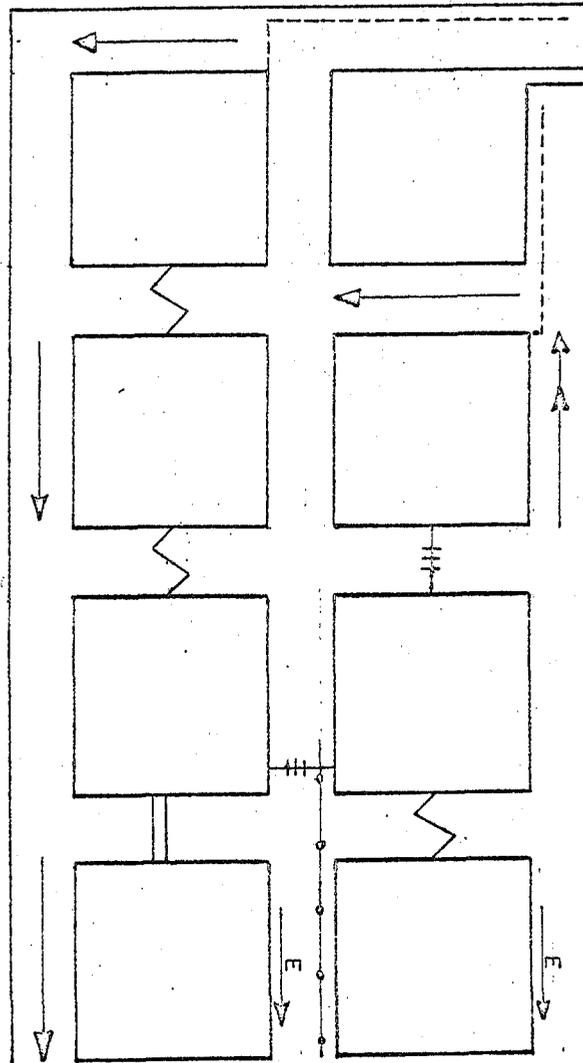
3 ENTRY SYSTEM-CUT 5

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'



→ → INTAKE AIR

→ → RETURN AIR

⌞ ⌞ CHECK CURTAIN

⌞ ⌞ STOPPING

⌞ ⌞ TRAVEL CURTAIN

⌞ ⌞ CONVEYOR BELT

⌞ ⌞ BRATTICE CURTAIN

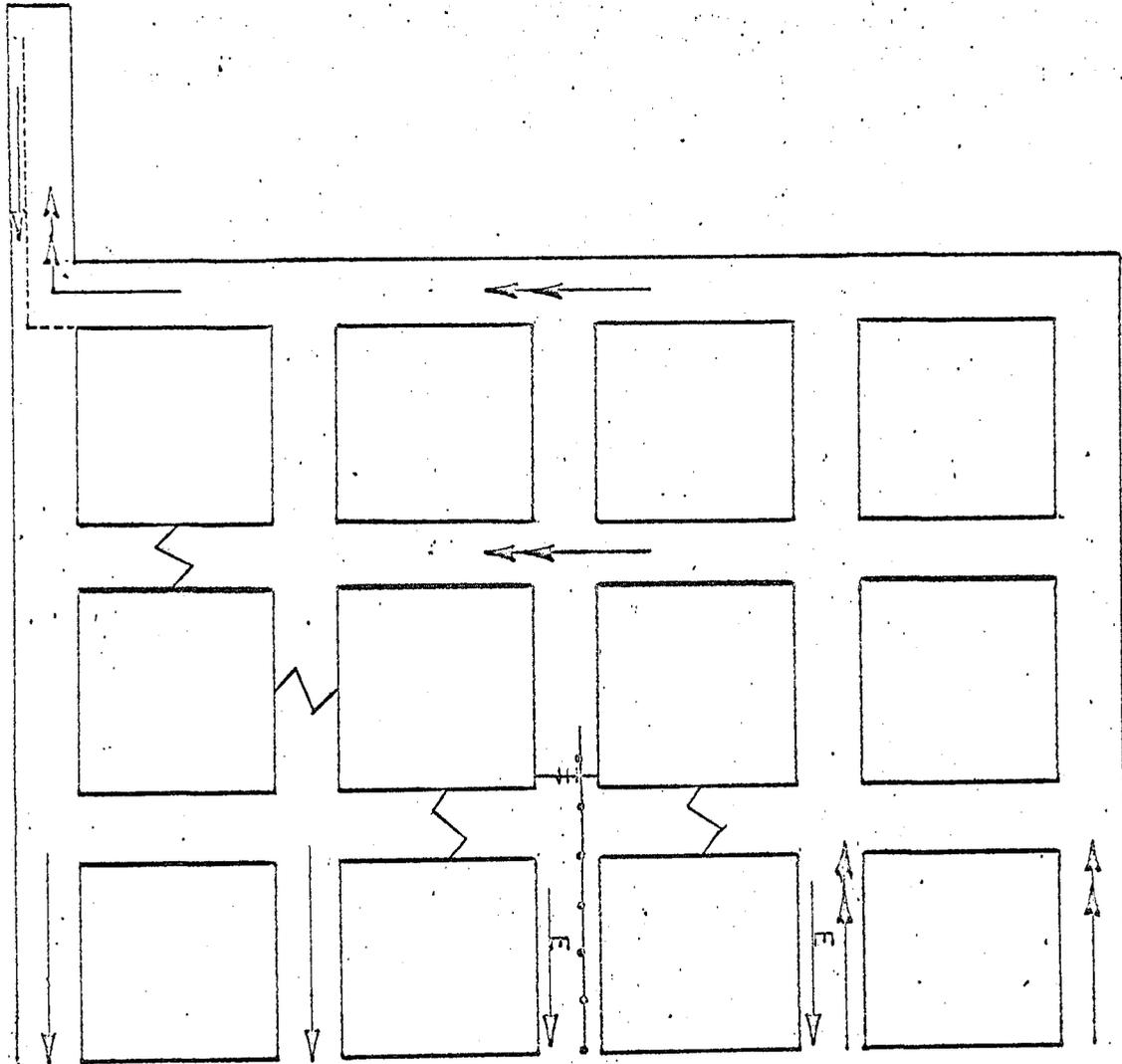
→ E → ESCAPEWAY

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM - CUT 1

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'

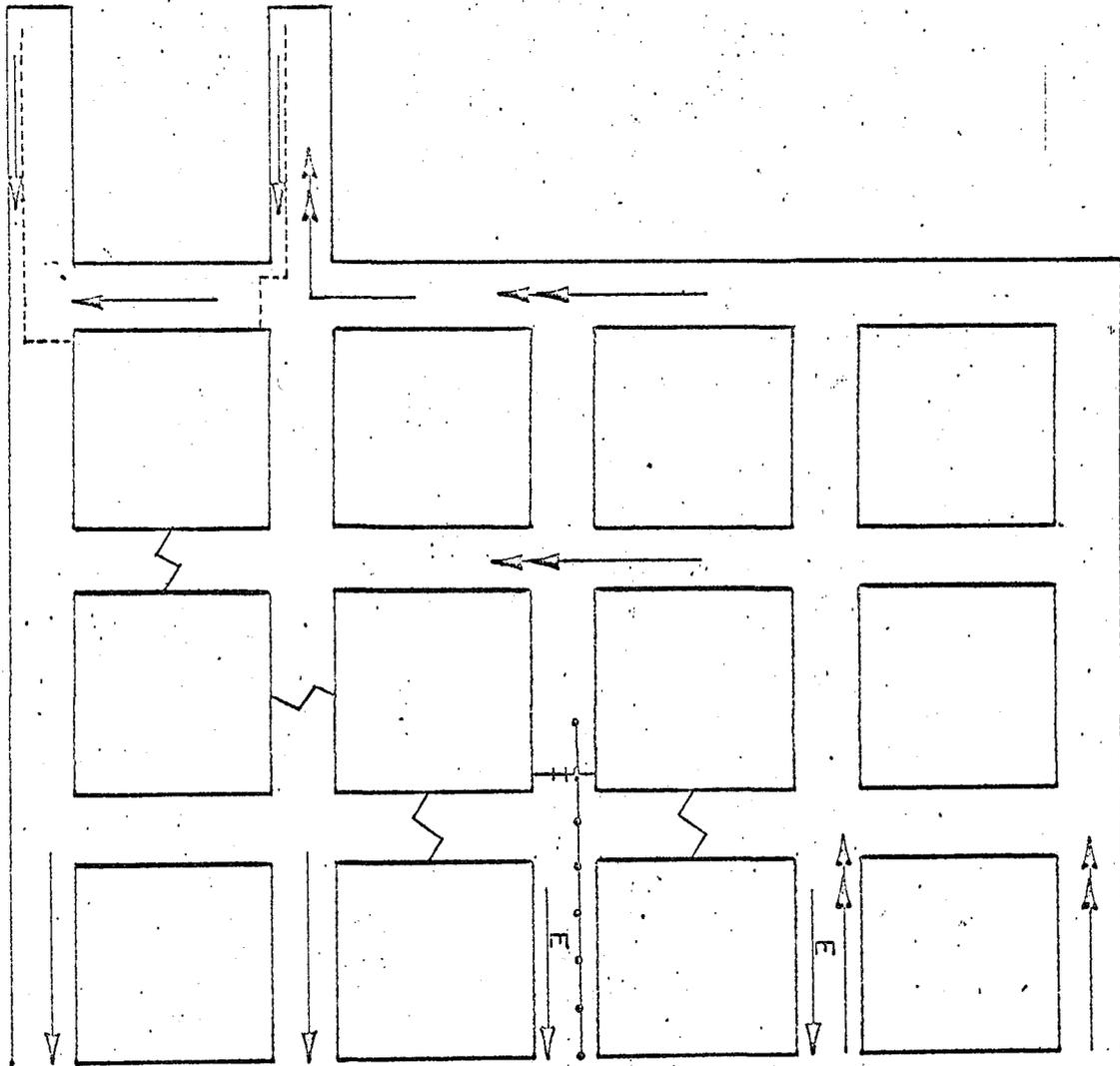


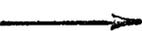
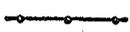
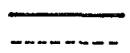
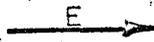
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
 5 ENTRY SYSTEM - CUT 2

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1" = 60'

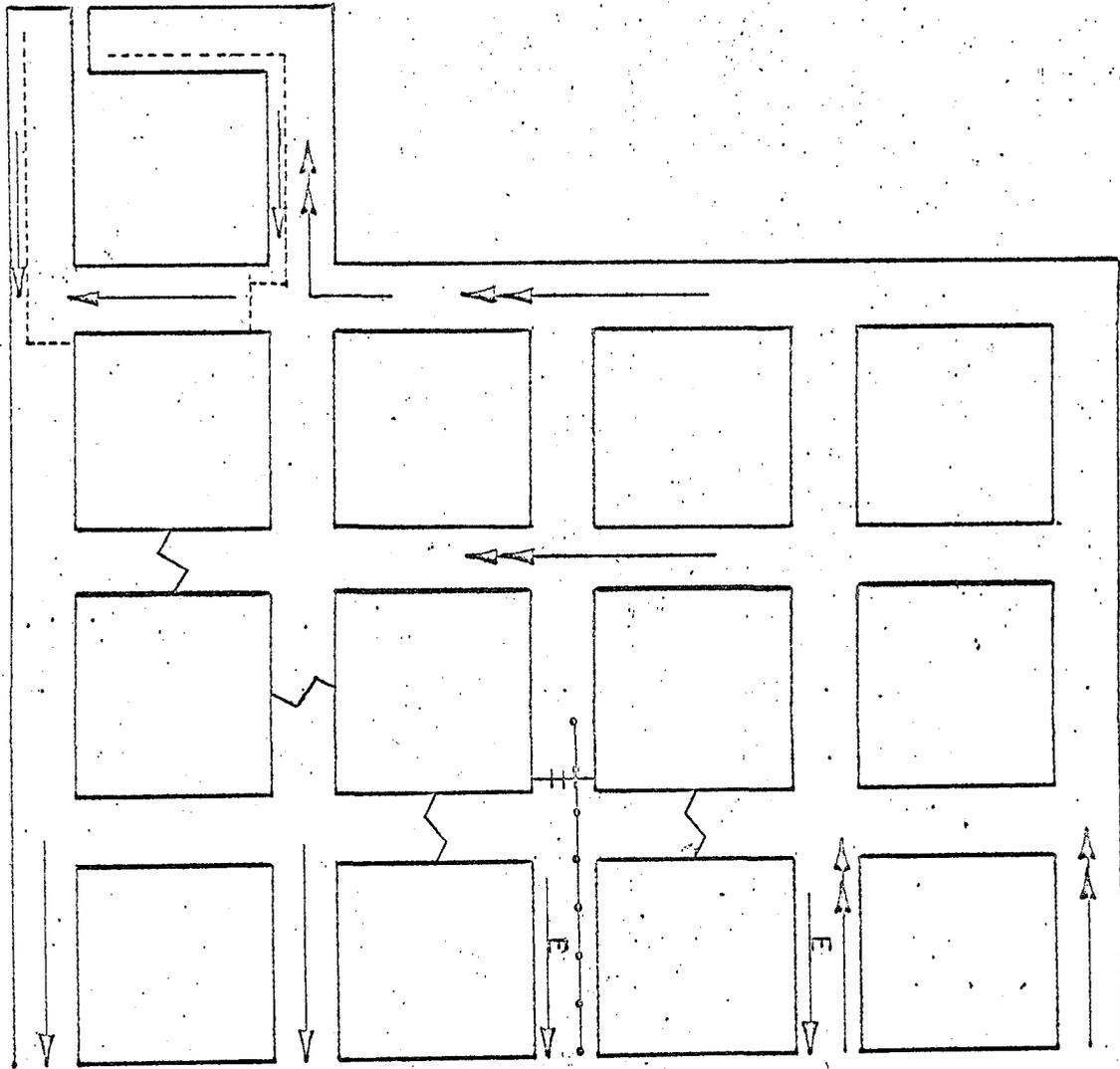


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|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 3

TOWER RESOURCES, INC.
PINNACLE MINE
MSHA #42-01474

SCALE 1" = 60'



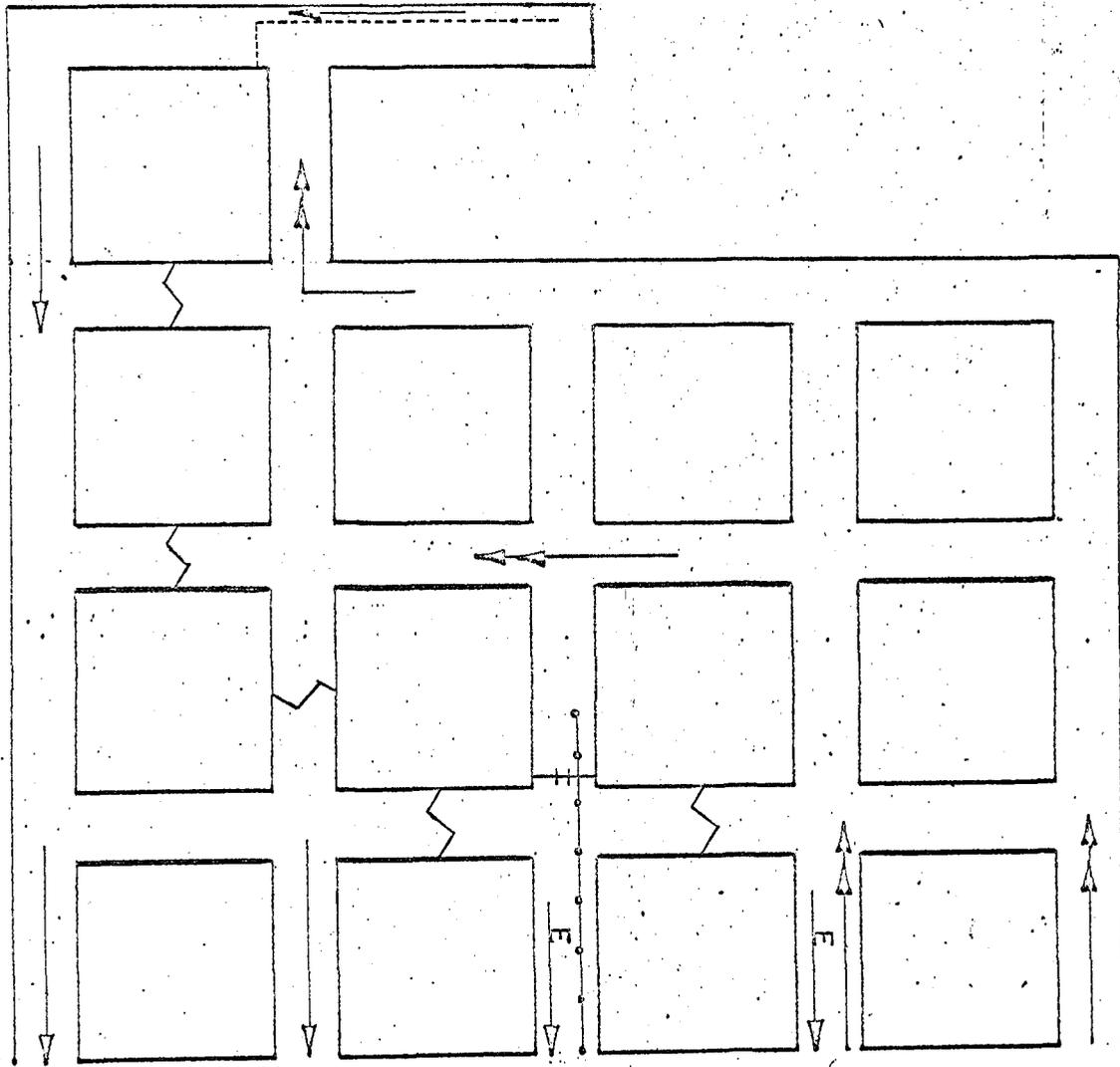
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

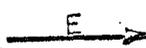
TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 4

TOWFR RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'

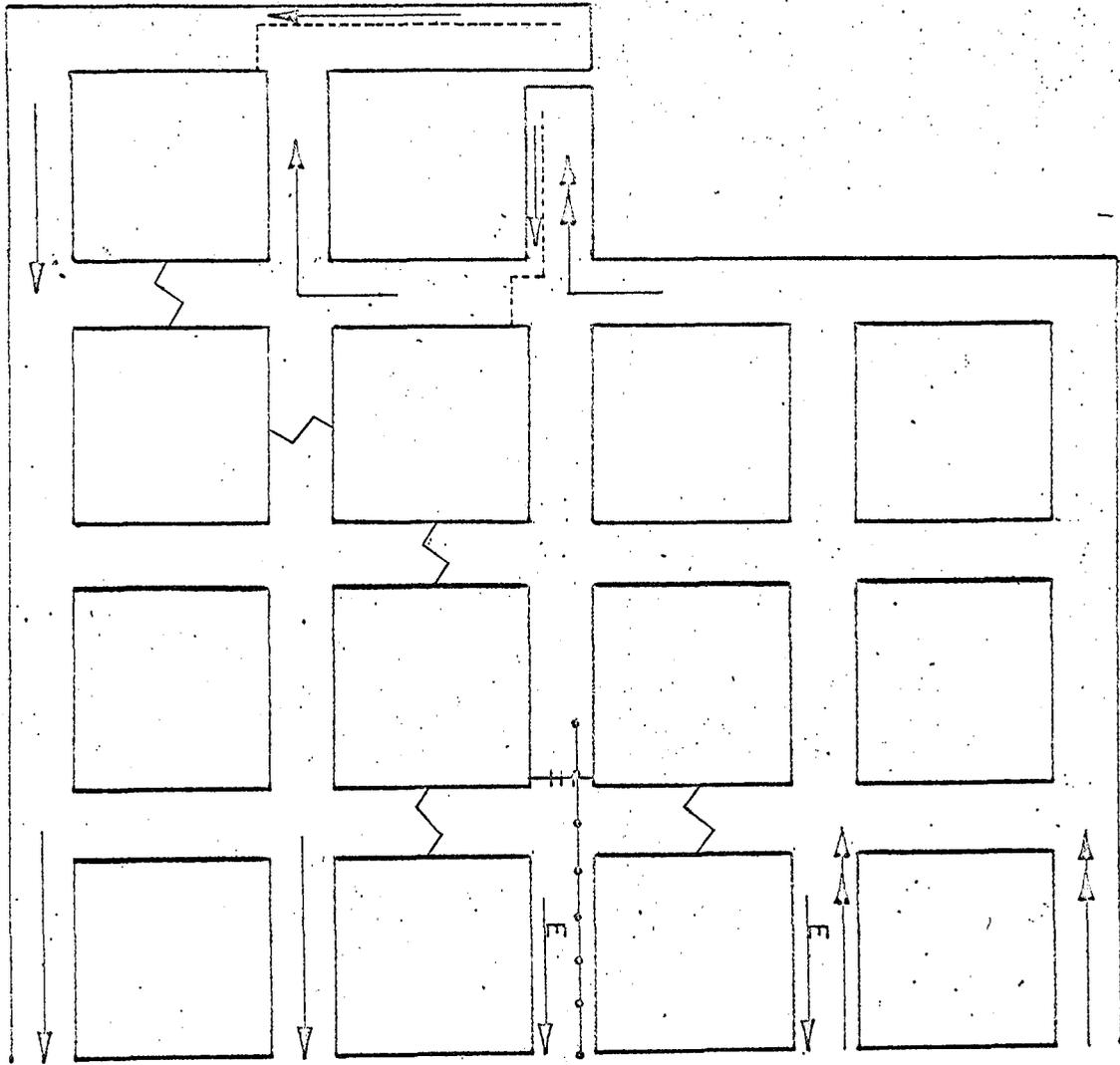


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|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MIXING SEQUENCE
 5 ENTRY SYSTEM-CUT 5

TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA # 42-01474

SCALE 1" = 60'



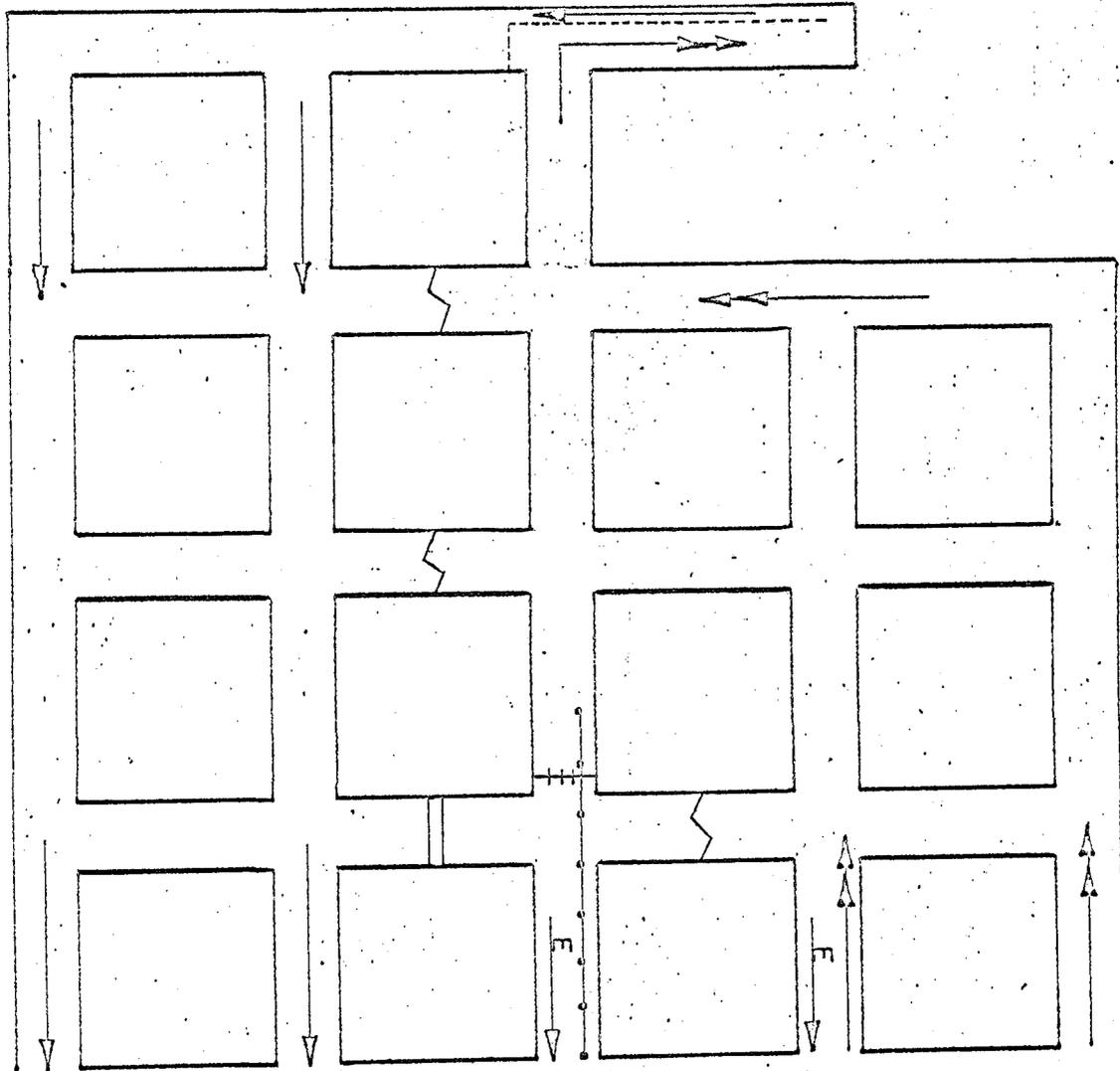
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 6

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'

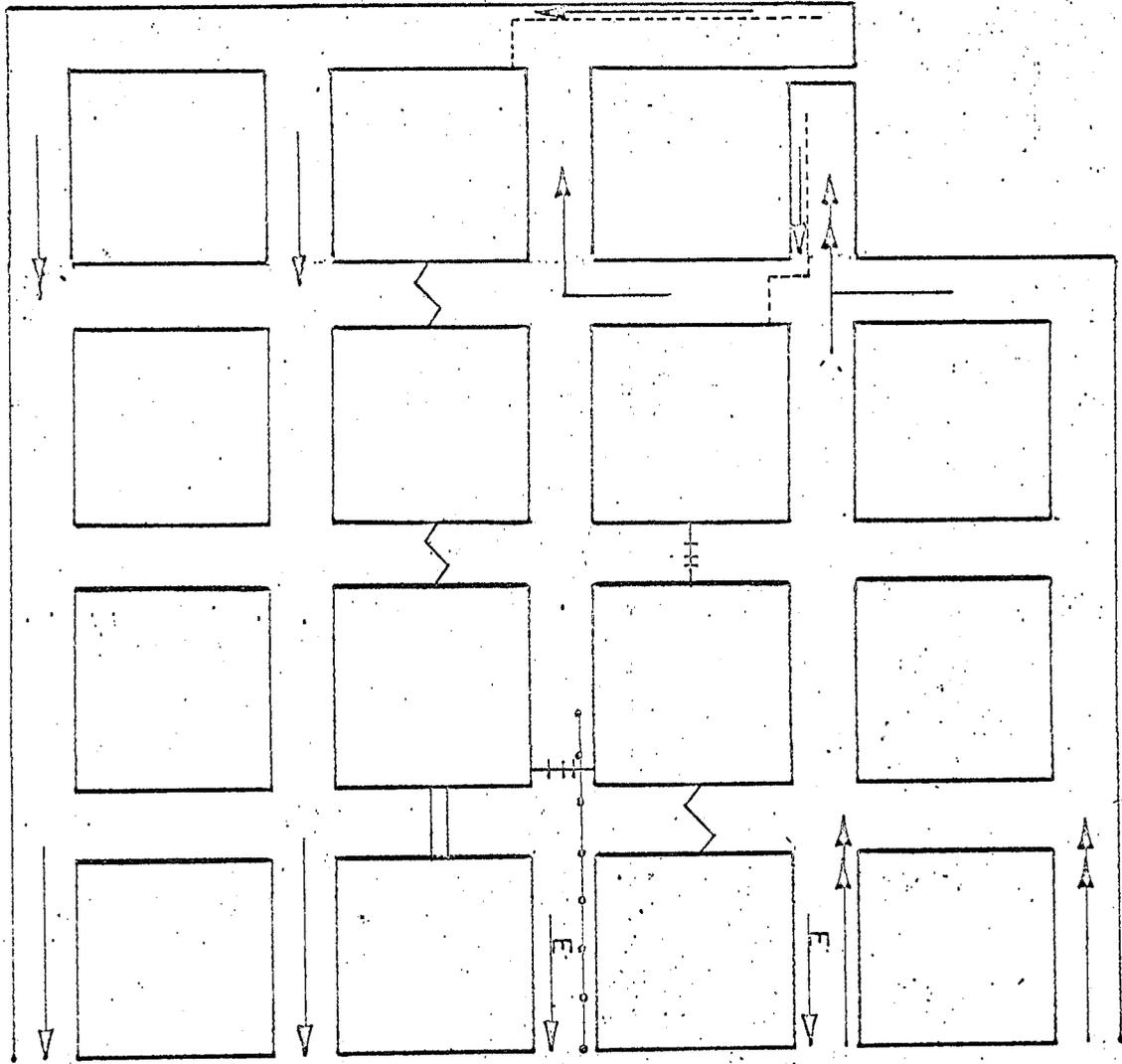


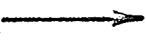
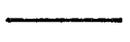
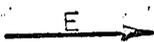
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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE
 5 ENTRY SYSTEM-CUT 7

TORON RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1"=60'



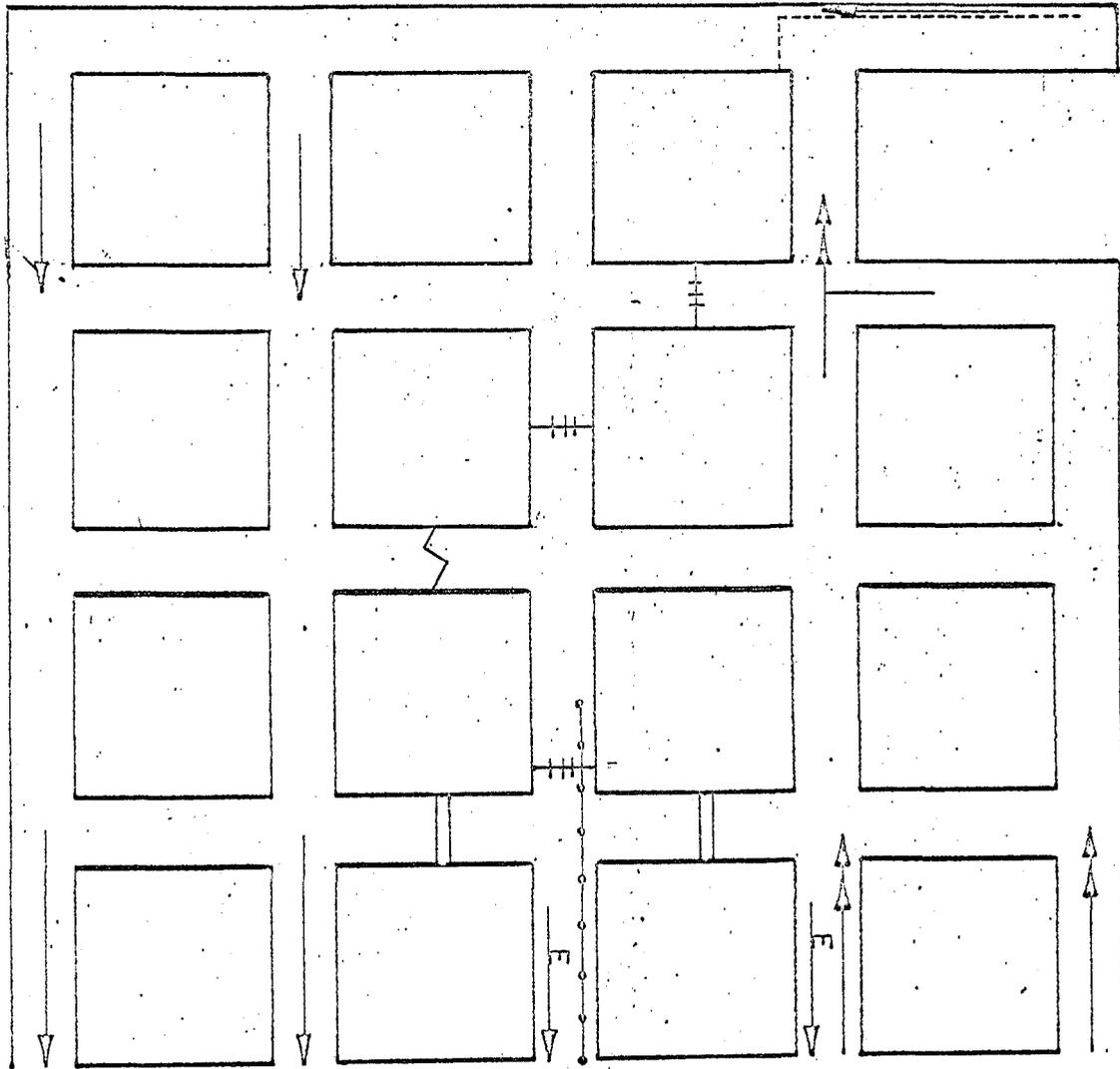
- | | | | |
|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT '8

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'



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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

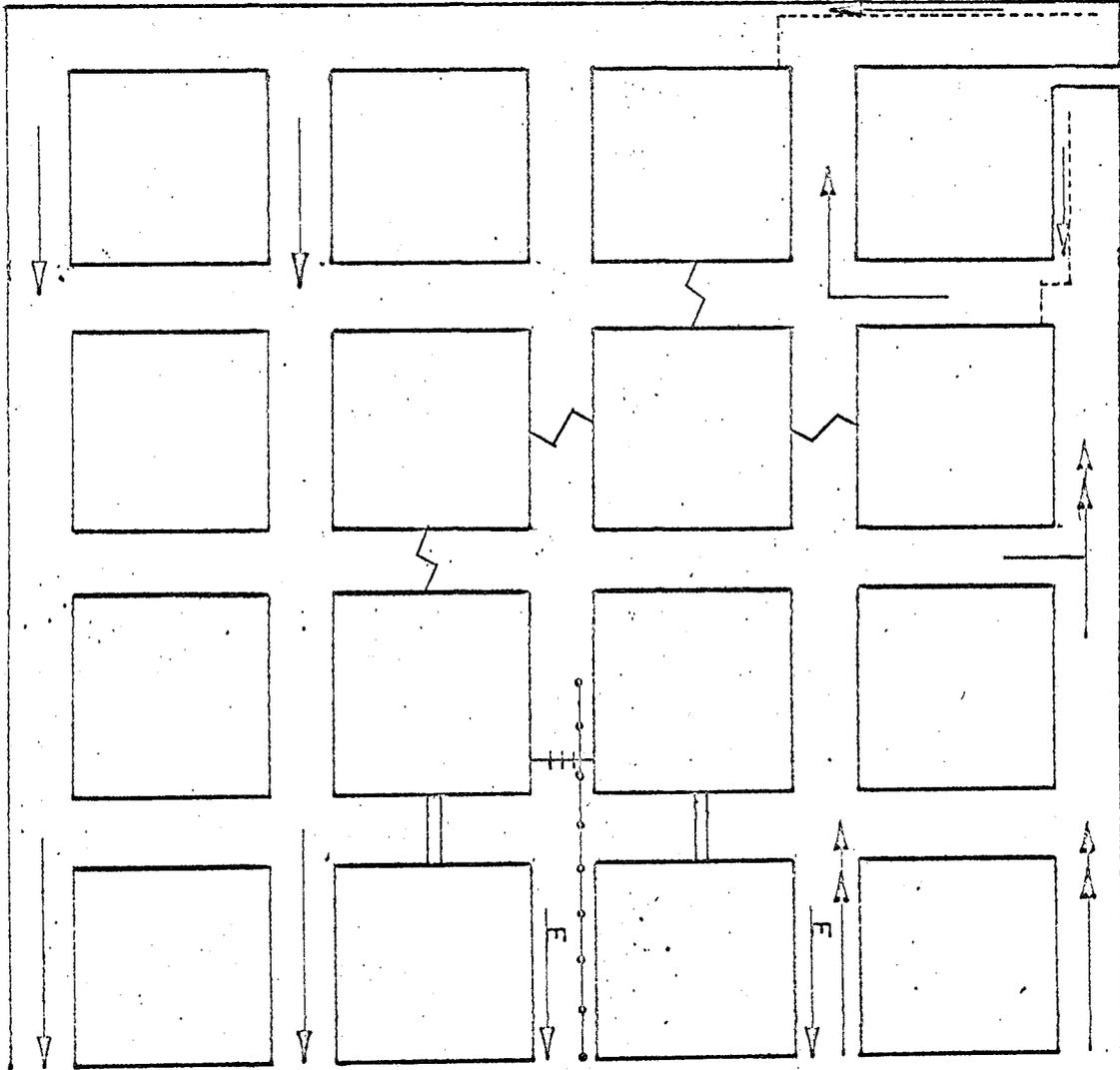
TYPICAL MINING SEQUENCE

5 ENTRY SYSTEM-CUT 9

PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

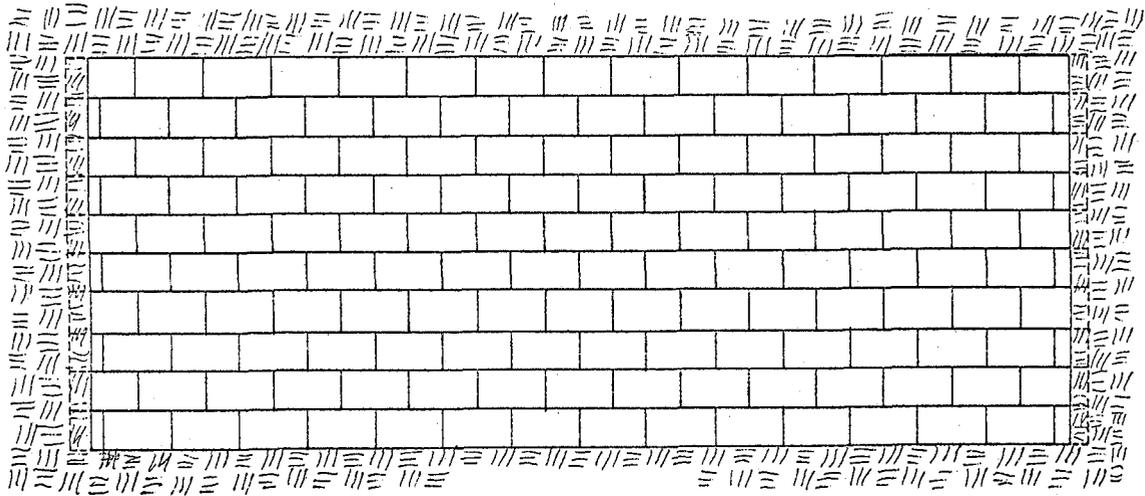


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|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

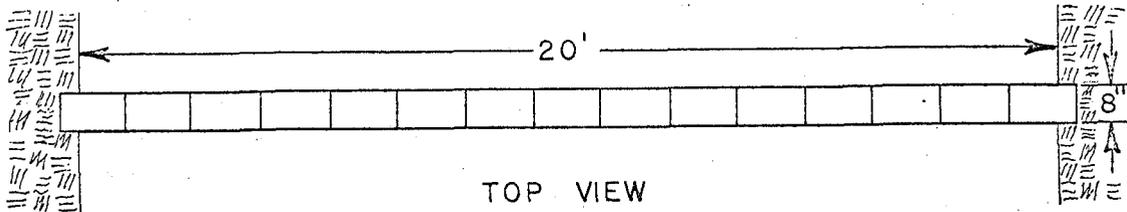
CONSTRUCTION OF
PERMANENT STOPPING

TOWER RESOURCES, INC.
PINNACLE MINE
MSHA #42-01474

SCALE 1" = 4'



FRONT VIEW



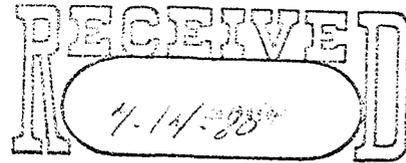
TOP VIEW

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225
Coal Mine Safety and Health
District 9



July 9, 1980



Samuel C. Quigley
Manager
Tower Resources, Inc.
PO Box 1027
Price UT 84501

Re: Pinnacle Mine
I.D. No. 42-01474
Ventilation System and Methane
and Dust Control Plan

Dear Mr. Quigley:

The ventilation system and methane and dust control plan dated June 26, 1980, for the subject mine has been approved in accordance with Section 75.316, 30 CFR 75. The plan is subject to revision at any time and shall be reviewed by the operator and MSHA at least once every six months. Before any changes are made in the approved ventilation system, they shall be submitted to and approved by MSHA prior to implementation.

This plan supersedes any previously approved plans and a copy of this plan shall be made available to the miners.

Sincerely yours,


John W. Barton
District Manager

Enclosure

The operator of the Pinnacle Mine hereby adopts and will follow the following ventilation system and methane and dust control plan and any approved supplements and/or revisions thereof:

Signatures
Company Representative _____
MESA Investigator _____

A. General

1. Company name Tower Resources, Inc.
Mine name Pinnacle Mine-old works rehabilitation
Post Office address (Town, County, State) P.O. Box 1027, Price, Carbon, Utah
Telephone number (801) 637-5385
Identification number MSHA# 42-01474
Operator's name Samuel C. Quigley
Operator's title Manager
Operator's address P.O. Box 1027, Price, Utah 84501
Operator's telephone number (801) 637-5385

2. Indicate if life of mine is _____ less than one year
X greater than one year

3. Number of employees: Surface 1)
Underground 10) Estimated
Total 11)

4. The type of face equipment used on each section in the mine and all diesel equipment used throughout the mine.

Face Equipment used will be:

Joy 12CM Continuous Miner
Joy 10SC Shuttle Cars
Lee Norse - Top Dog - Roof Bolter



Diesel Support Equipment:

Material Tractors

John Deere

Kabota

LHD Scoops:

Eimco

Wagner

5. The name and height of the coal seam being mined:

Coal seam is the Gilson seam—approximately 6.6 ft. thick.

B. 1. Auxillary Fans

An auxillary Exhausting Fan will be used during the entry rehabilitation and clean-up as shown on plates 1 & 2.

2. Main Fan Installation

The fan will be located on the surface, installed in fireproof housings and connected to the mine opening by fireproof air ducts. The fan will be equipped with a pressure recording gauge and an automatic signal device which will give alarm in the event the fan slows or stops. This signal will be placed in such a way that it can be either seen or heard by a responsible person on duty so that immediate action can be taken.

The fan will be offset 15 feet from the nearest side of the mine opening and equipped with explosion doors or a weak wall. The cross sectional area of the explosion doors or weak wall will be equal to or greater than the connecting entry. These doors will be in direct line with explosive forces.

The fan will be driven with an electric motor which will be provided with an independent power circuit separate from any

other mine circuit.

The fan will continuously operate except during scheduled maintenance or fan failure.

All main fan installations shall meet or exceed all criteria established in Sections 75.300-2 and 75.300-3, 30 CFR 75.

C. Dust Control Plan Outby Areas

1. The following dust control practices will be adhered to at the indicated locations:

- a. Transfer points will be cleaned of coal accumulation and rock dusted. Excessive dust created by belt haulage will be controlled by water sprays. ** When Necessary for use, Sprays will operate AT 50 PSI.*
- b. Loading points will be kept free of coal accumulations and rock dusted at all times. ** When Necessary for use, Sprays will operate AT 50 P.S.I.*
- c. There will be no underground crushers.
- d. There will be no underground dumps.
- e. All belt ways will be cleaned of coal and dust accumulation and rock dusted.
- f. Roadways and shuttle car haulageways will be kept clean and free of accumulations of coal. ** AND MAINTAINED IN A damp, well compacted condition except in freeze AREAS*
- g. All other problem areas will be cleaned of loose coal accumulation and rock dusted.

D. Methane and Dust Control Practices at Face Areas

1. Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined, or loaded shall be installed at a distance no greater

** AS per phone conversation between Sam Quigley and IVAL VAN HORNE ON 7/9/80*

than 10 feet from the area of deepest penetration prior to initiating the next scheduled box cut.

2. A minimum quantity of ~~3000~~ * 6,000 cubic feet a minute of air shall reach each working face from which coal is being cut, mined, or loaded.
3. The minimum mean entry face velocity as specified in Section 75.301-4, 30 CFR 75, shall be 60 feet a minute in all working places where coal is being cut, mined, or loaded.
4. The minimum quantity of air reaching the last open crosscut in any pair or set of developing entries or rooms shall be 9000 cubic feet a minute and the minimum quantity of air reaching the intake end of a pillar line shall be 9000 cubic feet a minute.
5. DOES NOT APPLY
6. At least 90% of the sprays indicated for dust suppression on each piece of equipment shall be maintained and operated at the indicated water pressure and flow rates.

<u>Equipment Type</u>	<u>No. of Sprays</u>	<u>Minimum Water Pressure</u>	<u>Minimum Flow Rate</u>
Continuous miners	27	90 psi	16 gal. min.

- *7. Working faces where roof bolting is being conducted shall be ventilated. *Dust from bolting operations will be controlled by either vacuum or water system*
8. Methane examinations of the face will be made by a qualified person at the last permanent or temporary support using an approved methaneometer.

* As per conversation between Sam Guigley and IVAL VAN HORNE ON 7/9/80

E. Methane Control in Outby Areas

1. The methane content in any return aircourse other than an aircourse returning the split of air from a working section (as provided in Sections 75.309 and 75.310, 30 CFR 75) shall not exceed 2.0 volume per centum. The methane content in the air in active workings shall be less than 1.0 volume per centum. If at any time the air in any active working contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation in the mine so that the air shall contain less than 1.0 volume per centum of methane.
2. Bleeder entries, bleeder systems, or equivalent means shall be used in all active pillaring areas to ventilate the mined areas from which pillars have been totally or partially extracted so as to control the methane content in these areas. All such bleeder systems shall meet or exceed the criteria established in Sections 75.316-2(e) through (i), 30 CFR 75.
 - a. At the six month review Tower will submit a detailed map of the proposed ventilation pillaring areas. This map will include detail describing expected air quantities and methane concentrations and methods used to keep the bleeder system open.
3. Whenever a working section is completed and the operator does not wish to ventilate the area, the area will be sealed.
4. If the operator wishes to ventilate pillared or abandoned area a request for permission to ventilate these areas will include;
 - a. A detailed history of the methane content determined throughout the mine and when available, the volume of

- air in which such methane determinations were made.
- b. A description of the method by which the areas from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated, and such maps and drawings as may be required to illustrate such method and to indicate existing or proposed air volumes to ventilate such areas.
 - c. The signature and title of the person who submits the application for the operator.

F. Section and Face Ventilation System

1. Typical section and face ventilation systems are shown on the attached maps. As the mining operation commences detail of the ventilation system will be submitted on an appropriate scale map and updated regularly.
2. Ventilation in the belt entries will be controlled by regulators or check curtains and will be maintained as a separate split of air.
3. Coal will not be allowed to accumulate at the outby end of the face equipment to the extent that ventilation of the working face is restricted.

G. Permanent Stoppings

1. All ventilating devices such as stoppings, overcasts, undercasts, and shaft partitions shall be of substantial and incombustible construction installed in a workmanlike manner and maintained in a condition to serve the purpose for which they were intended, and any stopping leaking air excessively shall be repaired immediately.

2. Permanent stoppings shall be erected between the intake and return aircourse and shall be erected to and including the ~~fourth~~ ^{third} connecting crosscut outby the faces of the entries.

Stoppings will be completed before 4th connecting crosscut is broken through

Whenever the third connecting crosscut is broken through, work shall be started on building the stopping as soon as possible and shall be completed in a timely manner which would be consistent with good ventilation practices.

3. Metal stoppings supported with approved fire retardant treated wood or metal angles may be used in short lived entries such as panels, rooms, or butts as belt or intake escapeway separation stoppings only. Timber laid longitudinally "skin to skin", and packed with rock dust, may be used in heavy or squeezing areas if the timbers are treated with an approved fire retardant.

4. A complete list of materials used in the construction of stoppings is as follows:

(1) Block Stoppings - Materials Used:

Cinder or cement blocks, mortar or cement mix. The stoppings are laid up on clean substantial bottom, tied into the ribs with staggered courses.

(a) Blocks with mortared joints will be plastered with mortar mix around the periphery to make it airtight.

(b) Blocks stacked without mortared joints will be plastered in its entirety on one side.

- (2) Permanent Stoppings - Will be used for belt isolation, return airways, intake airways, and any other separate approved aircourse.

* As per phone conversation between Sam Quigley and IVAL VAN HORNE ON 7/9/80

H. Diesel Equipment

The use of diesel equipment underground shall comply with the following requirements:

1. All diesel equipment used underground will be operated and maintained according to the manufacturer's instructions.
2. The atmosphere in the operator's compartment and the atmosphere returning from any working place where diesel powered equipment is being used shall be tested at least once a day while the equipment is in operation, and if the analyses of these samples exceeds five parts per million NO_2 or 50 parts per million CO , or both, corrective measures shall be taken immediately.
3. If any unusual discoloration of the exhaust occurs, the atmosphere in the operator's compartment and the atmosphere returning from the diesel equipment will be tested immediately. If levels of NO_2 and CO are detected approaching those stated in paragraph 2, samples will be taken every shift until such levels are reduced to normal operating levels.
4. If for any reason the levels specified in paragraph 2 are exceeded, corrective measures will be taken immediately. Samples will be taken every hour thereafter until the corrective measures are shown to be effective.
5. The date, time of sampling, machine identification and the results of the analyses shall be recorded in a book maintained for that purpose.

I. Use of Auxiliary Fans and Machine-Mounted Diffusers Underground

1. The fan shall be of a permissible type, maintained in

permissible condition, so located and operated to avoid any recirculation of air, and examined once every four hours when in use. The examiner shall place his initials, date, and time near the fan.

- a. Fans operated blowing shall be installed in the positive intake current of the place to be ventilated by the fan, and the volume of such positive intake air current shall be greater than the free discharge capacity of the fan.
 - b. Fans operating exhausting shall be installed in the return air current from the place to be ventilated by the fans, and the volume of positive intake air current available at the entrance to the place (at the crosscut or other point of entry) to be ventilated with exhaust fans shall be greater than the free discharge capacity of the fan.
2. All face ventilation systems using auxiliary fans and tubing or machine-mounted diffusers shall be approved under the provision of Section 303 (o) of the Act. (Subsection 75.316 or the Federal Register).
 3. If a machine-mounted diffuser is used in conjunction with fan tubing or exhaust line brattice, the intake end of the diffuser shall be located outby the intake end of the exhaust tubing or line brattice.

J. Mine Maps

A mine map of the appropriate scale shall be submitted and updated at six month intervals and will include the following:

1. Mine maps shall be coded with symbols provided in a detailed legend on every map, showing the scale and orientation of the

map, including property, ventilation, and face system maps; and such symbols shall be standard for the entire ventilation plan.

2. Limits of the mine property, on a suitable scale (may be smaller than 500 feet to the inch) and type of map to show entire limits. Indicate location of present workings.
3. Location of all oil and gas wells, active and abandoned, or if none, so stated. Also include any other drill holes that penetrate the seam.
4. All known underground workings adjacent, above and below the mine; and all water pools above; if none so state. Include any surface or auger mines.
5. Mine fan data for all main fans including: location, manufacturer's name, type, size, speed, water gauge, quantity, and blade setting at present operating point; and name plate date from fan motor including horsepower, voltage, and ampere rating, in addition to any stand-by motors and fans where applicable.
6. Location of all surface mine openings including direction of air flow and air quantities.
7. Any faults, wants, or slips that may affect ventilation, including any abnormal conditions, such as entries blocked by water or roof falls.
8. Mining projections in detail for at least one year showing ventilation controls, crosscut and entry center distances, and proposed bleeder systems in areas where second mining will be done.

9. All underground workings with active section delineated.
10. Locations of stoppings, overcasts, regulators, seals, air-lock doors, and man-doors; a statement of location may be allowed for certain areas.
11. Measured volumes and directions of air entering and leaving each split, and the volume, direction, and percent methane of air in return airways and bleeders. Such data to be representative of conditions immediately prior to date of submission.
12. Show location and average height, width, and air velocity in each conveyor belt haulage entry, every place where trolley haulage systems are maintained, and every place where trolley wires and trolley feeder wires are installed.
13. Velocities of air at any abnormal or restricted location.
14. Location of areas which have been abandoned and areas from which pillars have been wholly or partially removed.
15. Locations of proposed or new shafts, slopes, or drift openings, either intake or return, including the direction, anticipated volume of air, and expected date for completion and operation.
16. Locations of proposed seals in all new areas developed after March 30, 1970.
17. Contour lines or spot elevations of coal seam as required by Section 75.1200-1(m), or 75.1200-1(k), including elevations of all main and cross or side entries.
18. Escapeways designated by means of symbols. The physical layout of escapeways must meet the criteria of 75.1704-1, 30 CFR 75.

19. Dip of coalbed.
20. All drill holes that penetrate the coalbed being mined.
21. The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown.
22. The location and elevation of any body of water dammed in the mine or held back in any portion of the mine.
23. The location and description of at least two permanent base line points coordinated with the underground and surface mine traverses, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys.
24. The elevations of tops and bottoms of shafts and slopes, and the floor at the entrance to drift and tunnel openings.

A. Ventilation

Ventilation will be accomplished in three phases:

1. Ventilation during entry bolting and clean-up;
2. Ventilation to cut belt and the return entries;
3. Final Ventilation established at the main return entry.

First Phase (Plate 1)

The two main entries of the Zions Mine "old works" will be ventilated with a portable exhausting fan established on the left-most existing portal with the right portal as intake air. Fresh air ventilation will be advanced during clean-up using conventional methods of timber and brattice and permanent stoppings between entries. Once the entries have been cleaned, rock dusted and roof bolted, the fan will be moved to cut the belt entry and then the permanent return.

Second Phase (Plate 2)

The portable fan will be moved to provide ventilation as the belt entry is cut. Ventilation will be segregated by a brattice line or ventilation tube. The return entry will be cut by the same methods. A cross cut will be established to connect this return with the intake portals.

Third Phase (Plate 3)

Once the return has been cut the main exhausting fan will be established as shown on plate 3.

Ventilation as entries are connected will be conducted according to the ventilation plan included as Appendix A.

B. Roof Control

Roof Control will consist of full Roof Bolting covering the areas depicted on plate 6. As entry connections are being cut cycles shall, for the purpose of this rehabilitation plan be limited to twenty feet. (See Appendix B).

Timbers and Cribs will be installed to provide additional protection as shown (Plate 5).

INDEX

Appendices

- A. Ventilation Plan
- B. Roof Control Plan

Plates

- Plate 1 - Ventilation - First Phase
- Plate 2 - Ventilation - Second Phase
- Plate 3 - Ventilation - Third Phase - Main Fan Installation
- Plate 4 - Intake and Belt Realignment
- Plate 5 - Entry Bolting Rehabilitation
- Plate 6 - Ventilation Scheme

REHABILITATION
OF THE
ZIONS MINE OLD WORKS

Scope

Logical access to the Gilson seam is interrupted by the "old mine works" called the Zion's Mine which was abandoned in the early 1940's. Portal access to the Gilson seam, avoiding the "old works" would be located on a steep slope, approximately 160 feet above the canyon bottom. This requires steep-cut pads for both the portal site and a coal storage pile as well as an extensive conveyor structure to drop the coal over the slope onto the storage pile.

Several inspections have been made of the abandoned Zions Mine, indicating they are suitable for rehabilitation and maintained for ventilation, men and material access, and belt haulage.

Rehabilitation of the Mine will consist of roof bolting, timbering, clean-up, rock dusting, and realignment of the two main entries for a distance of 500 feet. A third entry will be driven to the south to provide final ventilation. On the outcrop, a pillar will be split to provide necessary alignment for the belt.

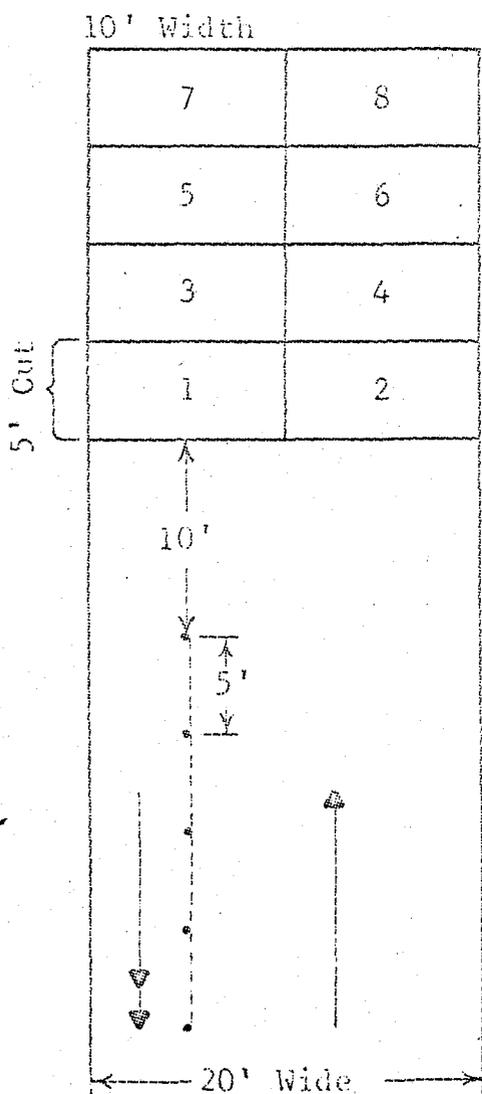
The rehabilitation will require:

1. Installation of an auxillary exhausting fan to provide ventilation as roof bolting and clean-up advance (Plate 1).
2. Roof bolting of the belt and intake entry on a full bolting plan. (See Roof Control-Plate 5)
3. Construction of stoppings and other ventilation aids as necessary to advance ventilation with clean-up and roof bolting.
4. Clean-up and rock dusting of reclaimed entries.
5. Timbers will be installed in areas where the entry width exceeds 20 feet. Cribs will be installed to insure adequate protection in areas where remaining pillars are small. (See Plate 5).

General

The "old works" are in the Gilson Seam which is 6.0 to 6.5 feet thick with a massive, competent sandstone roof approximately 40 to 50 feet thick. The mine penetrated the outcrop coal from the surface inby to the farthest point of 520 feet. The cover ranges from 0 feet at the outcrop to 260 feet at the point of deepest penetration. The "old works" show no coal sloughing from the ribs or roof falls. Some areas have been pillared and consequently caved.

MINING CYCLES 20' CUTS



The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft. of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

TYPICAL MINING SEQUENCE

FACE VENTILATION

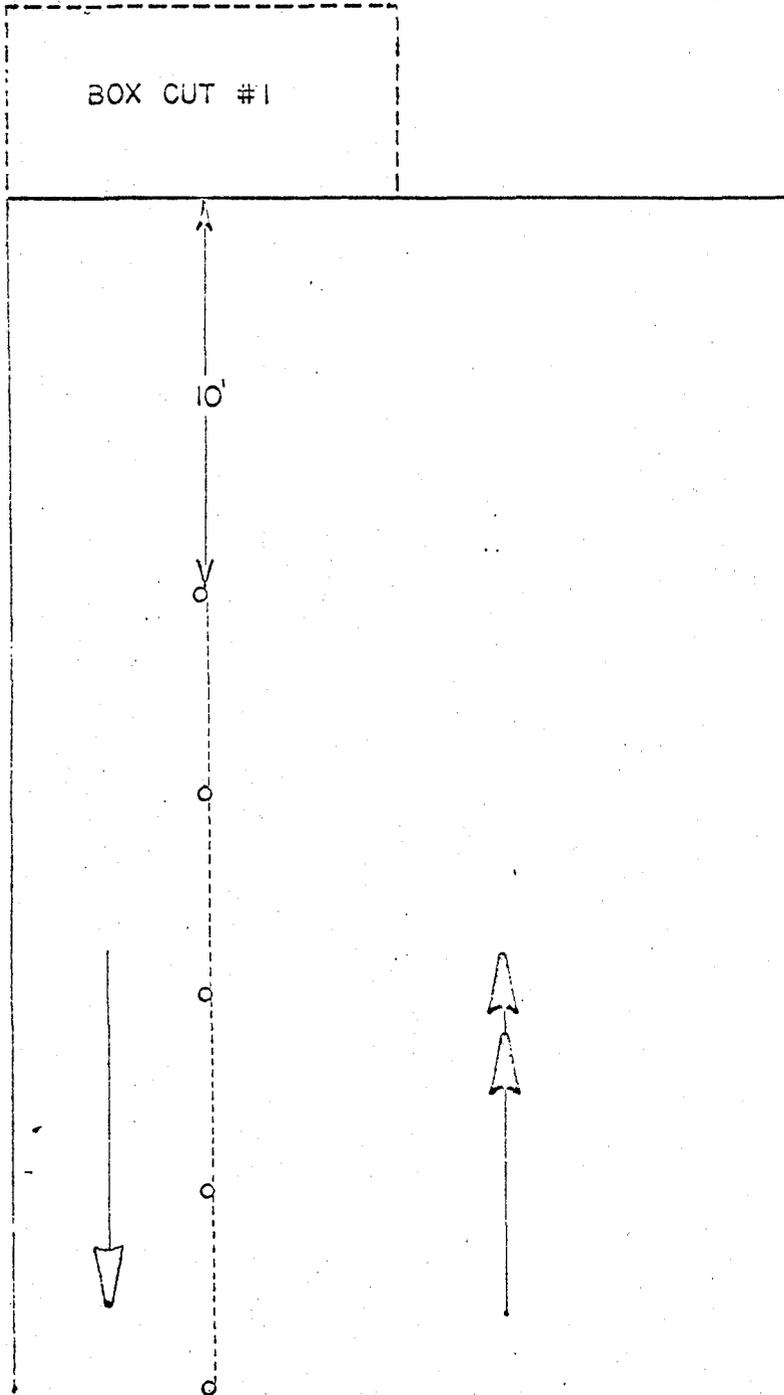
BOX CUT #1

TOWER RESOURCES, INC.

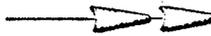
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 5'



In preparation of 1st box cut, line curtain is extended to within 10 ft. of the face.

-  Intake Air
-  Return Air
-  Timber with Cappiece
-  Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

PREPARATION FOR

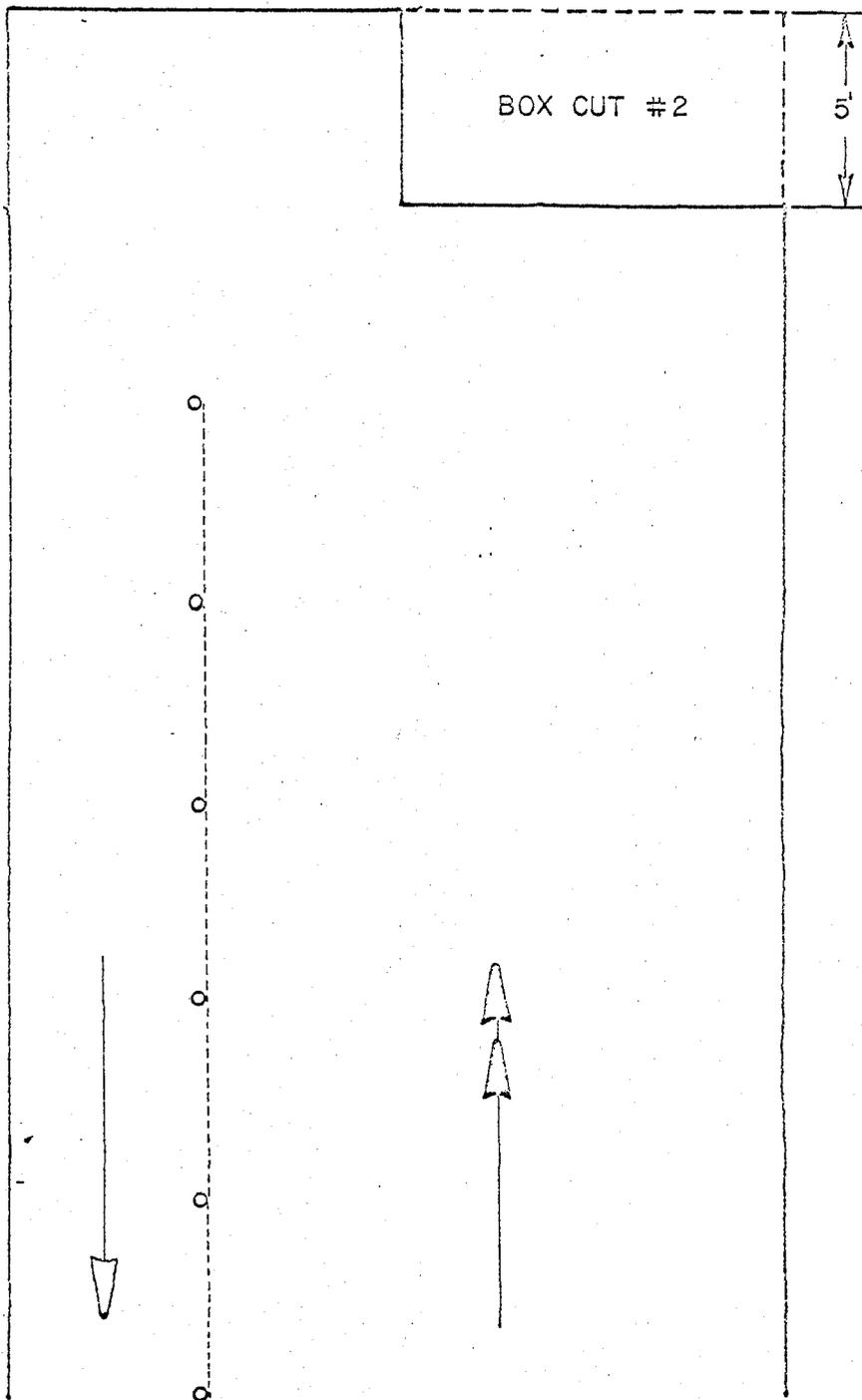
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



Box Cut #1 is complete and preparation for Box Cut #2 is to install a post with capping and advance the line curtain by five feet.

- Intake Air
- ⇨ Return Air
- Timber with Cappiece
- Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

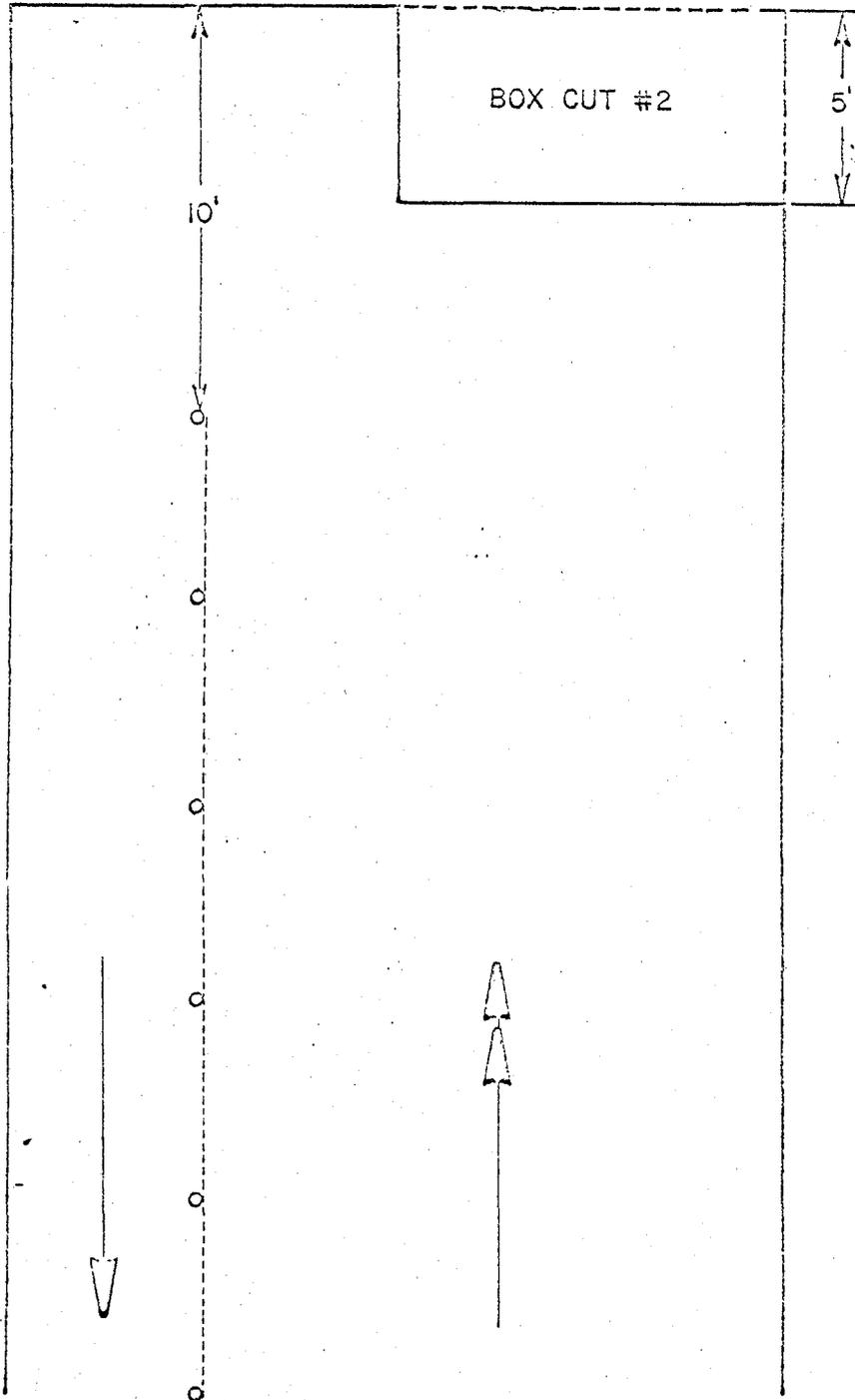
BOX CUT #2

TOWER RESOURCES, INC.

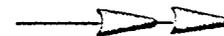
PINNACLE MINE

MSHA #42-01474

SCALE 1"=5'



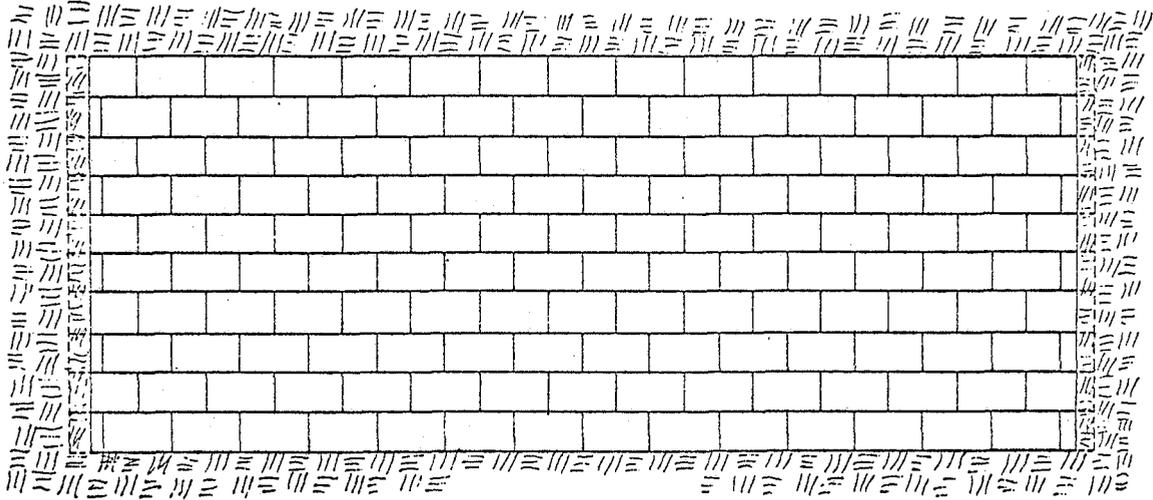
Post with capping piece and line curtain has been advanced. The face is now prepared for Box Cut #2.

-  Intake Air
-  Return Air
-  Timber with Capping piece
-  Brattice

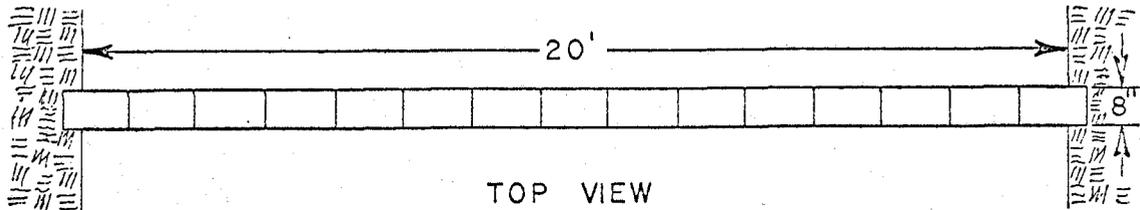
CONSTRUCTION OF
PERMANENT STOPPING

TOWER RESOURCES, INC.
PINNACLE MINE
MSHA #42-01474

SCALE 1" = 4'



FRONT VIEW



TOP VIEW

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

February 9, 1981

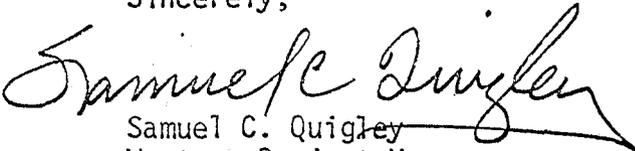
Mr. Fred Tatton
M.S.H.A.
Drawer "J"
Price, Utah 84501

Dear Mr. Tatton:

Enclosed for your review is a revised Ventilation Plan which we have submitted to the District.

If any questions need answering, please call.

Sincerely,


Samuel C. Quigley
Western Project Manager

SCQ/ac

Enclosure

cc: File ✓

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

February 9, 1981

Mr. John W. Barton
District Manager
M.S.H.A.
P.O. Box 25367
Denver, Colorado 80225

Re: Ventilation Plan
Pinnacle Mine
I.D. #42-01474

Dear Mr. Barton:

Enclosed is the updated Ventilation Plan for the Pinnacle Mine including designated area sampling.

In order to comply with an approved plan I would like to request a variance from 75.300-3, paragraph 3 which refers to continuous operation of the fan.

1. The fan will run continuously when men are underground.
2. In the event the fan is shut down after a working shift and restarted prior to the next working shift, the fan will be restarted and run 15 minutes prior to the preshift examination.

Our request for this variance is to mitigate the effects of freezing due to our close proximity to the outcrop as the mine is new. Our norm is to operate day and night shift with the mine idle on graveyard and weekends.

Sincerely,


Samuel C. Quigley
Western Project Manager

SCQ/ac

Enclosure

cc: File ✓

The operator of the Pinnacle Mine hereby adopts and will follow the following ventilation system and methane and dust control plan and any approved supplements and/or revisions thereof:

Signatures:

Company Representative

Samuel C. Quigley

MSHA Investigator _____

A. General

1. Company Name Tower Resources, Inc.
Mine Name Pinnacle Mine
Post Office Address
(Town, County, State) P.O. Box 1027, Price, Carbon, Utah
Telephone Number (801) 637-5385
Identification Number MSHA #42-01474
Operator's Name Samuel C. Quigley
Operator's Title Manager
Operator's Address P.O. Box 1027, Price, Utah 84501
Operator's Telephone
Number (801) 637-5385

2. Indicate if life of mine is _____ less than one year
_____ greater than one year

3. Number of employees: Surface 2)
(including Expansion Underground 48) Estimated
Plans) Total 50)

4. The type of face equipment used on each section in the mine and all diesel equipment used throughout the mine.

Face Equipment used will be:

Continuous Miner - Electric
Shuttle Cars - Electric
Roof Bolter - Electric

Diesel Support Equipment (other diesel support equipment may be added):

Material Tractors

Terra Jet Diesel

John Deere Tractors

Cushman Diesel

Kabota Tractors

Joy Air Compressor

LHS Scoop:

Eimco

Wagner

5. The name and height of the coal seam being mined:

Coal seam is the Gilson seam - approximately 6.6 ft. thick.

B. 1. Fan Data (Main Fans)

a) Type, Manufacturer and I.D. Number - Vaneaxial

b) Horsepower - 100 hp

AmF 2000-8-10

c) Operating Specifications

Spendrup Fan Company

1. RPM - 1180

2. Blade Setting - 40°

3. Water Gauge - 0.75"

4. Voltage - 460 VAC

d) Fan curves from manufacturer (attached page 33)

2. Main Fan Installation

The fan will be located on the surface, installed in fireproof housings and connected to the mine opening by fireproof air ducts.

The fan will be equipped with a pressure recording gauge and an automatic signal device which will give alarm in the event the fan slows or stops. This signal will be placed in such a way that it can be either seen or heard by a responsible person on duty so that immediate action can be taken.

The fan will be offset 15 feet from the nearest side of the mine

opening and equipped with explosion doors or a weak wall. The cross sectional area of the explosion doors or weak wall will be equal to or greater than the connecting entry. These doors will be in direct line with explosive forces.

The fan will be driven with an electric motor which will be provided with an independent power circuit separate from any other mine circuit.

The fan will continuously operate except during scheduled maintenance or fan failure, unless a variance is granted by District Manager.

All main fan installations shall meet or exceed all criteria established in Sections 75.300-2 and 75.300-3, 30 CFR 75, unless a variance is granted by District Manager.

3. All stand-by fan motors must first be approved before being utilized and their operating specifications incorporated into this plan.

C. Dust Control Plan Outby Areas

1. The following dust control practices will be adhered to at the indicated locations:
 - a) Transfer points will be cleaned of excessive coal accumulation and rock dusted. Excessive dust created by belt haulage will be controlled by water sprays. When necessary for use, spray(s) will operate at a minimum of 50 p.s.i.
 - b) Loading points will be kept free of excessive coal accumulations and rock dusted at all times. When necessary for use, spray(s) will operate at a minimum of 50 p.s.i.

- c) There will be no underground crushers.
- d) There will be no underground dumps.
- e) All belt ways will be cleaned of excessive coal and dust accumulation and rock dusted.
- f) Roadways and shuttle car haulageways will be kept clean and free of excessive accumulations of coal and maintained in a damp, well compacted condition except in freeze areas.
- g) All other problem areas will be cleaned of loose coal accumulation and rock dusted.

D. Methane and Dust Control Practices at Face Areas

1. Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined, or loaded shall be installed at a distance no greater than 10 feet from the area of deepest penetration prior to initiating the next scheduled box cut.
2. A minimum quantity of 6,000 cubic feet a minute of air shall reach each working face from which coal is being cut, mined, or loaded.
3. The minimum mean entry face velocity is specified in Section 75.301-4, 30 CFR 75, shall be 60 feet a minute in all working places where coal is being cut, mined, or loaded.
4. The minimum quantity of air reaching the last open crosscut in any pair or set of developing entries or rooms shall be 9,000 cubic feet a minute and the minimum quantity of air reaching the intake end of a pillar line shall be 9,000 cubic feet a minute.

5. At least 90% of the sprays indicated for dust suppression on each piece of equipment shall be maintained and operated at the indicated water pressure and flow rates.

<u>Equipment Type</u>	<u>No. of Sprays</u>	<u>Minimum Water Pressure</u>	<u>Flow Rate</u>
Continuous Miners	27	75 psi	16 gal. min.

6. Working faces where roof bolting is being conducted shall be ventilated. Dust from bolting operations will be controlled by either ventilation vacuum or water system.
7. Methane examinations of the face will be made by a qualified person at the last permanent or temporary support using an approved methanometer.

E. Methane Control in Outby Areas

1. The methane content in any return aircourse other than an aircourse returning the split of air from a working section (as provided in Sections 75.309 and 75.310, 30 CFR 75) shall not exceed 2.0 volume per centum. The methane content in the air in active workings shall be less than 1.0 volume per centum. If at any time the air in any active working contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation in the mine so that the air shall contain less than 1.0 volume per centum of methane.
2. Bleeder entries, bleeder systems, or equivalent means shall be used in all active pillaring areas to ventilate the mined areas from which pillars have been totally or partially extracted so as to control the methane content in these areas. If used, bleeder systems shall meet or exceed the criteria established in Sections 75.316-2(e) through (i), 30 CFR 75.

3. Whenever a working section is completed and the operator does not wish to ventilate the area, the area will be sealed.
4. If the operator wishes to ventilate pillared or abandoned area a request for permission to ventilate these areas will include:
 - a) A detailed history of the methane content determined throughout the mine and when available, the volume of air in which such methane determinations were made.
 - b) A description of the method by which the areas from which the pillars have been wholly or partially extracted and abandoned areas shall be ventilated, and such maps and drawings as may be required to illustrate such method and to indicate existing or proposed air volumes to ventilate such areas.
 - c) The signature and title of the person who submits the application for the operator.

F. Section and Face Ventilation System

1. Typical section and face ventilation systems are shown on the attached maps. Details of the ventilation system will be submitted on an appropriate scale map and updated regularly.
2. Ventilation in the belt entries will be controlled by regulators or check curtains and will be maintained as a separate split of air.
3. Coal will not be allowed to accumulate at the outby end of the face equipment to the extent that ventilation of the working face is restricted.

G. Permanent Stoppings

1. All ventilating devices such as stoppings, overcasts, undercasts, and shaft partitions shall be of substantial and incombustible construction installed in a workmanlike manner and maintained in a condition to serve the purpose for which they were intended, and any stopping leaking air excessively shall be repaired immediately.
2. Permanent stoppings shall be erected between the intake end return aircourse and shall be erected to and including the third connecting crosscut (the third stopping will be completed before the fourth connecting crosscut is broken through) outby the faces of the entries. Whenever the third connecting crosscut is broken through, work shall be started on building the stopping as soon as possible and shall be completed in a timely manner which would be consistent with good ventilation practices.
3. Metal stoppings supported with approved fire retardant treated wood or metal angles may be used in short lived entries such as panels, rooms, or butts as belt or intake escapeway separation stoppings only. Timber laid longitudinally "skin to skin", and packed with rock dust, may be used in heavy or squeezing areas if the timbers are treated with an approved fire retardant.
4. A complete list of materials used in the construction of stoppings is as follows:
 - 1) Block Stoppings - Materials Used:
Cinder or cement blocks, mortar or cement mix or equivalent.

The stoppings are laid up on clean substantial bottom, tied to the ribs with staggered courses.

- a) Blocks with mortared joints will be plastered with mortar mix around the periphery to make it airtight.
- b) Blocks stacked without mortared joints will be plastered in its entirety on one side.

2) Permanent Stoppings - Will be used for belt isolation, return airways, intake airways, and any other separate approved aircourse.

H. Diesel Equipment

1. Any diesel equipment used in by the last open crosscut shall be schedule 31 approved.
2. All diesel equipment shall be operated and maintained in accordance with the manufacturer's operating specifications and maintenance manual. These manuals and specifications shall be made available for reference.
3. Once each shift in working areas where diesel equipment is used, examinations for carbon monoxide (CO) and nitrogen dioxide (NO₂) shall be made in the work area which is least effectively ventilated and the likelihood of an accumulation is the greatest. If samples are above the threshold limits (50 ppm CO; NO₂) corrective actions must be taken immediately. A record of these examinations (along with their results) shall be recorded in a book.

I. Use of Auxiliary Fans and Machine-Mounted Diffusers Underground

1. The fan shall be of a permissible type, maintained in permissible condition, so located and operated to avoid any recirculation of

air, and examined once every four hours when in use. The examiner shall place his initials, date, and time near the fan.

- a) Fans operated blowing shall be installed in the positive intake current of the place to be ventilated by the fan, and the volume of such positive intake air current shall be greater than the free discharge capacity of the fan.
- b) Fans operating exhausting shall be installed in the return air current from the place to be ventilated by the fans, and the volume of positive intake air current available at the entrance to the place (at the crosscut or other point of entry) to be ventilated with exhaust fans shall be greater than the free discharge capacity of the fan.

2. All face ventilation systems using auxiliary fans and tubing or machine-mounted diffusers shall be approved under the provision of Section 303 (o) of the Act. (Subsection 75.316 or the Federal Register).
3. If a machine-mounted diffuser is used in conjunction with fan tubing or exhaust line brattice, the intake end of the diffuser shall be located outby the intake end of the exhaust tubing or line brattice.

J. Mine Maps

A mine map of the appropriate scale shall be submitted and updated at six month intervals and will include the following:

1. Mine maps shall be coded with symbols provided in a detailed legend on every map, showing the scale and orientation of the map, including property, ventilation, and face system maps; and such symbols shall be standard for the entire ventilation plan.

2. Limits of the mine property, on a suitable scale (may be smaller than 500 feet to the inch) and type of map to show entire limits. Indicate location of present workings.
3. Location of all oil and gas wells, active and abandoned, or if none, so stated. Also include any other drill holes that penetrate the seam.
4. All known underground workings adjacent, above and below the mine; and all water pools above; if none so state. Include any surface or auger mines.
5. Mine fan data for all main fans including: location, manufacturer's name, type, size, speed, water gauge, quantity, and blade setting at present operating point; and name plate date from fan motor including horsepower, voltage, and ampere rating, in addition to any stand-by motors and fans where applicable.
6. Location of all surface mine openings including direction of air flow and air quantities.
7. Any faults, wants, or slips that may affect ventilation, including any abnormal conditions, such as entries blocked by water or roof falls.
8. Mining projections in detail for at least one year showing ventilation controls, crosscut and entry center distances, and proposed bleeder systems in areas where second mining will be done.
9. All underground workings with active section delineated.
10. Locations of stoppings, overcasts, regulators, seals, air-lock doors, and man-doors; a statement of location may be allowed for certain areas.

11. Measured volumes and directions of air entering and leaving each split, and the volume, direction, and percent methane of air in return airways and bleeders. Such data to be representative of conditions immediately prior to date of submission.
12. Show location and average height, width, and air velocity in each conveyor belt haulage entry, every place where trolley haulage systems are maintained, and every place where trolley wires and trolley feeder wires are installed.
13. Velocities of air at any abnormal or restricted location.
14. Location of areas which have been abandoned and areas from which pillars have been wholly or partially removed.
15. Locations of proposed or new shafts, slopes, or drift openings, either intake or return, including the direction, anticipated volume of air, and expected date of completion and operation.
16. Locations of proposed seals in all new areas developed after March 30, 1970.
17. Contour lines or spot elevations of coal seam as required by Section 75.1200-1(m), or 75.1200-1(k), including elevations of all main and cross or side entries.
18. Escapeways designated by means of symbols. The physical layout of escapeways must meet the criteria of 75.1704-1, 30 CFR 75.
19. Dip of coalbed.
20. All drill holes that penetrate the coalbed being mined.

21. The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown.
22. The location and elevation of any body of water dammed in the mine or held back in any portion of the mine.
23. The location and description of at least two permanent base line points coordinated with the underground and surface mine traverses, and the location and description of at least two permanent elevation bench markers used in connection with establishing or referencing mine elevation surveys.
24. The elevations of tops and bottoms of shafts and slopes, and the floor at the entrance to drift and tunnel openings.

Mine Name: Pinnacle Mine
Mine I.D. No.: 42-01474
MMU I.D. No.: 001-0
Designated Occupation (D.O.): 036

Date: 2-9-81
Type of Mining and Section Haulage
Equipment: Electric Continuous
Miner, Electric Shuttle Cars, and
Conveyor Belts.

The following parameters are hereby adopted as part of the ventilation system and methane and dust control plan as per Section 75.316, 30 CFR.


(Signature Company Official)

TYPICAL MINING SEQUENCE

TOWER RESOURCES, INC.

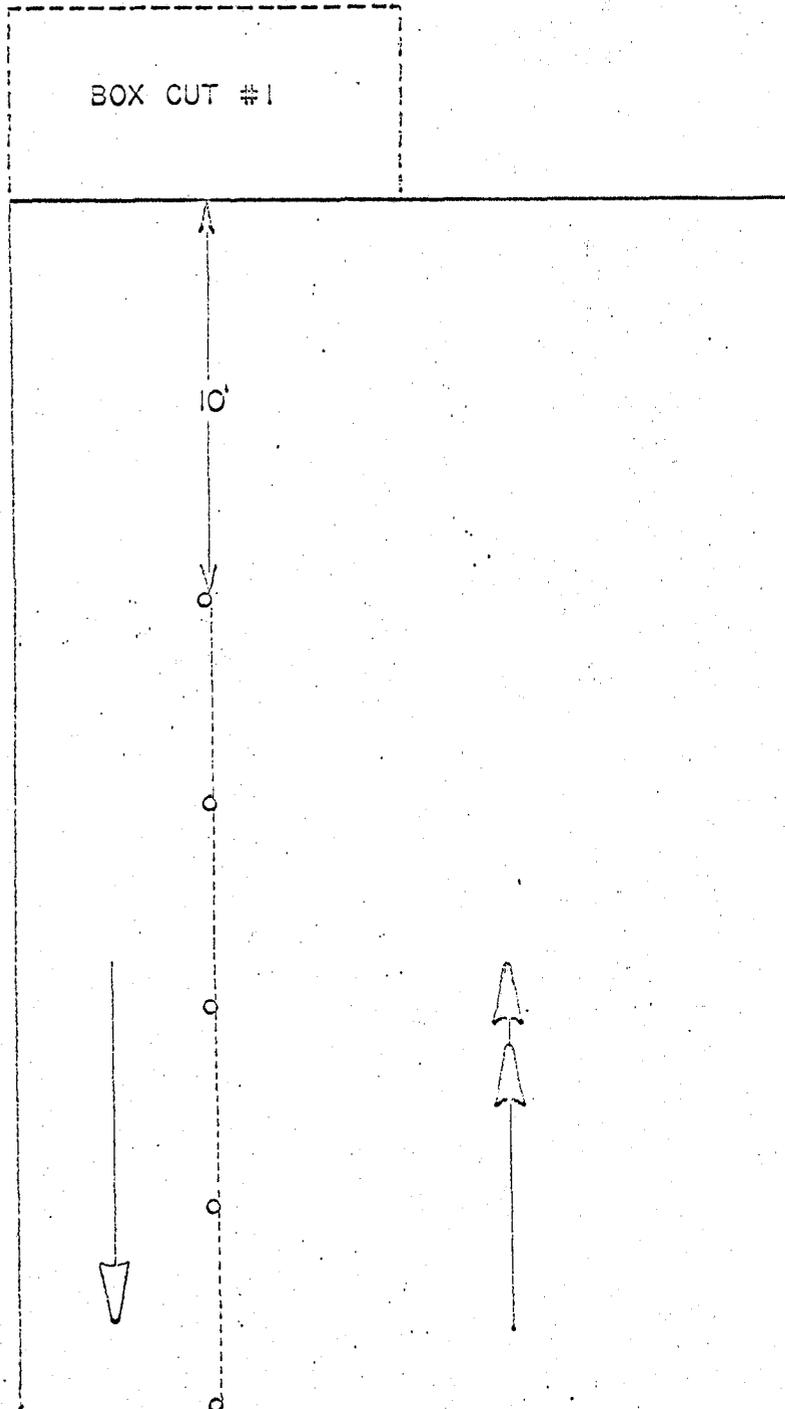
FACE VENTILATION

PINNACLE MINE

BOX CUT #1

MSHA #42-01474

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



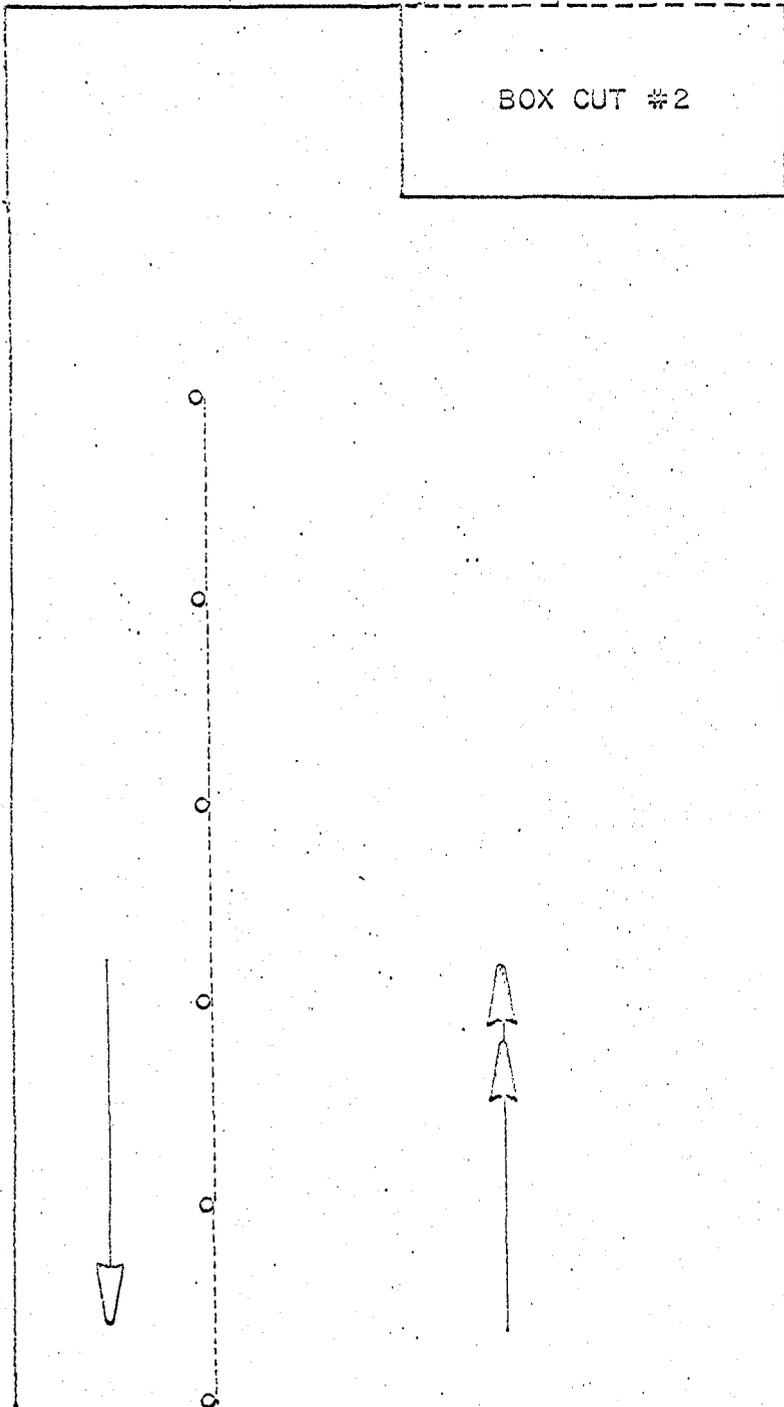
In preparation of 1st
box cut, line curtain
is extended to within
10 ft. of the face.

- ▶▶ Intake Air
- ▶ Return Air
- Timber with Cappiece
- Brattice

TYPICAL MINING SEQUENCE
FACE VENTILATION
PREPARATION FOR
BOX CUT #2

TOWER RESOURCES, INC.
PINNACLE MINE
MSHA #42-01474

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



Box Cut #1 is complete and preparation for Box Cut #2 is to install a post with capping and advance the line curtain by five feet.

→ Intake Air

→ Return Air

o Timber with Capping

----- Brattice

TYPICAL MINING SEQUENCE

FACE VENTILATION

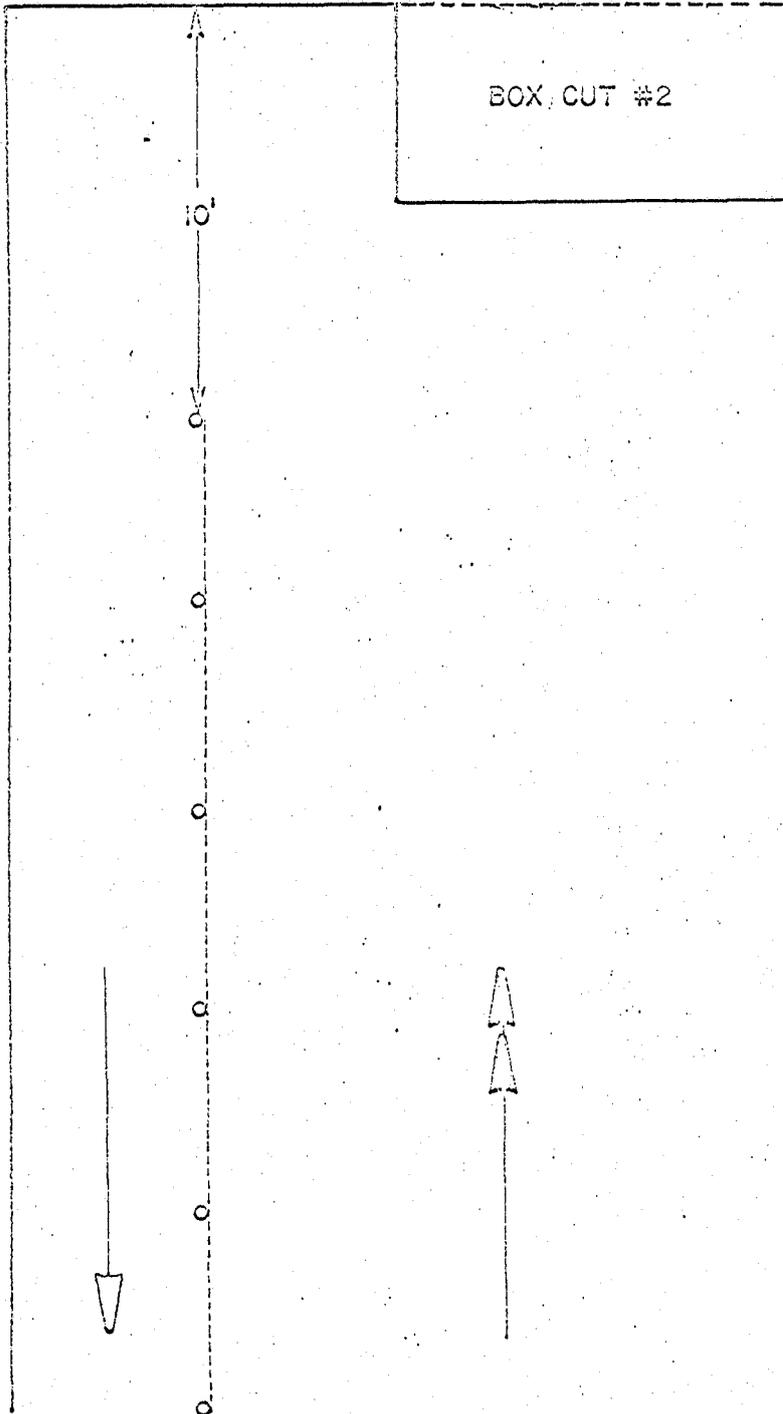
BOX CUT #2

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



Post with capping and line curtain has been advanced. The face is now prepared for Box Cut #2.

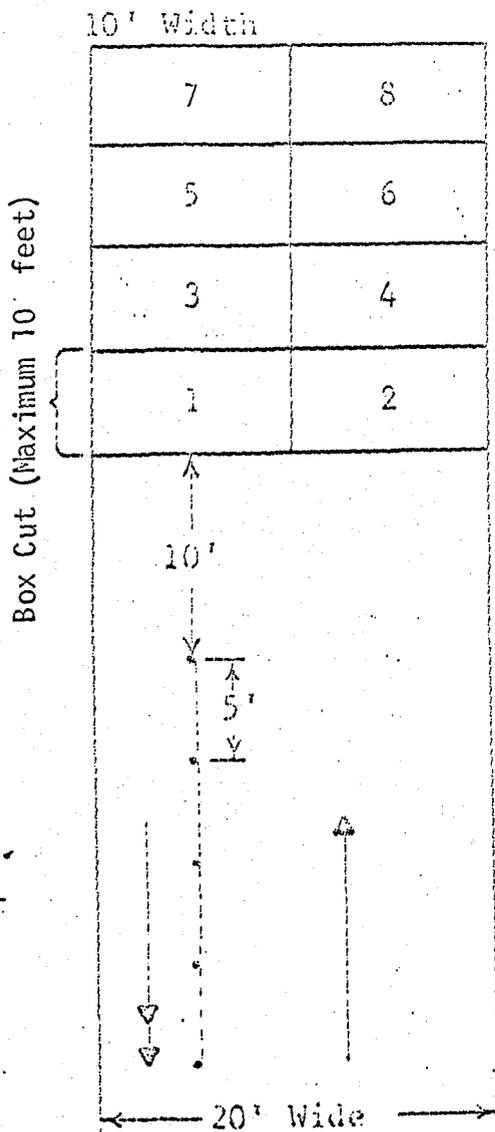
→ → Intake Air

← ← Return Air

o Timber with Capping

----- Brattice

MINING CYCLES 120' CUTS



The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft. of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

TYPICAL MINING SEQUENCE

FACE VENTILATION

BOX CUT SEQUENCE

TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.

31	32
29	30
27	28
25	26
23	24
21	22
19	20
17	18
15	16
13	14
11	12
9	10
7	8
5	6
3	4
1	2

The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

TYPICAL MINING SEQUENCE

3 ENTRY SYSTEM-CUT I

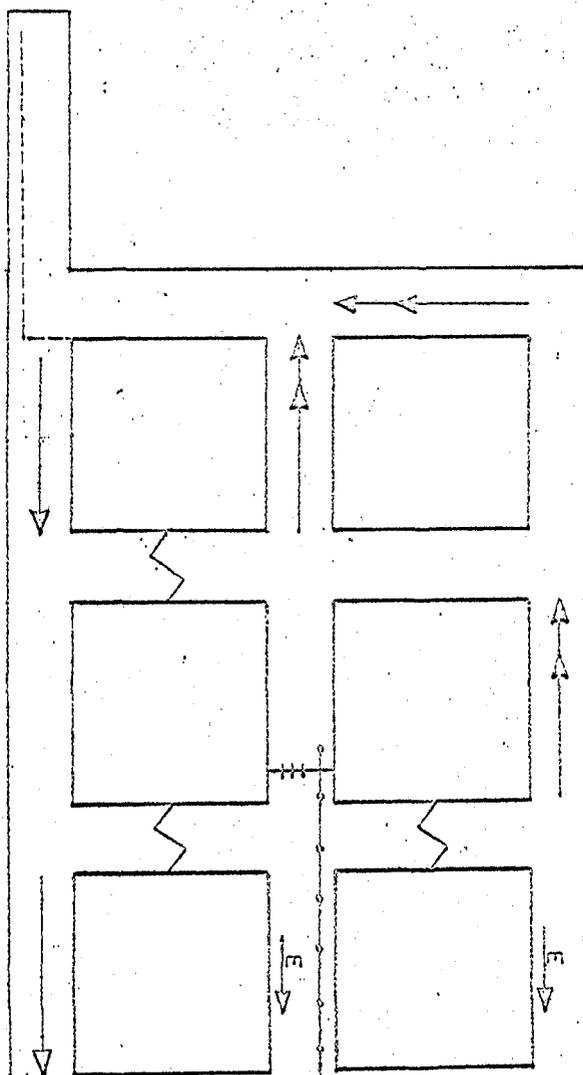
TOWER RESOURCES, INC.

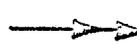
PINNACLE MINE

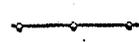
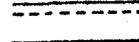
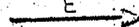
MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.

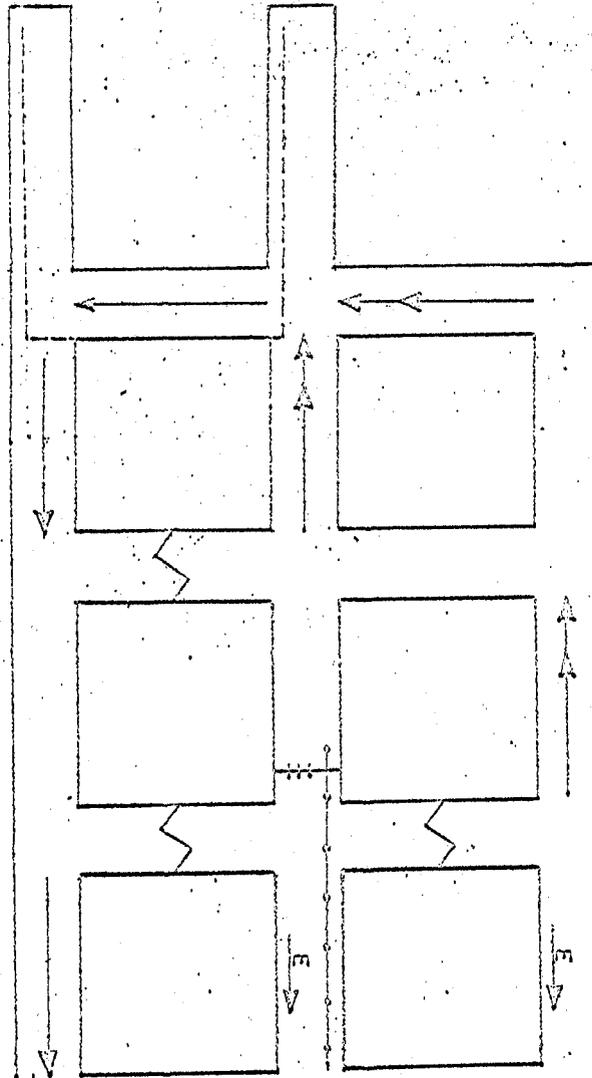


-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

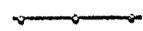
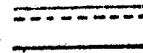
-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

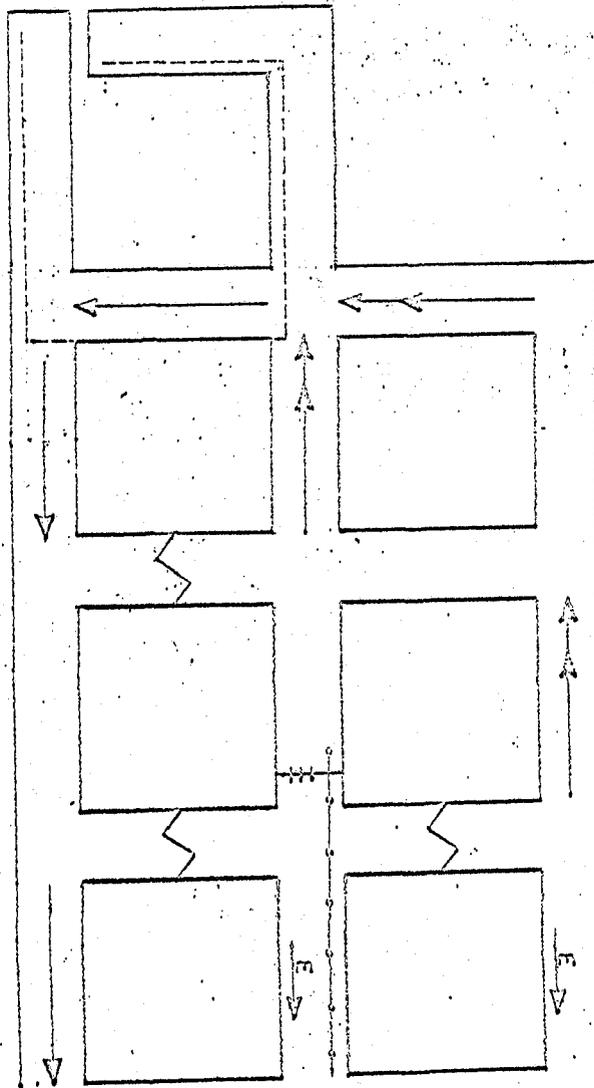
-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

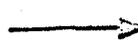
TYPICAL MINING SEQUENCE
 3 ENTRY SYSTEM-CUT 3

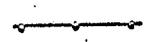
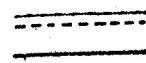
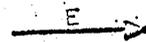
TOWER RESOURCES, INC.
 PINNACLE MINE
 MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
 MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.

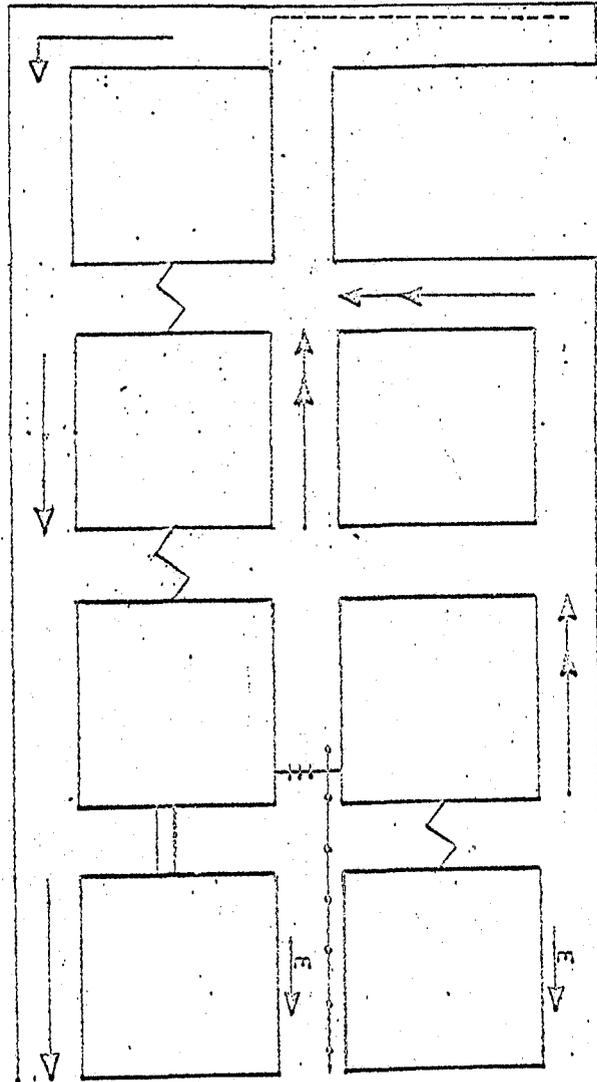


-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



→ → INTAKE AIR

→ → RETURN AIR

⚡ CHECK CURTAIN

|| STOPPING

—||— TRAVEL CURTAIN

—●— CONVEYOR BELT

--- BRATTICE CURTAIN

—E→ ESCAPEWAY

TYPICAL MINING SEQUENCE

3 ENTRY SYSTEM-CUT 5

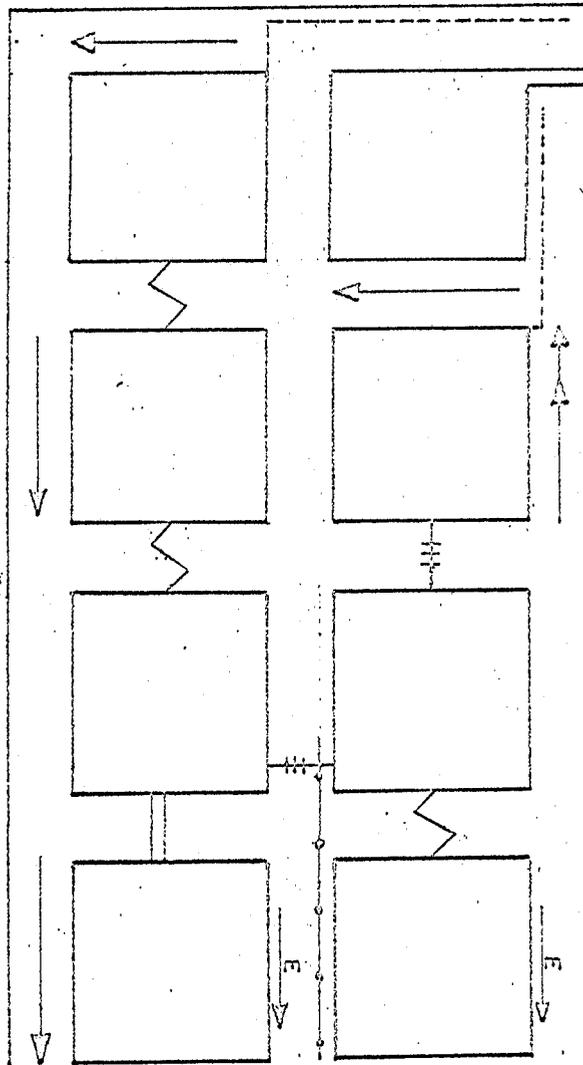
TOWER RESOURCES, INC.

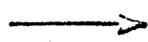
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



-  INTAKE AIR
-  RETURN AIR
-  CHECK CURTAIN
-  STOPPING

-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

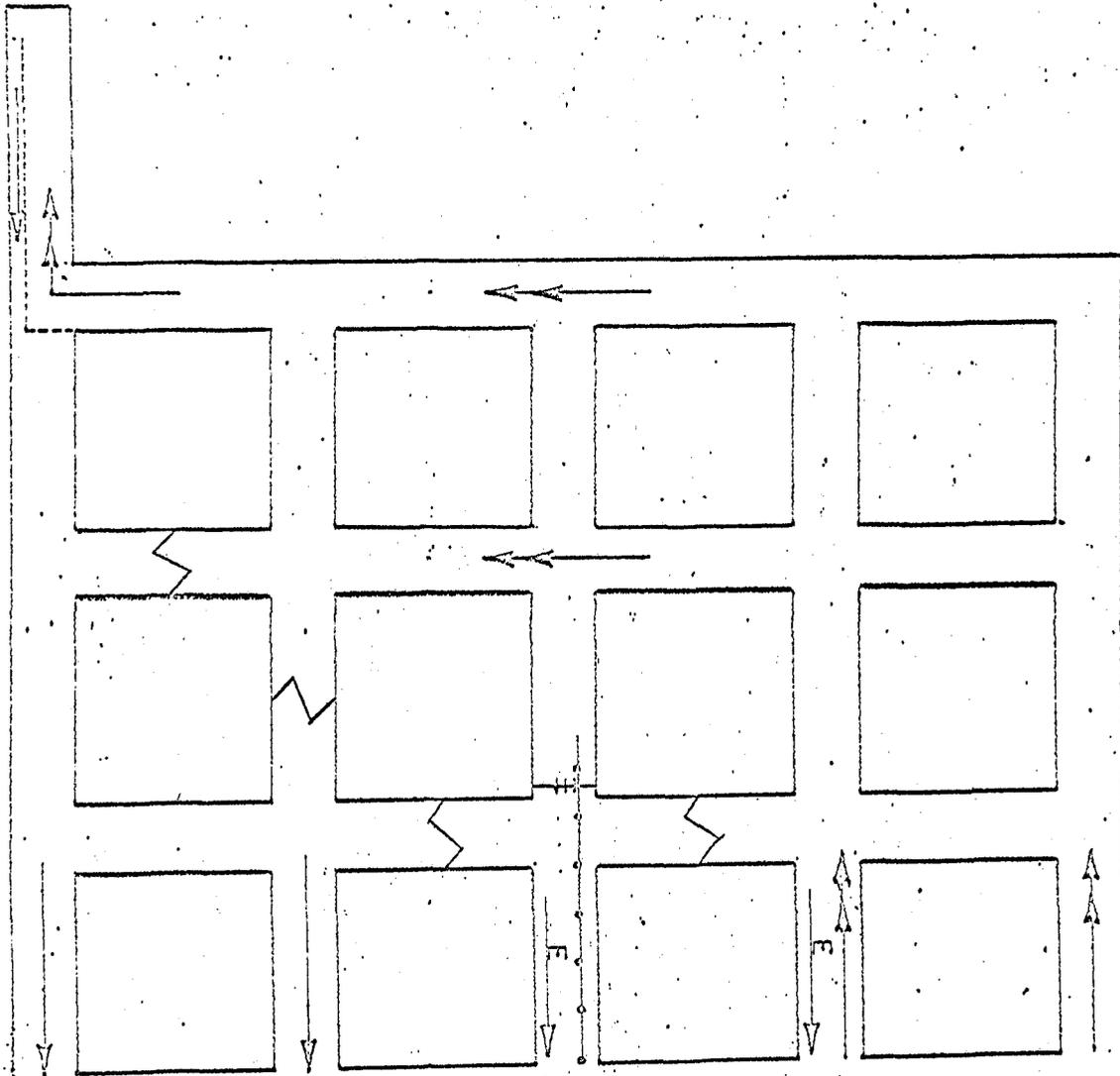
TYPICAL MINING SEQUENCE
 5 ENTRY SYSTEM - CUT 1

TOWER RESOURCES, INC.
 PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'

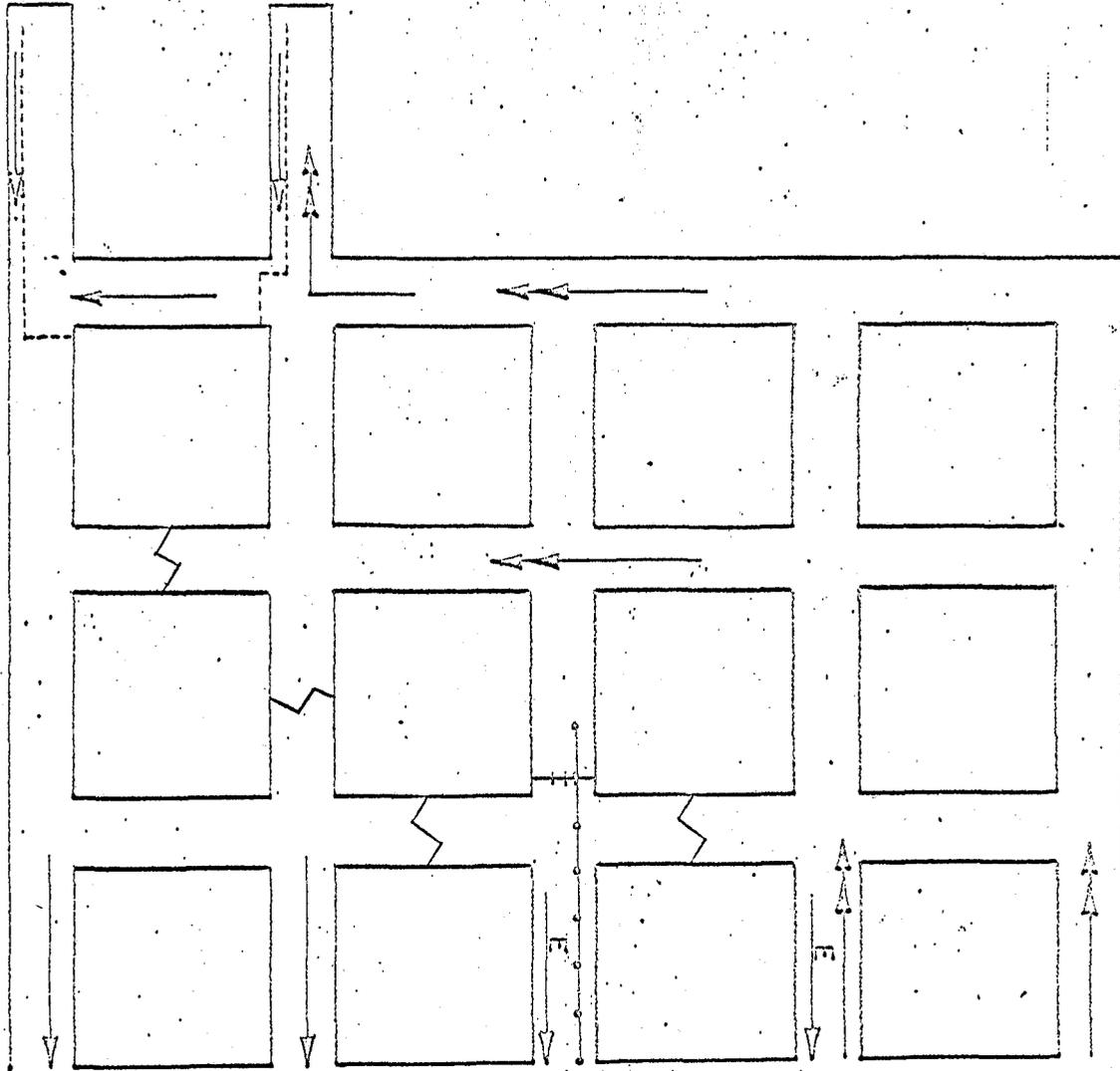
THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
 MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

SCALE 1" = 60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE

5 ENTRY SYSTEM-CUT 3

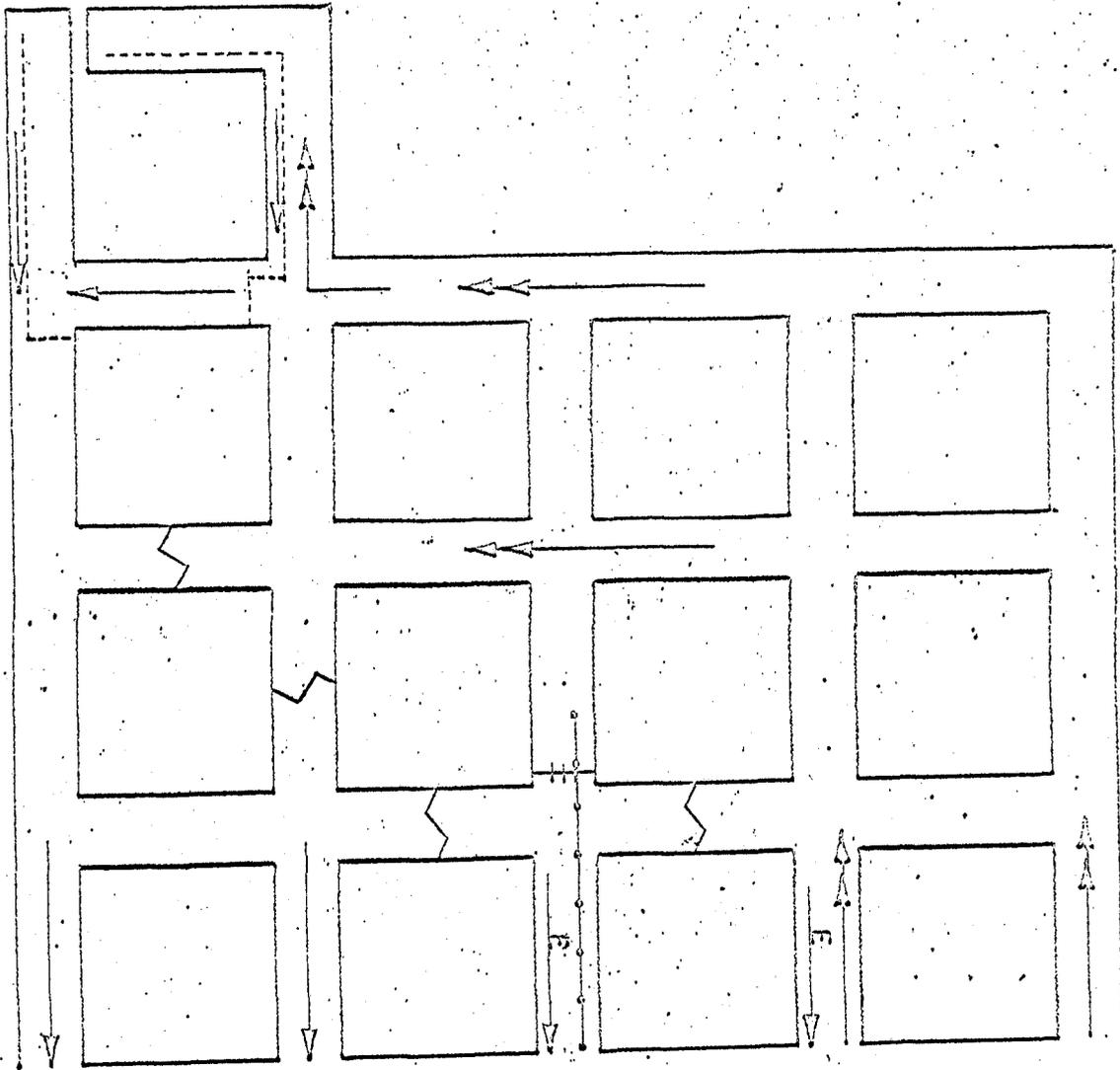
LOWER RESOURCES, INC.

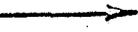
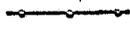
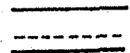
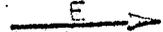
PINNACLE MINE

MSHA #42-01474

SCALE 1" = 60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



-  INTAKE
-  RETURN
-  CHECK CURTAIN
-  STOPPING
-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

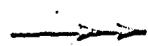
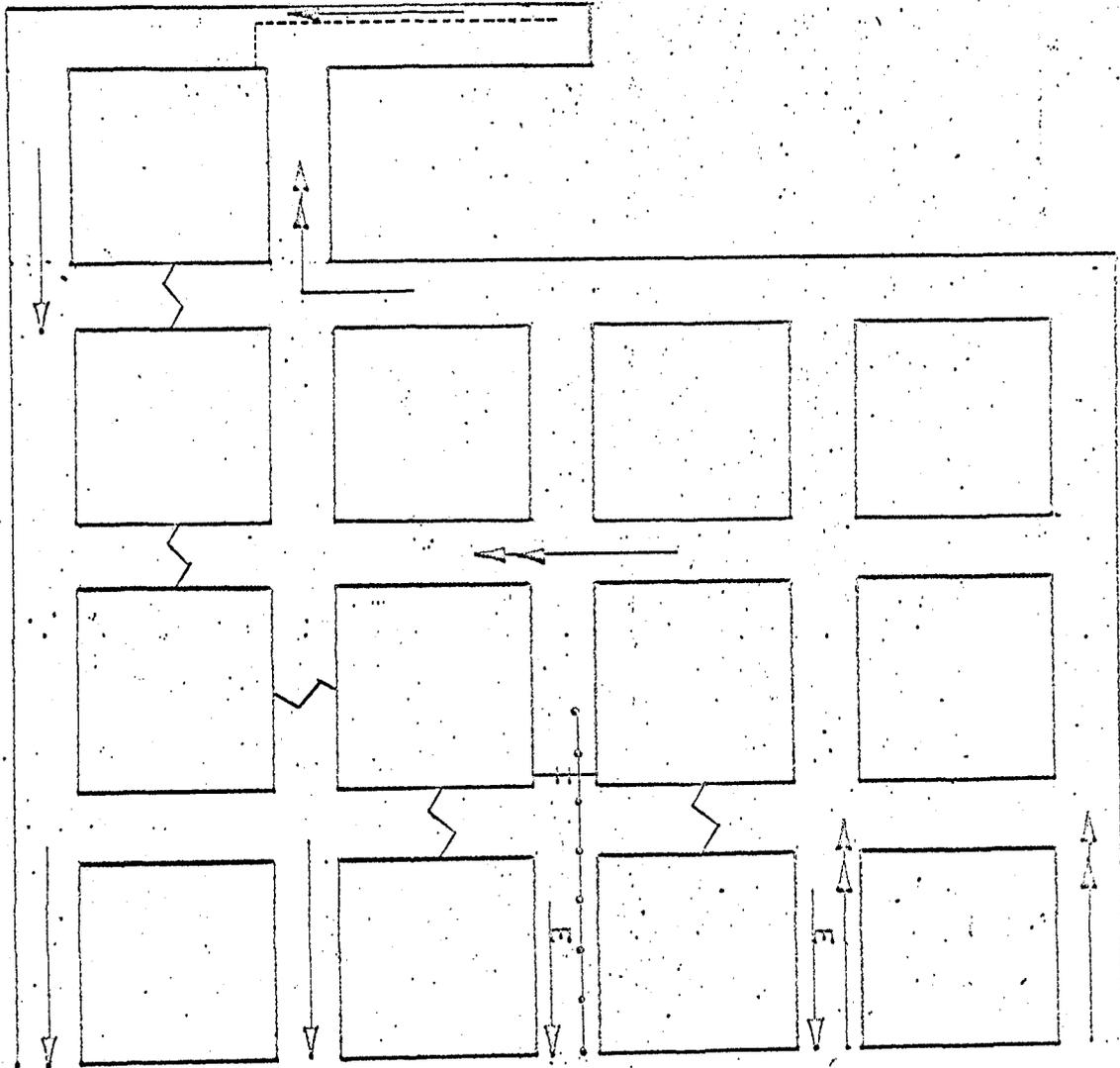
TYPICAL MINING SEQUENCE
5 ENTRY SYSTEM-CUT 4

TOWER RESOURCES, INC.
PINNACLE MINE

MSHA # 42-01474

SCALE 1" = 60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



INTAKE



RETURN



CHECK CURTAIN



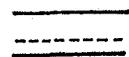
STOPPING



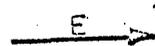
TRAVEL CURTAIN



CONVEYOR BELT



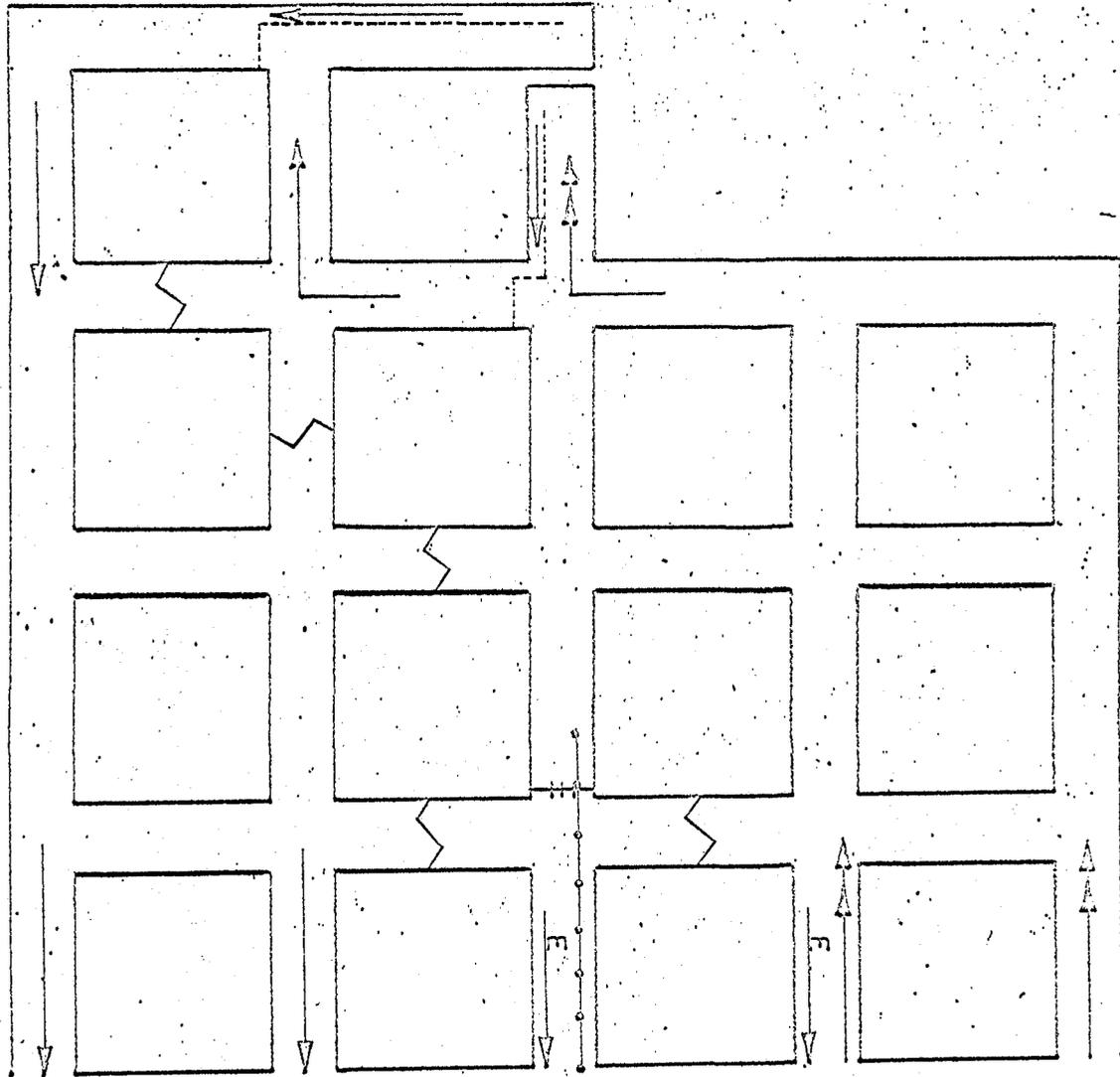
BRATTICE CURTAIN



ESCAPEWAY

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

TYPICAL MINING SEQUENCE

5 ENTRY SYSTEM-CUT 6

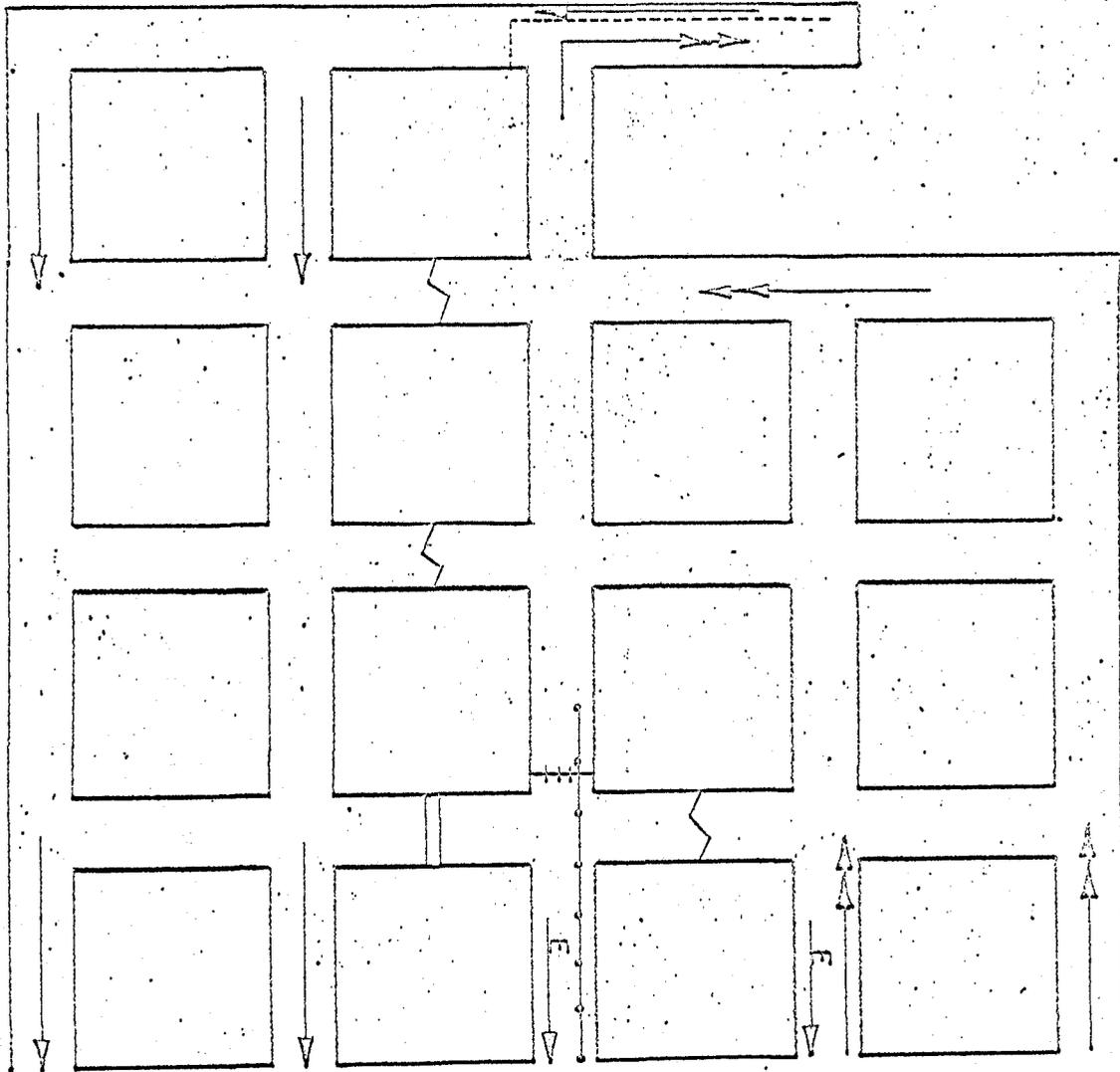
TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



- | | | | |
|--|---------------|--|------------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | BRATTICE CURTAIN |
| | STOPPING | | ESCAPEWAY |

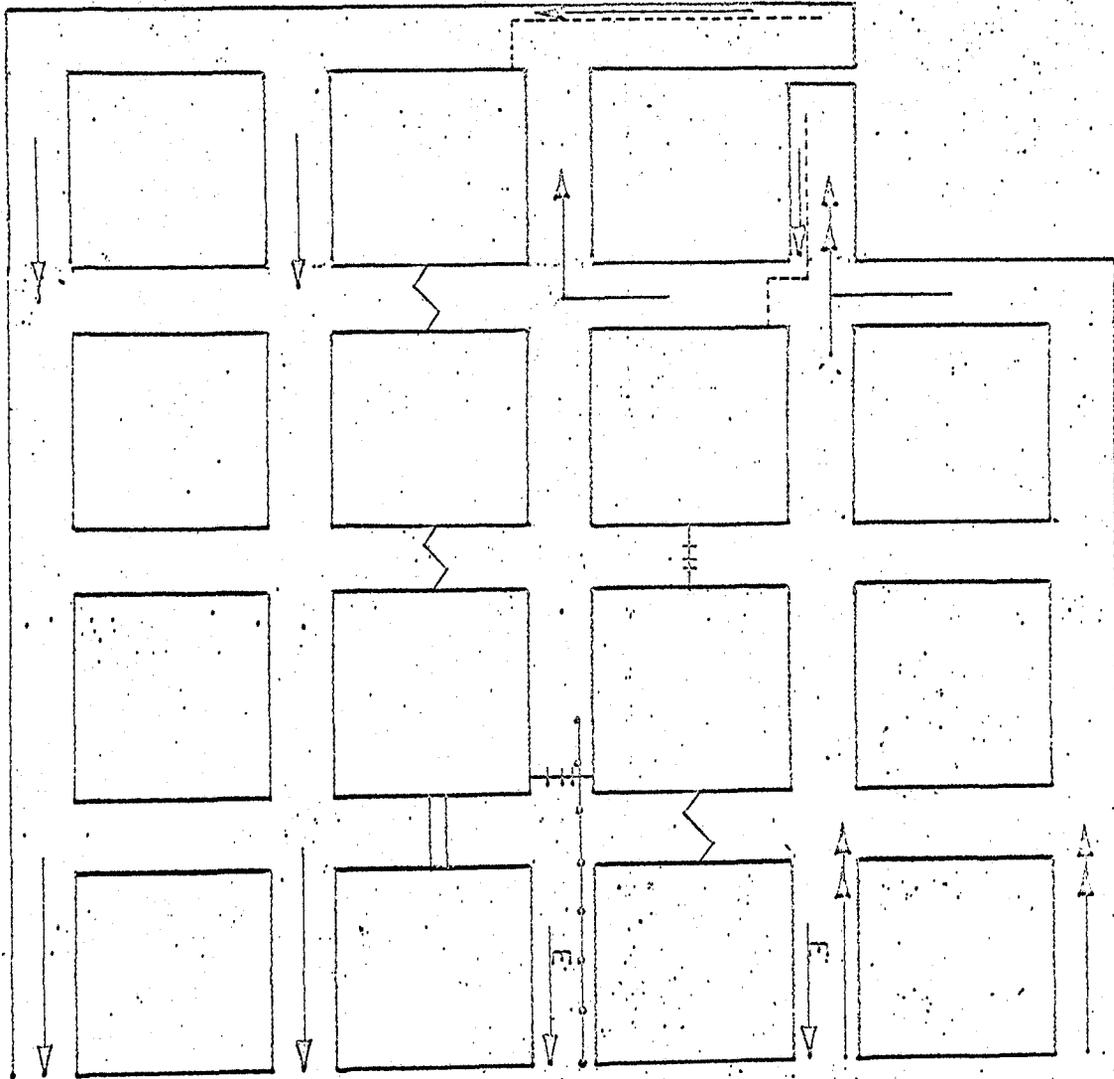
5 ENTRY SYSTEM-CUT 7

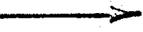
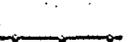
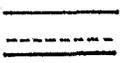
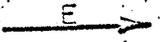
PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE
MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



- | | | | |
|---|---------------|--|------------------|
|  | INTAKE |  | TRAVEL CURTAIN |
|  | RETURN |  | CONVEYOR BELT |
|  | CHECK CURTAIN |  | BRATTICE CURTAIN |
|  | STOPPING |  | ESCAPEWAY |

TYPICAL MINING SEQUENCE

5 ENTRY SYSTEM-CUT '8

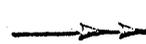
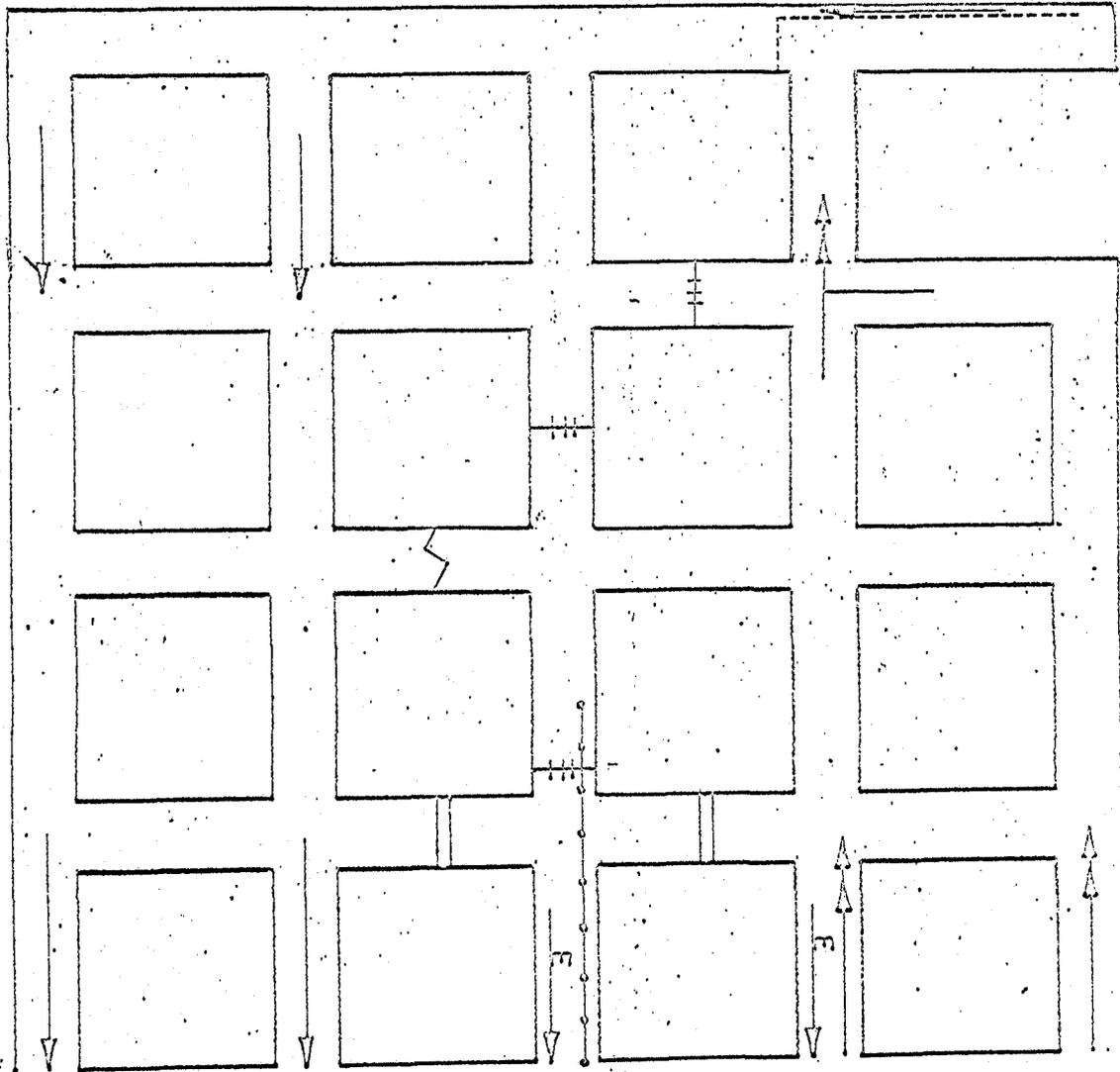
TOWER RESOURCES, INC.

PINNACLE MINE

MSHA #42-01474

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



INTAKE



RETURN



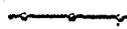
CHECK CURTAIN



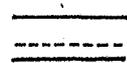
STOPPING



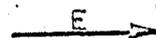
TRAVEL CURTAIN



CONVEYOR BELT



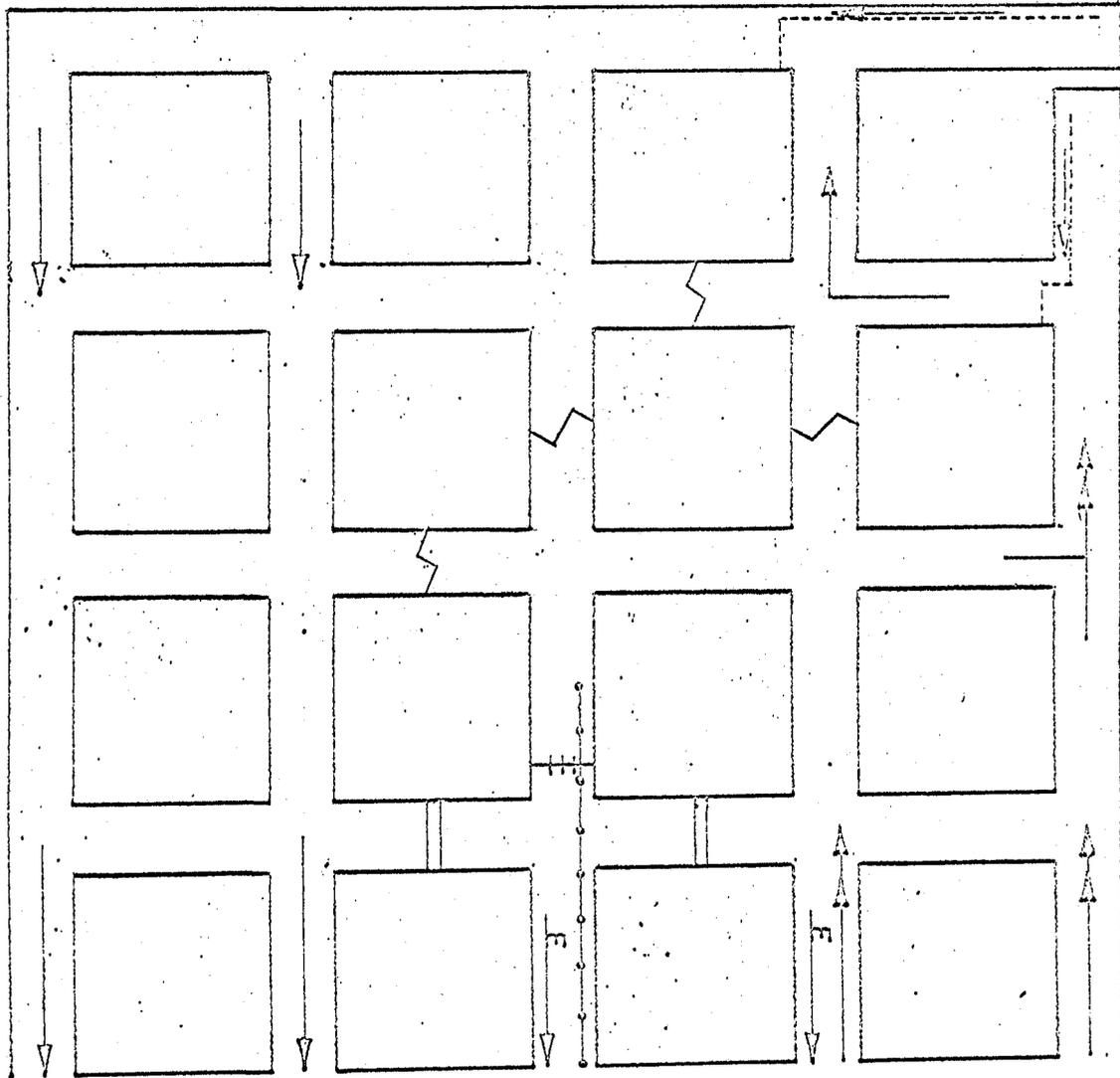
BRATTICE CURTAIN

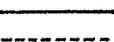
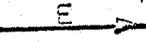


ESCAPEWAY

SCALE 1"=60'

THIS INDICATES VENTILATION FOR EACH CUT. CUT SEQUENCE MAY VARY ACCORDING TO CONDITIONS OR REQUIREMENTS.



-  INTAKE
-  RETURN
-  CHECK CURTAIN
-  STOPPING
-  TRAVEL CURTAIN
-  CONVEYOR BELT
-  BRATTICE CURTAIN
-  ESCAPEWAY

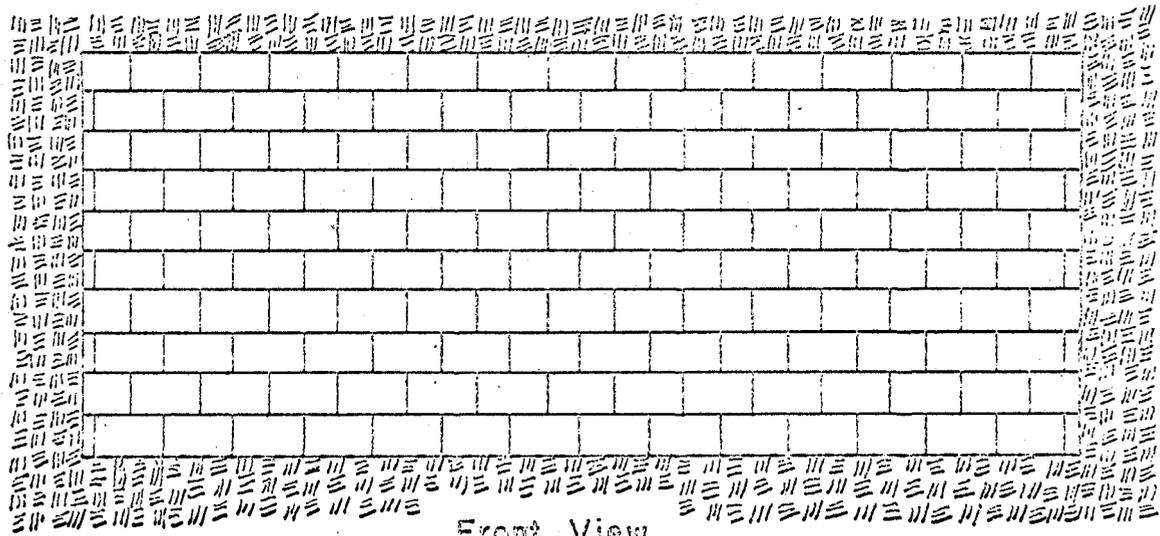
Tower Resources Inc.

Pinnacle Mine

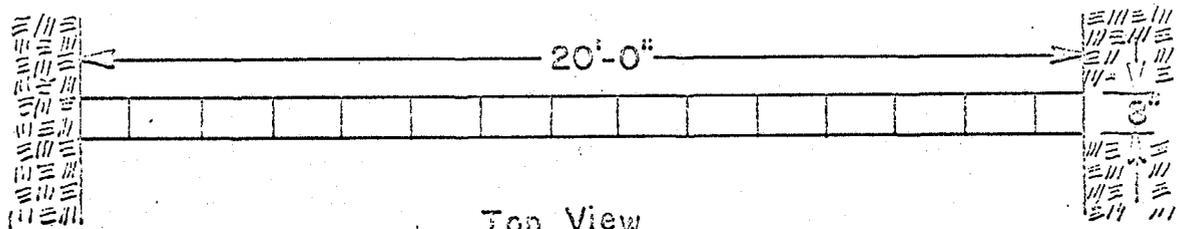
MSHA # 42-01474

Construction of Permanent Stopping

Scale: 1" = 4'-0"

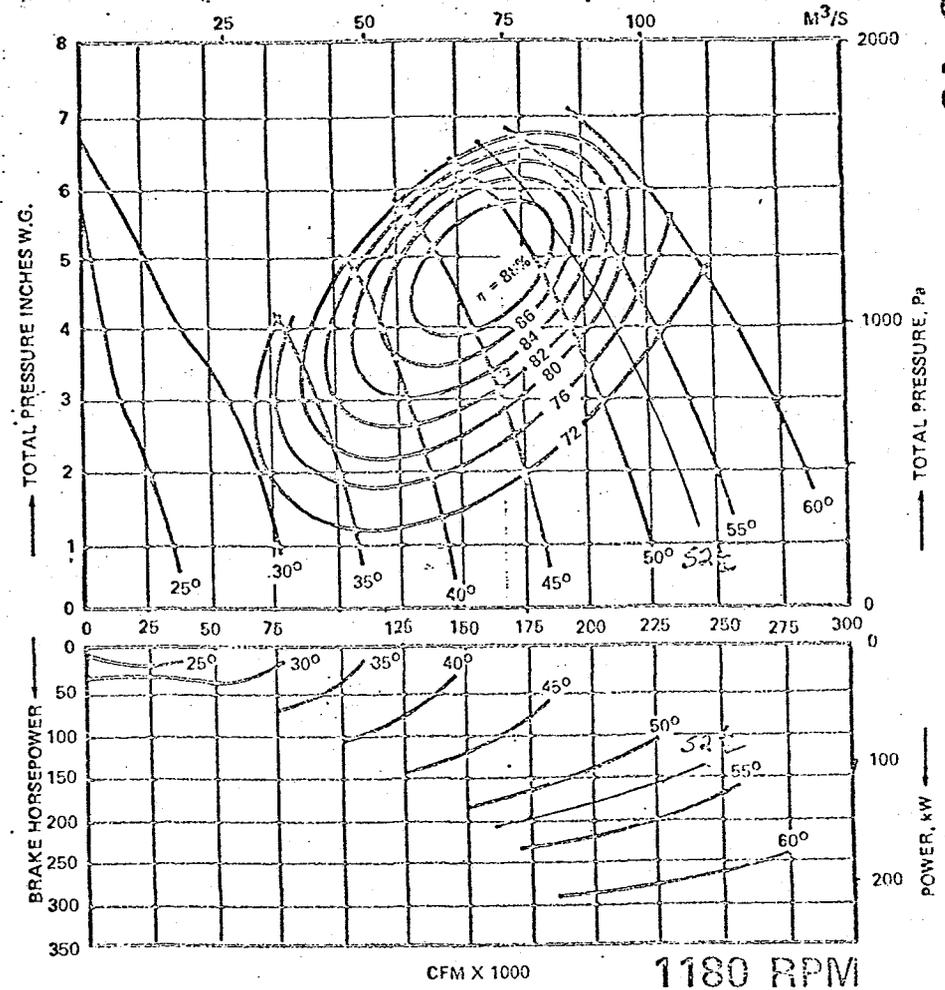
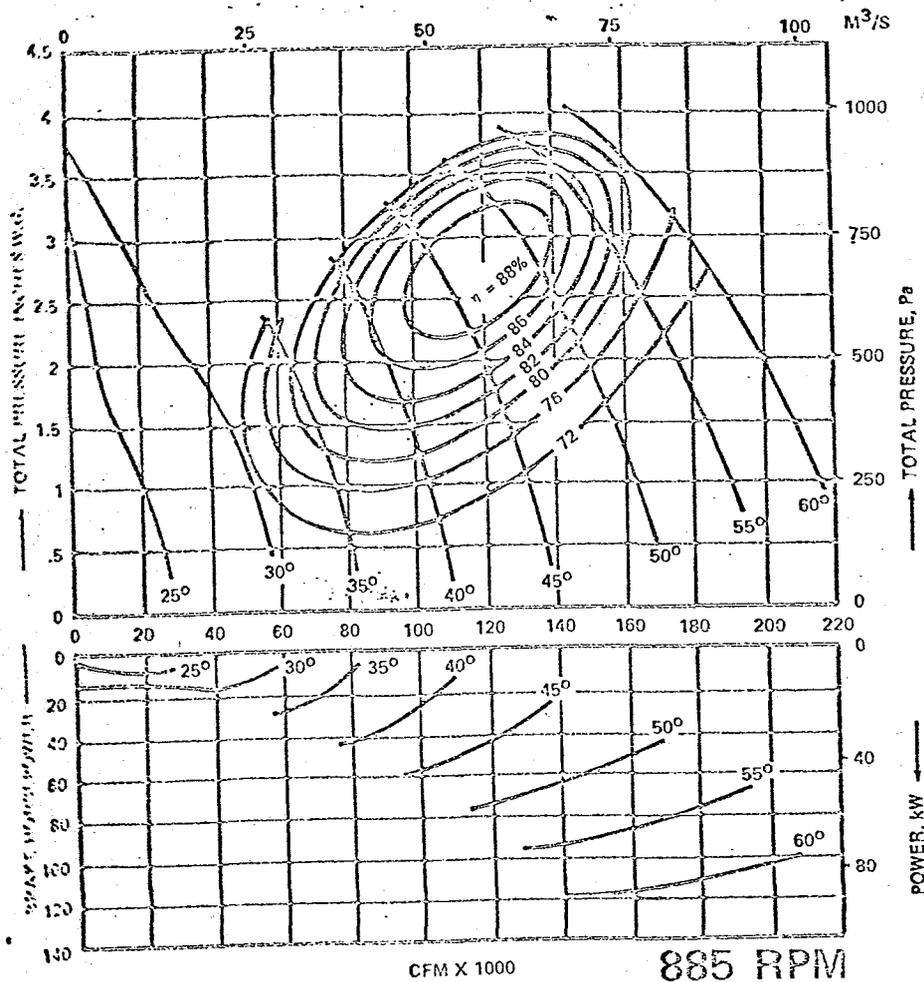


Front View



Top View

100-8-10



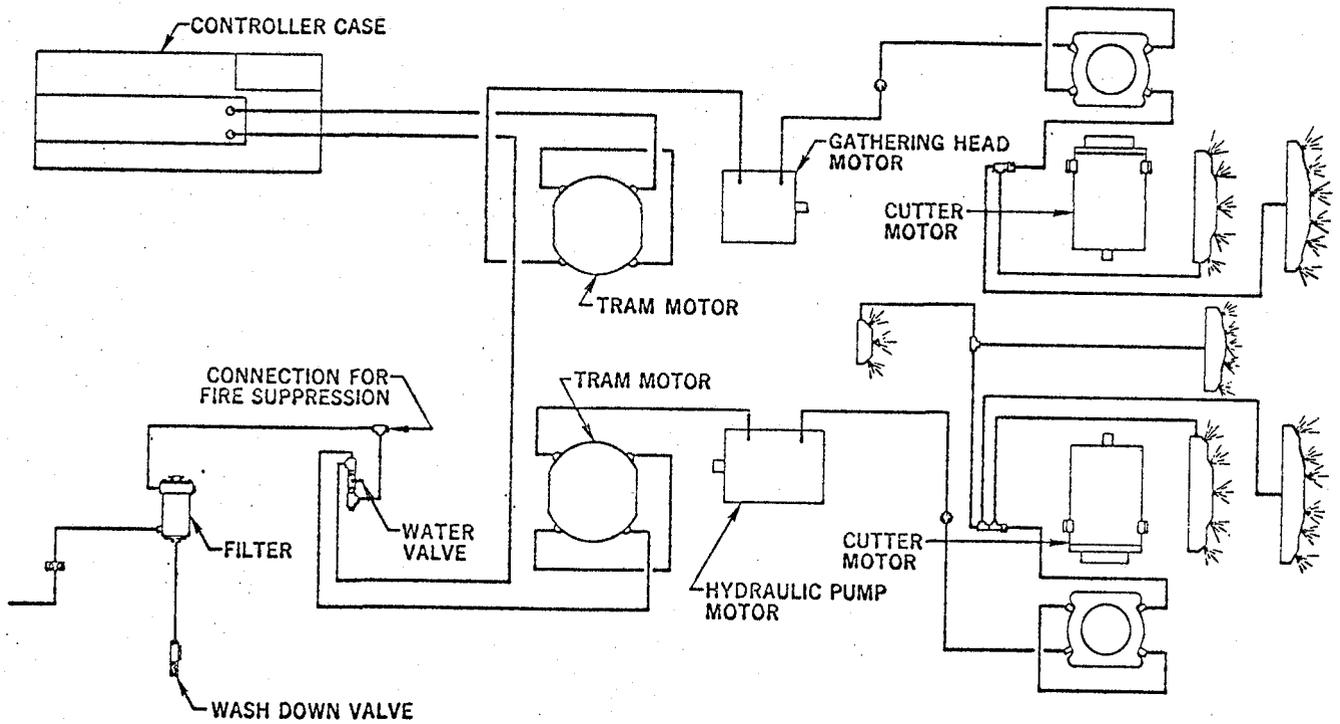
PERFORMANCE AT DENSITY OF 0.075 lb./ft.³

MADE IN USA

VANEAXIAL FAN

FV 200-8-10

Water Piping Diagram



TJM-1235 12/79



Selection Sheet For Designated Areas

Mine Pinnacle Mine ID 42-01474

Company Tower Resources, Inc.

To Be Filled In
By MSHA

Location Of Designated Area: Main West Belt No. 1 - Regulator

Designated Area
ID: 200-0

Position Of Sampling Instrument Within Designated Area: Approximately 50 ft. upwind (opposite direction of airflow) from the regulator door, at the normal breathing level, but not less than 1 foot from roof or rib.

Location Of Designated Area: Main West Belt No. 1 - Transfer Point

Designated Area
ID: 201-0

Position Of Sampling Instrument Within Designated Area: Approximately 20 ft. downwind (with direction of airflow) from where the North belt drive dumps onto #1 belt at the normal breathing level, but not less than 1 foot from roof or rib.

Location Of Designated Area:

Designated Area
ID: _____

Position Of Sampling Instrument Within Designated Area:

Location Of Designated Area:

Designated Area
ID: _____

Position Of Sampling Instrument Within Designated Area:

Location Of Designated Area:

Designated Area
ID: _____

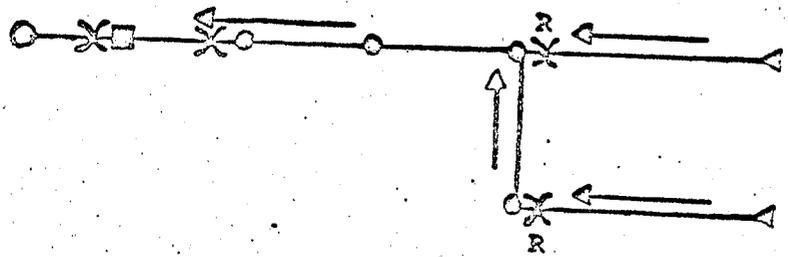
Position Of Sampling Instrument Within Designated Area:

Following information should be included on the line diagram: all active belt and track lines, direction of airflow, regulators, belt transfer points, rotary dumps, major repair shops, and designated sampling locations.

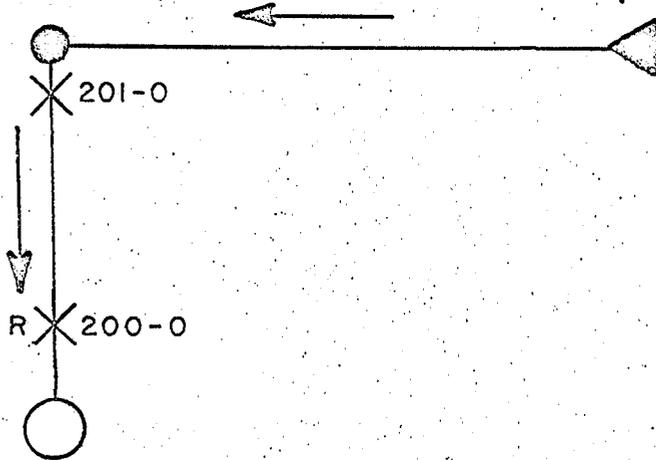
Example

KEY

- Belt to Rail Transfer Points
- Mine Opening
- Belt Transfer Point
- △ Section Loading Point
- ⊗ Designated Area
- R Air Regulated Into Return
- Air Movement



Show Line Diagram in the Following Space



U.S. DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

Mailing Address:
P.O. Box 25367, DFC
Denver, Colorado 80225

Street Address:
730 Simms
Lakewood, Colorado



Coal Mine Health and Safety
District 9

October 24, 1978

Mr. Samuel C. Quigley
Manager of Mines
AMCA Coal Leasing, Incorporated
P. O. Box 1027
Price, Utah 84501

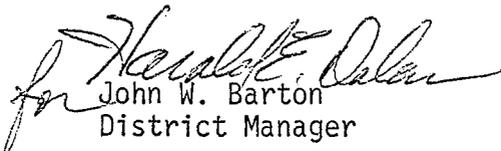
Re: Pinnacle Mine
I. D. No. 42-01474
Roof Control Plan

Dear Mr. Quigley:

The revised roof control plan submitted on September 27, 1978, has been reviewed and cannot be approved due to the minimum roof bolt length of 36 inches specified in the plan. It is MSHA's position, when considering approval for an initial roof control plan for a new mine (or reopening of an old mine), that a roof bolt of reasonable minimum length be used to insure adequate support of most roof conditions which might be encountered. A minimum bolt length of less than 48 inches cannot be considered for such an initial roof control plan. However, once mining has progressed and a true "feel" for the roof conditions has been obtained, a minimum bolt length of less than 48 inches can be considered based on the conditions encountered. Please notify us at that time and an MSHA representative will visit the mine to investigate the roof conditions and make pull tests to determine the adequacy of a lesser minimum length.

The remainder of the roof control plan submitted on September 27, 1978, is satisfactory and no changes need be made in it.

Sincerely yours,


John W. Barton
District Manager

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

March 25, 1980

Mr. John Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Co. 80225

RE: Pinnacle Mine
I.D. No. 42-01474
Roof Control Plan

Dear Mr. Barton,

Enclosed is the revised Roof Control Plan for the Pinnacle Mine. I have revised this plan according to the specifications of a minimum bolt length of 48 inches as stated in your letter of Oct. 24, 1978. Also the company name has been changed to Tower Resources as previously explained.

Sincerely,


Samuel C. Quigley
Western Project Manager

Enclosures

SCQ/lm

POST A COPY OF THIS PLAN NEAR EACH PORTAL WHERE WORKERS ENTER THE MINE IN SUCH A MANNER THAT SAID PLAN WILL BE AVAILABLE TO THE MINE WORKERS.

ROOF CONTROL PLAN

General Information

Date: 7/26/78 Mine I.D. No. 42-01474

A. Company: Tower Resources, Inc.

Address: P. O. Box 1027 Price Utah 84501
City State Zip

B. Mine: Pinnacle Mine

Mine Location:

Price Carbon Utah
City County State

C. Location (reference to nearest highway route, direction, and distance)

6.2 Miles North Off Route No. 6 & 50

D. Type(s) of Plan: Conventional Roof Control with spot bolting supplement.

E. Area(s) of mine covered by the plan entire mine

F. Maximum Cover: 2500 Feet

Main Roof Sandstone & Siltstone interbedded

Immediate Roof Sandstone

Coal Bed Gilson Seam 6' 7"

Bottom Siltstone & Sandstone

G. Samuel C. Dudley Manager 3/25/80
Company Official's Signature Title Date

Roof Control Investigator

The Roof Control Plan approved this date hereby supersedes all previously approved plans.

Approved by _____

Title _____

ROOF SUPPORT MATERIALS - All components of the roof bolt assembly shall comply with the American National Standards Institute "Specifications for Roof Bolting Materials in Coal Mines".

H. ROOF BOLTS
Manufacturer CF&I Corp, Armco Steel Corp, Mikco Industries, - Bethlehem Steel or equivalent. Manufacturer's Designation R-1
N/A
CP-2103-80 DET CP-519-8 DET

Minimum Length 48" Diameter 3/4" or 5/8"
Type Steel Extra high strength - 5/8" High Strength - 3/4" Type Thread Rolled or cut
Length of Thread 4" minimum Type Head Standard
Dimensions of Bolt Head: Nut 1/8" Flange 1 3/4"

I. BEARING PLATES
Manufacturer Mikco Industries, CF&I Steel, Armco Steel or equivalent Manufacturer's Designation
Dimensions 6" x 6" x 1/4"
18" x 6" x 1/4"
Shape: Square or rectangular embossed, double-embossed or flat. Center Hole 11/16" to 13/16"
Size: 1" for resin bolts

J. WASHERS
Manufacturer Kaiser Steel Manufacturer's Designation
*Type Steel Hardened Size 2" OD
*Washers shall be through hardened to a hardness of 35 to 45 as measured on the Rockwell C Scale.
Shape Round - flat Hole Size 13/16"

K. ANCHORAGE UNIT
Manufacturer Ohio Brass, Pattin D, Bethlehem or equivalent Manufacturer's Designation 22378
Type Expansion Size Finishing Bit 1 3/8" ± .030
(Finishing bits shall be easily identifiable by sight or feel)
Installed Torque 3/4"=150-250 ft lbs, 5/8"=150 to 240 ft lbs
WHW 3/4"=125 to 170 ft lbs, WHW 5/8"= 125 to 165 ft lbs.

L. MATERIALS USED IN CONJUNCTION WITH ROOF BOLTS
Cottonwood blocks 2" x 6" x 12" minimum
Roof Mats - 16 gauge minimum

Prior approval shall be obtained before making any changes in the materials listed.

Dimensions of Post--The length of post shall be as required. The diameter must be at least 1 inch for each 15 inches in length but not less than 4 inches--Split posts shall have a cross-sectional area equal to that required for round posts of equivalent length. Smaller posts may be used provided they are set in clusters to provide equivalent support.

Type of Post--Round or split of solid straight grain wood with the ends sawed square and free from defects which would affect their strength.

*Cap blocks, size, and shape--Cap Blocks and footers shall have flat paralleled sides and be not less than 2" x 6" x 12" in size.
(insert minimum)

Wedges, size and shape-- 3½" wide x 10" long x 1" thick, tapered.

*Crossbars, type and size--Crossbars shall be of straight grain solid wood and they shall be not less than 3-inches thick by 8-inches wide of varying length.

*Planks, size-- A minimum of 1-inch thick by 8-inches wide of varying length.

Cribbing blocks, size and shape--Cribbing blocks shall have flat paralleled sides and be not less than 30-inches in length.

*Note: Where wood material is used between roof bolt bearing plates and the roof for additional bearing surface, the use shall be limited to short life openings (not to exceed 3 years) unless treated.

ROOF SUPPORT MATERIALS FOR RESIN GROUTED RODS

RODS

Manufacturer Mikco Industries,
Bethlehem Steel,
Buringham or ap-
proved equivalent

Manufacturer's
Designation M-6

Minimum Length 36" Diameter 3/4"

Type Steel ASTM 8615 Type Head Hex or square
Grade 40 rebar

Dimensions of Rod: Head 1-1/8" Flange 2"

BEARING PLATES

Dimensions 6" x 6" x 1/4"
18" x 6" x 1/4"

Shape Square Center Hole Size 1"

RESIN

Manufacturer Dupont, Faslock,
Celtite, Carbolay or
any approved equiv-
alent

Manufacturer's
Designation _____

Type Resin Size of
Finishing Bit 1" ± .030

Prior approval shall be obtained before making any changes in the materials listed.

N. FACE EQUIPMENT AND SECTION HAULAGE EQUIPMENT ASSOCIATED WITH EACH:

1. Lee Norse or Joy Continuous Miners
2. Long Airdox or Lee Norse roof drills - Rotary - Percussion
3. Joy shuttle cars
4. Eimco or Wagner diesel scoop trams or teletrams
5. Diesel support equipment - tractors - John Deere, Kabota

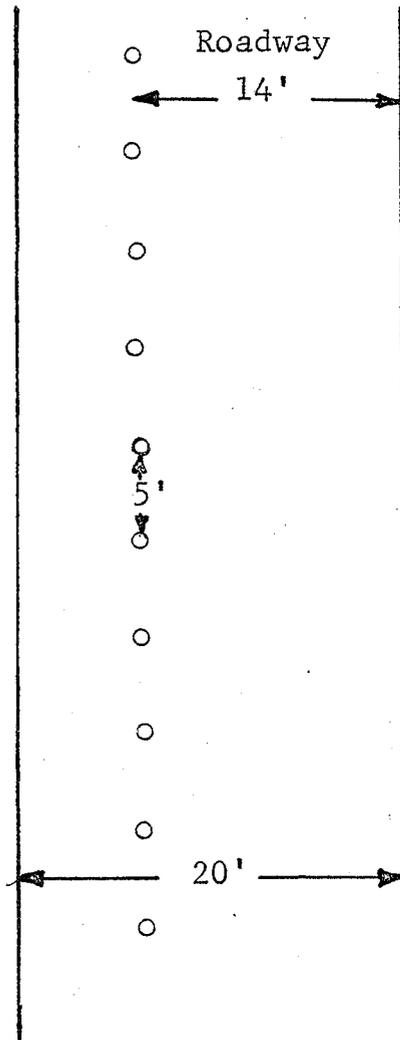
O. SEQUENCE OF MINING AND INSTALLATION OF SUPPORTS INCLUDING TEMPORARY SUPPORTS:

Drawings shall be attached showing the maximum width of entries, rooms, inter-sections, crosscuts, and (if applicable) pillar splits; the sequence of support installation--including temporary supports; the spacing of supports; and where applicable the sequence of mining pillars, including cut sequence in those pillars necessary to establish a uniform pillar line that eliminates pillar points and pillars that project inby the breakline.

SIGHT LINES SHALL BE ESTABLISHED TO ASSURE THAT MINING PROJECTIONS IN ENTRIES, ROOMS, CROSSCUTS, AND PILLAR SPLITS ARE FOLLOWED.

Entry Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Crosscut Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Room Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Room Crosscut Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Slope Width (anthracite)	<u></u>		
Gangway Width (anthracite)	<u></u>		

Conventional Roof Control Plan



○ Timber with Cappiece

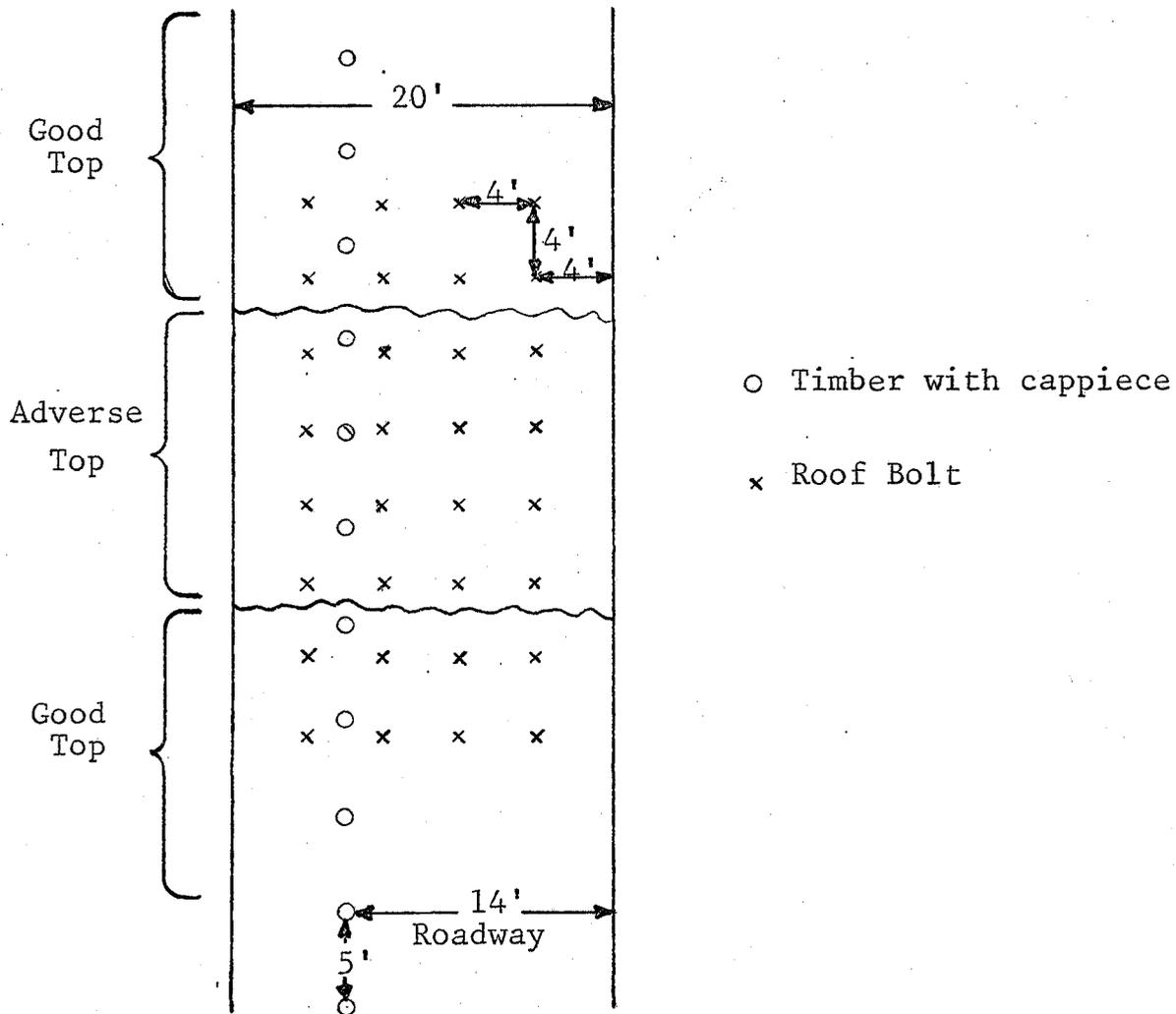
Note: Roadway may be shifted to opposite side to accomodate either equipment move or ventilation.

Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

Spot Bolting Plan

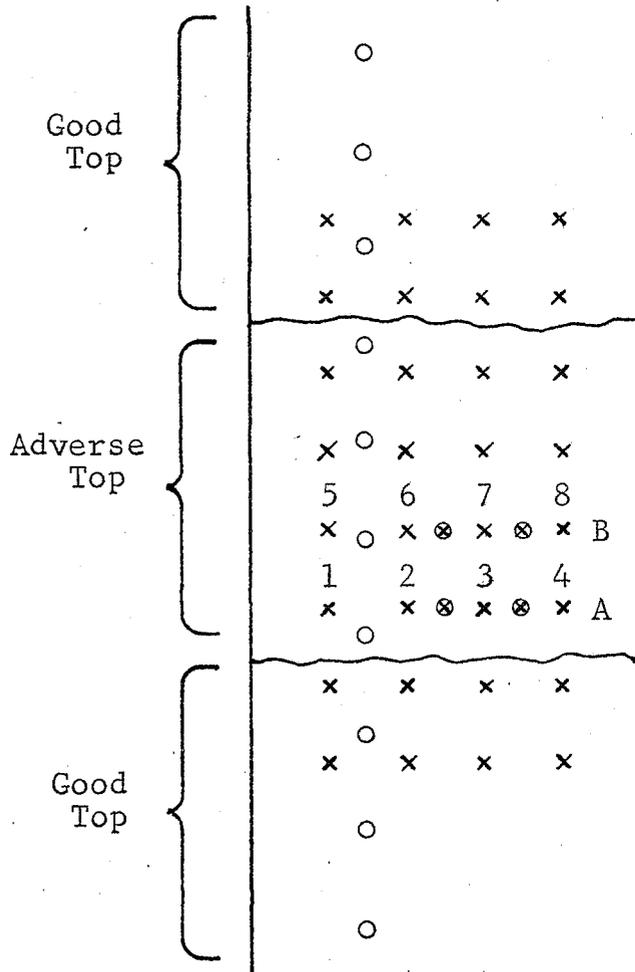


Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

Spot Bolting Plan Temporary Support Procedure



1. Two temporary supports will be installed within five feet of a permanent post and on centers of five feet or less.

2. The roof bolts 1,2,3, & 4 will be installed.

3. After bolt 4 is installed the temporary supports will be advanced to position B and bolts 5 through 8 will be installed.

4. This procedure will continue until the area has been secured.

Roof Bolt

Timber with Cappiece

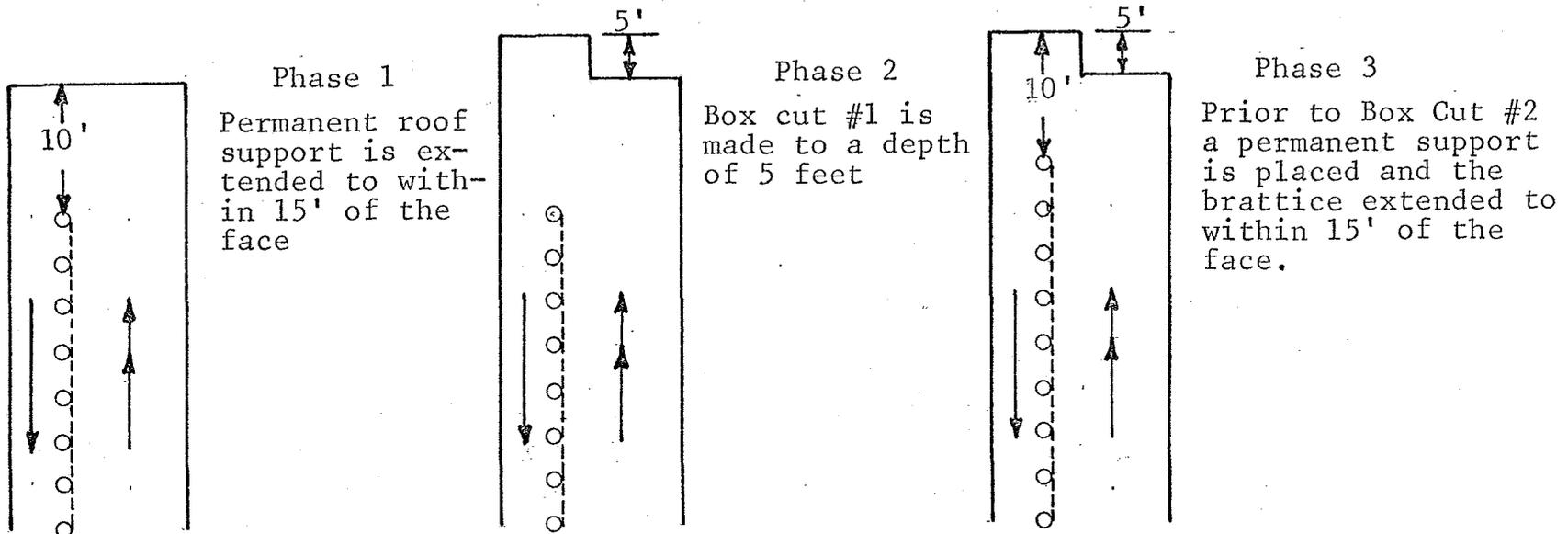
Temporary support

Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

Procedure for the Installation
of
Permanent Roof Support



Tower Resources, Inc.

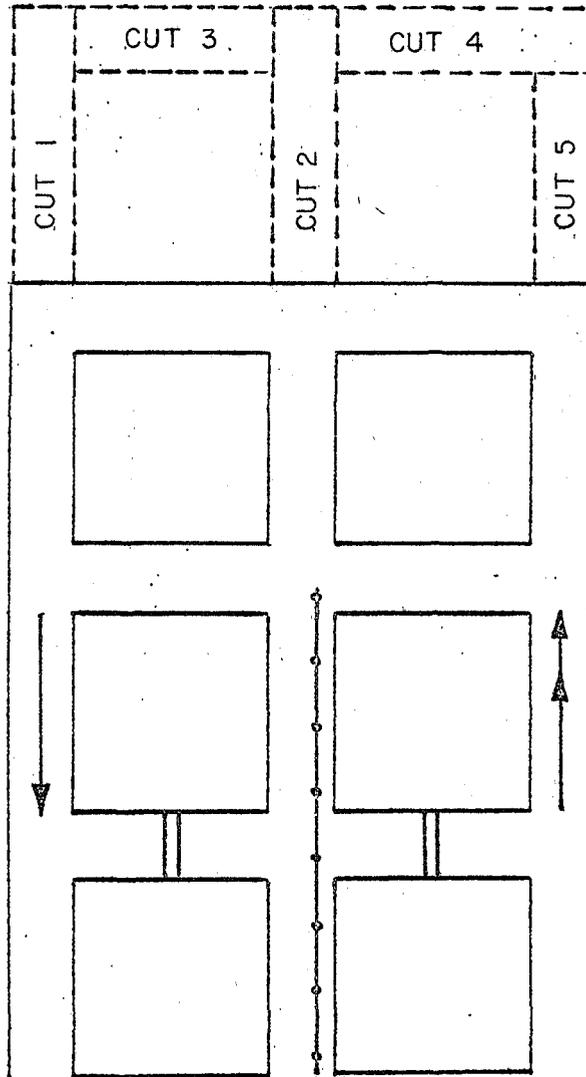
Pinnacle Mine
USBM# 42-01474

Scale 1"=20'

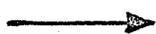
- Timber with capping
- intake air
- Return air
- Brattice

CUT SEQUENCE
3 ENTRY SYSTEM

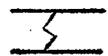
TOWER RESOURCES, INC.
PINNACLE MINE
USBM # 42-01474



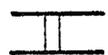
INTAKE



RETURN



CHECK CURTAIN



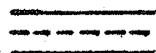
STOPPING



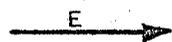
TRAVEL CURTAIN



CONVEYOR BELT



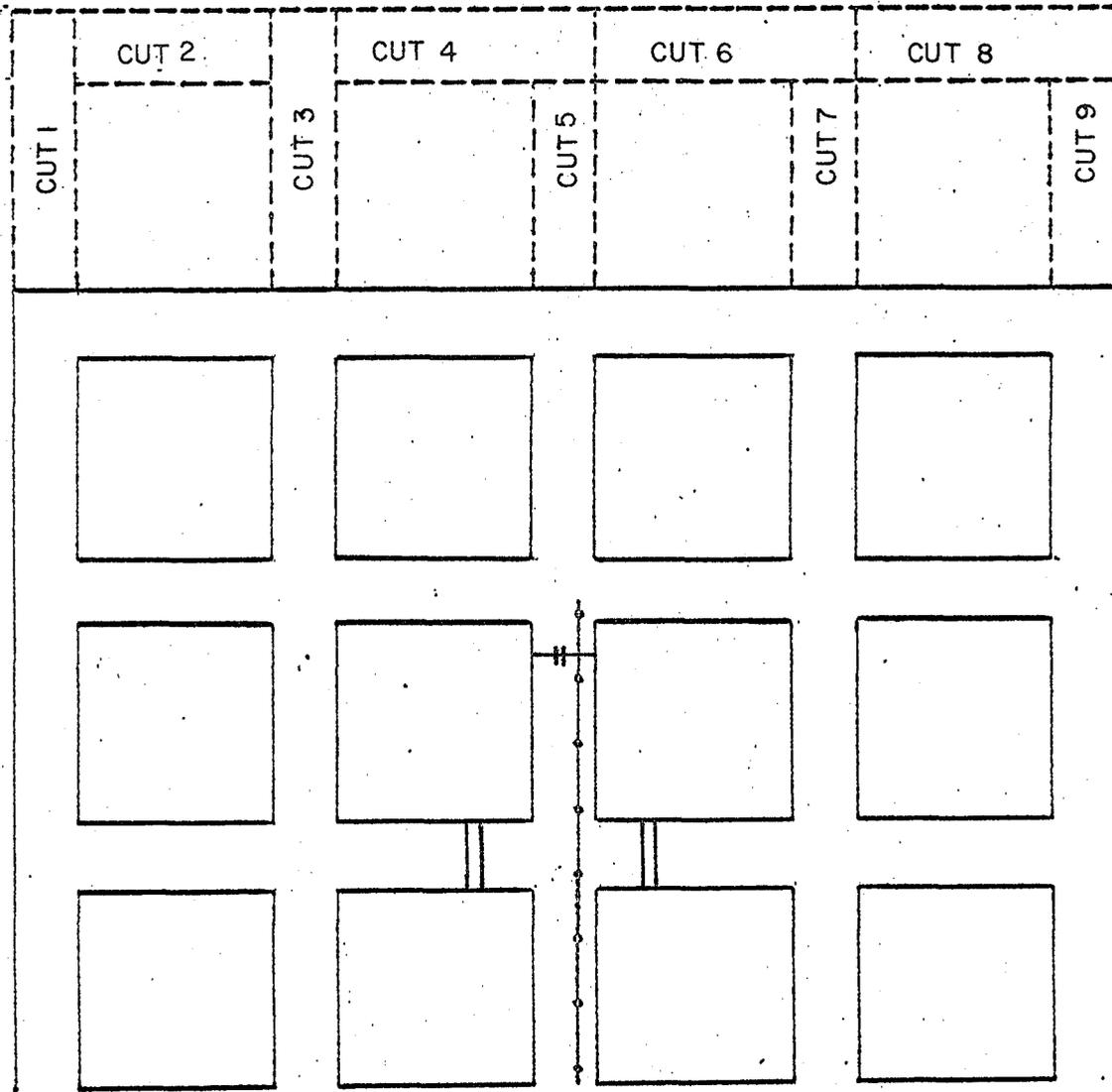
LINE CURTAIN



ESCAPEWAY

CUT SEQUENCE
5 ENTRY SYSTEM

TOWER RESOURCES, INC.
PINNACLE MINE
USBM #42-01474



- | | | | |
|--|---------------|--|----------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | LINE CURTAIN |
| | STOPPING | | ESCAPEWAY |

SAFETY PRECAUTIONS FOR CONVENTIONAL PLANS

1. This is the minimum roof control plan and was formulated for normal roof conditions while using the mining system(s) described. In areas where subnormal roof conditions are encountered, indicated or anticipated, the operator shall provide additional support where necessary. If changes are to be made in the mining system that necessitates any change in the roof control plan, the plan shall be revised and approved prior to implementing the new mining system.
2. All personnel required to install roof supports shall be trained by a qualified supervisor designated by mine management before being assigned to perform such work. This training shall insure that such persons are familiar with the functions of the support being used, proper installation procedures, and the approved roof control plan. Supervisors in charge and miners who install supports shall be informed of an approved roof control plan and any change in a previously approved roof control plan no later than their first working shift following receipt of the approved plan. As soon as possible, but not later than three weeks after receipt of this approved plan, all provisions contained herein shall be fully explained to all miners whose duties require them to be on a "working section". All new members shall have the hazards of mine roof and ribs and the content of this plan explained to them before they start to work.
3. (a) Where required, temporary support shall be installed immediately after the loading cycle is completed.
 - (i) Except when the District Manager has determined that more than 5 minutes are needed, "immediately" is interpreted to mean that the installation of such temporary supports shall be started not later than 5 minutes after mining of the cut started, the installation of supports shall be continued until at least the minimum number are installed as required in the approved plan.
 - (b) Only those persons engaged in installing temporary supports shall be allowed to proceed beyond the last row of permanent supports

until temporary supports are installed. Before any person proceeds inby permanently supported roof, a thorough visual examination of the unsupported roof and ribs shall be made. If the visual examination does not disclose any hazardous condition, persons proceeding inby permanent supports for the purpose of testing the roof by the sound and vibration method and installing supports shall do so with caution and shall be within 5 feet of a temporary or permanent support. If hazardous conditions are detected, corrective action shall be taken to give adequate protection to the workmen in the area involved.

4. Work such as extending line curtains, other ventilating devices or making methane tests inby the permanent supports shall not be done unless a minimum of two temporary supports is installed. The minimum is applicable only if they are within 5 feet of the face or rib and the work is done between such supports and the nearest face or rib. Other methods of providing temporary supports for this work will be accepted if equivalent protection is provided.
5. (a) Where loose material is being taken down, a minimum of two temporary supports on not more than 5-foot centers shall be installed between the workmen and the material being taken down unless such work can be done from an area supported adequately by permanent roof supports.

(b) To enable miners to perform their duties from a safe position without exposure to falling material, a bar of suitable length and design shall be provided on all mobile face-equipment, except haulage equipment, and such bar shall be used when prying down loose material. (The length of bar shall be suitable for the area involved in its use, i.e., construction areas, roof falls, and other mining areas require a bar of suitable length.)
6. All metal jacks shall be installed with a cap block between the jack and the roof unless an oversize bearing plate of not less than 36 square inches is provided.
7. The roof in the face of an entry or room shall be supported according to the approved plan before any side cuts are started.

8. All posts installed under roof that is cracked, broken or susceptible to sloughing shall have a wooden cap block, plank, or crossbar between the post and the roof. Where crossbars or planks are installed, they shall be blocked to equally distribute the load across their length.
9. A supply of suitable roof support material, including temporary supports, sufficient to support the roof during one complete cycle of mining shall be provided as close as practicable to each working face.
10. Posts shall be installed tight and on solid footing. Not more than two wooden wedges shall be used to install a post.
11. An additional supply of supplementary roof support material shall be provided at the dumping point or within 500 feet of the faces, whichever is closer. Such supplementary support shall consist of at least 20 posts of proper length with sufficient cap pieces and wedges and a minimum of two crossbars for each active place or at least six per section. Where spot roof bolting has been incorporated in the roof control plan, at least 50 roof bolts of the approved length or longer shall be provided and such roof bolts may be used in lieu of the crossbars. If such bolts are used, the approved spot bolting plan shall be compiled with. Tools and equipment necessary to install such supports shall be available within the above specified distance.
12. A suitable roof sounding device shall be provided with all mobile face equipment, except haulage equipment. If face workmen who are not operators or helpers on such equipment do not carry a roof sounding device, such device shall be available within 50 feet of their working area.
13. When an opening is no longer needed for storing of supplies or for travel of equipment, the roof at the entrance of all such openings along travelways shall be supported by extending the post line across the opening.
14. (a) Where roof falls have occurred and at all overcasts, boom holes, and other construction sites that require removal of mine roof material, (e.g., by blasting, by ripping with a continuous mining machine, by cutting with a cutting machine, or any other mean), the roof shall be considered unsupported. If miners are required to enter such areas, either to travel over the fallen material, to

clean it up, or to perform other duties, the roof shall be supported adequately. Mine management shall devise and have posted in writing at the scene of such unsupported roof a plan incorporating the following procedures:

- (i) Such work shall be under the direct and, unless the miners are specially trained to do such work, constant supervision of a certified person.
 - (ii) Adequate temporary support on not more than 5-foot centers should be set at the edge of the fall where work is to be started. A minimum of four posts or jacks shall be used.
 - (iii) Temporary support mentioned above shall be replaced by permanent supports and advanced as cleanup work progresses.
 - (iv) Installation of supports shall proceed from permanently supported roof to the temporary supports before other work is performed and the roof supports shall be advanced as cleanup work progresses.
 - (v) Where necessary to load material before support can be set, such loading shall be done from areas of permanent support with the operator and other persons in the area under supported roof at all times.
 - (vi) Where feasible, permanent supports shall be placed in the entire fall area before loading starts.
- (b) All roof falls in active working areas and other areas of unsupported roof that are not being cleaned up shall be posted off at each entrance to the fall and unsupported areas by at least two rows of posts (or the equivalent) installed on not more than 5-foot centers across the opening.

15. During development, except where old workings are involved, mine openings shall not be holed through into unsupported areas. When a mine opening holes through into a permanently supported entry, room, or crosscut, the intersection so created shall be considered unsupported and no work shall be done in or inby such intersection until either:

- (a) The newly created opening is permanently supported as indicated in the approved roof control plan, or:

(b) The newly created opening is timbered off with at least two rows of posts installed on no more than 4-foot centers across the opening.

16. Permanent roof supports shall not be recovered unless the operator has included a detailed system for such recovery in the approved roof control plan.

NOTE: Part 80, Title 30, Code of Federal Regulations, provides that all unintentional roof falls described therein shall be investigated and the results of the investigation shall be maintained in accordance with Section 80.23, 30 CFR, Part 80. Such falls shall also be shown on a map of the mine. Failure to do so will be a violation of Part 80.

SAFETY PRECAUTIONS FOR SPOT BOLTING

1. Spot roof bolting shall be used only as a supplement to the approved roof control plan.
2. In addition to permanent posts, at least two (four at intersections) temporary supports on not more than 5-foot centers shall be installed before roof bolts are installed at spot locations. (Each plan should indicate the location of such temporary supports).
3. Roof bolts (spot bolting) shall be installed in accordance with roof conditions, but in no case shall spacing exceed 4-foot lengthwise and crosswise. Where roof bolts are installed at spot locations, roof bolting shall begin under safe roof and continue for the length of the adverse roof condition until safe roof is again encountered.
4. An approved calibrated torque wrench that will indicate the actual torque on the roof bolts by a direct reading shall be provided on each roof bolting machine in operation.
5. Immediately after the first bolt is installed in each place, the torque shall be tested and thereafter at least one roof bolt out of every four shall be tested by a qualified person. If any of the bolts tested do not fall within the required range, the remaining previously installed bolts on this cycle should be tested.

If the majority of the bolts still fall outside the required torque range, necessary adjustments shall be made immediately. If, after these adjustments are made, the required torque ranges are still not obtained, supplementary supports such as different length roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

6. When roof bolts (spot bolting) are installed in by the outby corner of the last open crosscut, a spot-check on torques shall be made during each 24-hour period on at least one out of every ten roof bolts installed in such area. Such torque checks are necessary only on advancing sections in working places producing coal during any portion of the aforementioned 24-hour period.

The results of these tests shall be recorded in the onshift examination book. The record should show the number of bolts tested and number above and below the required range.

If the results show that the majority of the bolts are not maintaining at least ** 105 foot-pounds of torque or have loaded up to where

* 75

they exceed 375 foot-pounds of torque, supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

7. Devices such as spherical washers, angle washers, or slotted wood wedges, shall be used to compensate for the angle when roof bolts are installed at angles greater than 5° from the perpendicular to the roof line.
8. All roof bolt materials shall be stored and handled in such a manner that will minimize rusting and/or damaging.
9. At locations where roof bolts are installed (spot bolting), the first roof bolt hole shall be drilled to a depth of at least 12 inches above the anchorage horizon of the bolts intended for use to determine the nature of the strata. If the area to be bolted exceeds 100 feet, additional test holes shall be drilled at intervals not to exceed 50 feet.

** Plates used directly against roof.

* Plates used against wood.

SAFETY PRECAUTIONS FOR RESIN GROUTED RODS

1. Persons responsible for installation of resins shall be instructed in safe handling precautions for such materials.
2. The relationship between the hole dimensions, rod size, and the size and number of resin cartridges is critical; therefore, adequate training and supervision shall be provided to assure proper installation.
3. All safety precautions required in the regular roof control plan shall apply--except Nos. 5, 6, & 9. (The torque checks specified for conventional roof bolts do not apply.)
4. Resin grouted rods shall be installed as soon as possible (to be determined on a mine-to-mine basis--normally not more than 8 hours) after the working place is exposed. Where required, temporary supports shall be installed immediately after the loading cycle is completed unless roof bolting machines are equipped with acceptable automated supports.
 - (a) Except when the District Manager has determined that more than 5 minutes are needed, "immediately" is interpreted to mean that the installation of such temporary supports shall be started not later than 5 minutes after mining of the cut is completed and, after the installation of such supports is started, the installation of supports shall be continued until at least the minimum number are installed as required in the approved plan.
5. Resin grouted rods and conventional roof bolts shall not be intermixed unless they are either used as supplementary support or a systematic plan has been approved by the District Manager for combining the two roof support systems.
6. Drill steel shall be equivalent in length to the rods used or adequately marked to assure the proper hole depth. Each drill hole shall be filled the entire length with resin.
7.
 - (a) All resin grouted rods shall be used with bearing plates approved for use at the mine.
 - (b) Bearing plates shall be installed tight against the mine roof.

8. (a) The resin shall not be used if manufacturer's recommended shelf life is exceeded.
(b) Resin packages shall be protected from excessive heat and cold during storage, and shall not be used in areas where the ambient temperature falls outside the range recommended by the manufacturer.
(c) Broken cartridges of resin or cartridges that show signs of deterioration shall be removed from the underground portion of the mine.
(d) Resin grouted rods shall be installed in accordance with the manufacturer's recommendations.
9. For test purposes the first resin grouted rods installed in each cycle in each working place, after a minimum curing time of 10 minutes, shall be checked with a torque wrench after installing the first line of permanent support and prior to removing any temporary supports. The torque applied should be 150-foot pounds. Should the rod turn in the hole, a second rod shall be tested in the same manner. If this rod also turns, resin installation shall be discontinued until reasons for failure of the resin is determined. (a click type torque wrench is recommended for this test.)

SAFETY PRECAUTIONS--SPECIAL ROOF CONTROL PLAN

Because the number of mines having a special roof control plan is minimal and the latitude of variation in requirements peculiar to special roof control plans is so great, it is believed that safety precautions to be included in such plans shall be formulated on a mine-to-mine basis.

U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225

4-17-80



Coal Mine Safety and Health
District 9

April 11, 1980

Samuel C. Quigley
Western Project Manager
Tower Resources, Incorporated
P. O. Box 1027
Price, Utah 84501

Re: Pinnacle Mine
I. D. No. 42-01474
Roof Control Plan

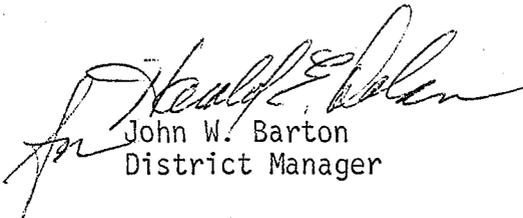
Dear Mr. Quigley:

The roof control plan submitted March 25, 1980, cannot be approved for the following reason:

Full overhead support system (i.e., full roof bolting, cross collars, truss on 4 or 5 foot centers, or any other acceptable method) with limited mining cycles of 20 feet and no person can proceed beyond the last permanent roof support, except only to install temporary supports, will be required until after the mine has penetrated a distance for which the prevailing conditions may be adequately evaluated by an authorized MSHA representative.

If assistance is needed to formulate an acceptable plan, please contact John Steve Miller in the Denver District Office, phone (303) 234-6298.

Sincerely,


John W. Barton
District Manager

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

March 25, 1980

Mr. John Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Co. 80225

RE: Pinnacle Mine
I.D. No. 42-01474
Roof Control Plan

Dear Mr. Barton,

Enclosed is the revised Roof Control Plan for the Pinnacle Mine. I have revised this plan according to the specifications of a minimum bolt length of 48 inches as stated in your letter of Oct. 24, 1978. Also the company name has been changed, to Tower Resources as previously explained.

Sincerely,


Samuel C. Quigley
Western Project Manager

Enclosures

SCQ/lm



POST A COPY OF THIS PLAN NEAR EACH PORTAL WHERE WORKERS ENTER THE MINE IN SUCH A MANNER THAT SAID PLAN WILL BE AVAILABLE TO THE MINE WORKERS.

ROOF CONTROL PLAN

General Information

Date: 7/26/78 Mine I.D. No. 42-01474

A. Company: Tower Resources, Inc.

Address: P. O. Box 1027 Price Utah 84501
City State Zip

B. Mine: Pinnacle Mine

Mine Location:

Price Carbon Utah
City County State

C. Location (reference to nearest highway route, direction, and distance)

6.2 Miles North Off Route No. 6 & 50

D. Type(s) of Plan: Conventional Roof Control with spot bolting supplement.

E. Area(s) of mine covered by the plan entire mine

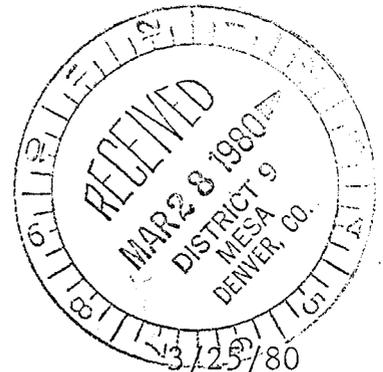
F. Maximum Cover: 2500 Feet

Main Roof Sandstone & Siltstone interbedded

Immediate Roof Sandstone

Coal Bed Gilson Seam 6' 7"

Bottom Siltstone & Sandstone



G. Samuel C. Dudley Manager 3/25/80
Company Official's Signature Title Date

Roof Control Investigator _____
The Roof Control Plan approved this date hereby supersedes all previously approved plans.

Approved by _____

Title _____

ROOF SUPPORT MATERIALS - All components of the roof bolt assembly shall comply with the American National Standards Institute "Specifications for Roof Bolting Materials in Coal Mines".

H. ROOF BOLTS
Manufacturer CF&I Corp, Armco Steel Corp, Mikco Industries, - Bethlehem Steel or equivalent. Manufacturer's Designation R-1
N/A
CP-2103-80 DET CP-519-8 DET
Minimum Length 48" Diameter 3/4" or 5/8"
Type Steel Extra high strength - 5/8" High Strength - 3/4" Type Thread Rolled or cut
Length of Thread 4" minimum Type Head Standard
Dimensions of Bolt Head: Nut 1/8" Flange 1 3/4"

I. BEARING PLATES
Manufacturer Mikco Industries, CF&I Steel, Armco Steel or equivalent Manufacturer's Designation
Dimensions 6" x 6" x 1/4"
18" x 6" x 1/4"
Shape: Square or rectangular embossed, double-embossed or flat. Center Hole 11/16" to 13/16"
Size: 1" for resin bolts

J. WASHERS
Manufacturer Kaiser Steel Manufacturer's Designation
*Type Steel Hardened Size 2" OD
*Washers shall be through hardened to a hardness of 35 to 45 as measured on the Rockwell C Scale.
Shape Round - flat Hole Size 13/16"

K. ANCHORAGE UNIT
Manufacturer Ohio Brass, Pattin D, Bethlehem or equivalent Manufacturer's Designation 22378
Type Expansion Size Finishing Bit 1 3/8" ± .030
(Finishing bits shall be easily identifiable by sight or feel)
Installed Torque 3/4"=150-250 ft lbs, 5/8"=150 to 240 ft lbs
WHW 3/4"-125 to 170 ft lbs, WHW 5/8"= 125 to 165 ft lbs.

L. MATERIALS USED IN CONJUNCTION WITH ROOF BOLTS
Cottonwood blocks 2" x 6" x 12" minimum
Roof Mats - 16 gauge minimum
Prior approval shall be obtained before making any changes in the materials listed.

Dimensions of Post--The length of post shall be as required. The diameter must be at least 1 inch for each 15 inches in length but not less than 4 inches--Split posts shall have a cross-sectional area equal to that required for round posts of equivalent length. Smaller posts may be used provided they are set in clusters to provide equivalent support.

Type of Post--Round or split of solid straight grain wood with the ends sawed square and free from defects which would affect their strength.

*Cap blocks, size, and shape--Cap Blocks and footers shall have flat paralleled sides and be not less than 2" x 6" x 12" in size. (insert minimum)

Wedges, size and shape-- 3½" wide x 10" long x 1" thick, tapered.

*Crossbars, type and size--Crossbars shall be of straight grain solid wood and they shall be not less than 3-inches thick by 8-inches wide of varying length.

*Planks, size-- A minimum of 1-inch thick by 8-inches wide of varying length.

Cribbing blocks, size and shape--Cribbing blocks shall have flat paralleled sides and be not less than 30-inches in length.

*Note: Where wood material is used between roof bolt bearing plates and the roof for additional bearing surface, the use shall be limited to short life openings (not to exceed 3 years) unless treated.

ROOF SUPPORT MATERIALS FOR RESIN GROUTED RODS

RODS

Manufacturer Mikco Industries, Manufacturer's
Bethlehem Steel, Designation M-6
Birmingham or ap-
proved equivalent

Minimum Length 36" Diameter 3/4"

Type Steel ASTM 8615 Type Head Hex or square
Grade 40 rebar

Dimensions of Rod: Head 1-1/8" Flange 2"

BEARING PLATES

Dimensions 6" x 6" x 1/4"
18" x 6" x 1/4"

Shape Square Center Hole Size 1"

RESIN

Manufacturer Dupont, Faslock, Manufacturer's
Celtite, Carbolay or Designation _____
any approved equiv-
alent

Type Resin Size of
Finishing Bit 1" ± .030

Prior approval shall be obtained before making any changes in the materials listed.

N. FACE EQUIPMENT AND SECTION HAULAGE EQUIPMENT ASSOCIATED WITH EACH:

1. Lee Norse or Joy Continuous Miners
2. Long Airdox or Lee Norse roof drills - Rotary - Percussion
3. Joy shuttle cars
4. Eimco or Wagner diesel scoop trams or teletrams
5. Diesel support equipment - tractors - John Deere, Kabota

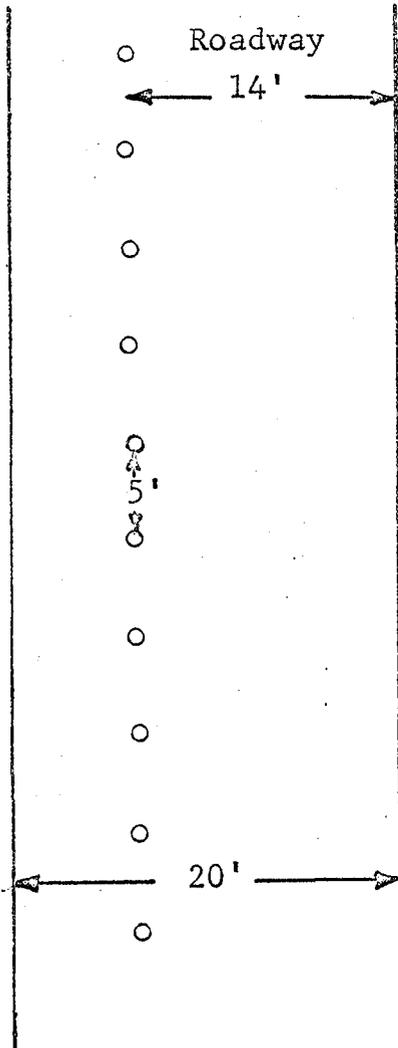
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Drawings shall be attached showing the maximum width of entries, rooms, inter-sections, crosscuts, and (if applicable) pillar splits; the sequence of support installation--including temporary supports; the spacing of supports; and where applicable the sequence of mining pillars, including cut sequence in those pillars necessary to establish a uniform pillar line that eliminates pillar points and pillars that project inby the breakline.

SIGHT LINES SHALL BE ESTABLISHED TO ASSURE THAT MINING PROJECTIONS IN ENTRIES, ROOMS, CROSSCUTS, AND PILLAR SPLITS ARE FOLLOWED.

Entry Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Crosscut Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Room Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Room Crosscut Width	<u>20 feet</u>	Centers	<u>120 feet</u>
Slope Width (anthracite)	<u></u>		
Gangway Width (anthracite)	<u></u>		

Conventional Roof Control Plan



○ Timber with Cappiece

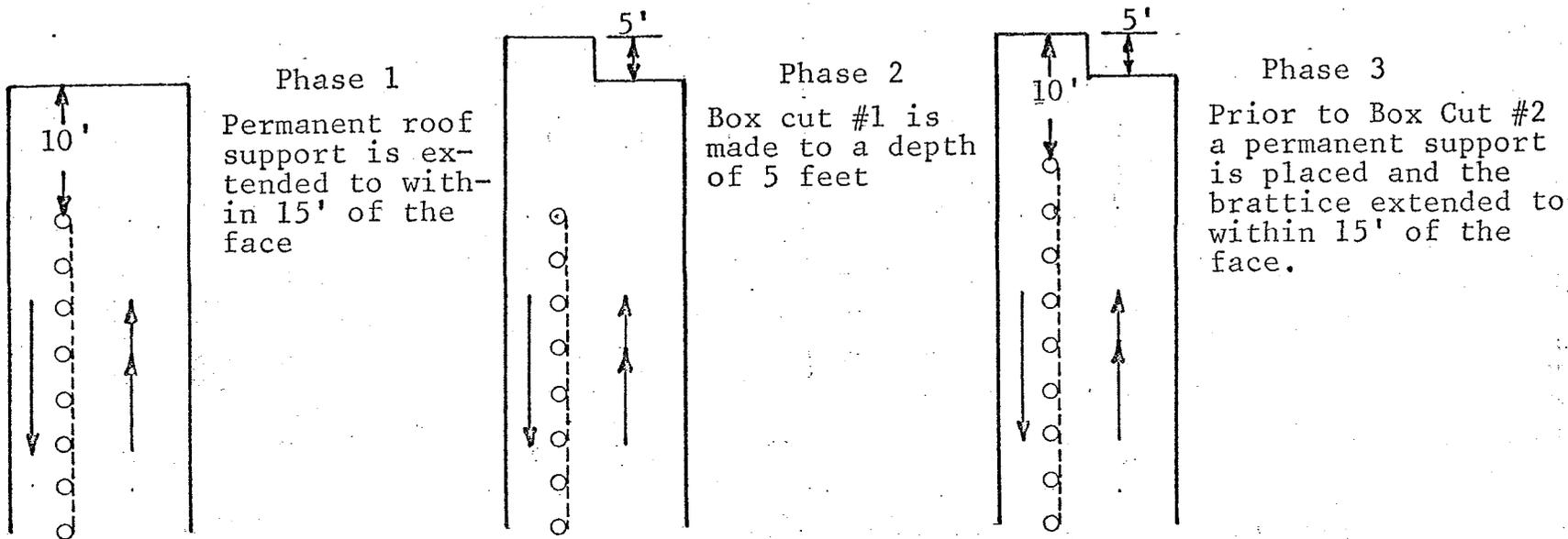
Note: Roadway may be shifted to opposite side to accomodate either equipment move or ventilation.

Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

Procedure for the Installation
of
Permanent Roof Support



Phase 1
Permanent roof support is extended to within 15' of the face

Phase 2
Box cut #1 is made to a depth of 5 feet

Phase 3
Prior to Box Cut #2 a permanent support is placed and the brattice extended to within 15' of the face.

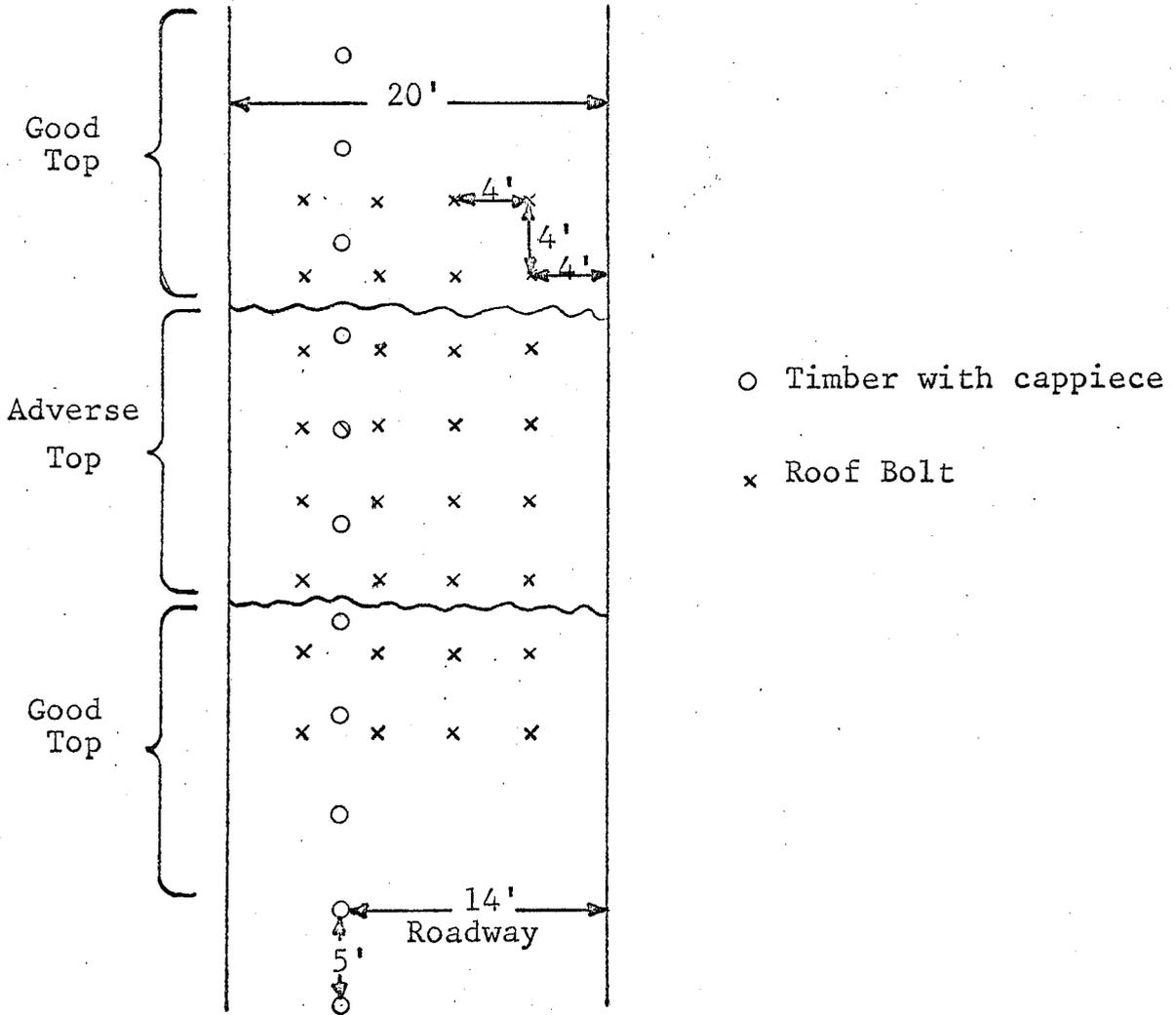
Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=20'

- Timber with capping
- intake air
- Return air
- Brattice

Spot Bolting Plan

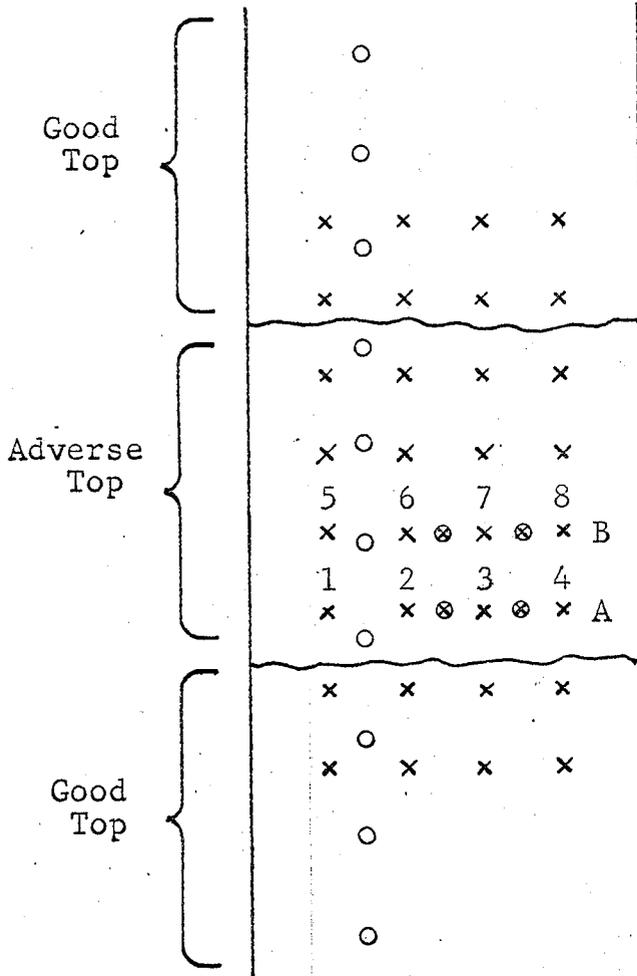


Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

Spot Bolting Plan
Temporary Support Procedure



1. Two temporary supports will be installed within five feet of a permanent post and on centers of five feet or less.

2. The roof bolts 1,2,3, & 4 will be installed.

3. After bolt 4 is installed the temporary supports will be advanced to position B and bolts 5 through 8 will be installed.

4. This procedure will continue until the area has been secured.

Roof Bolt

Timber with Cappiece

Temporary support

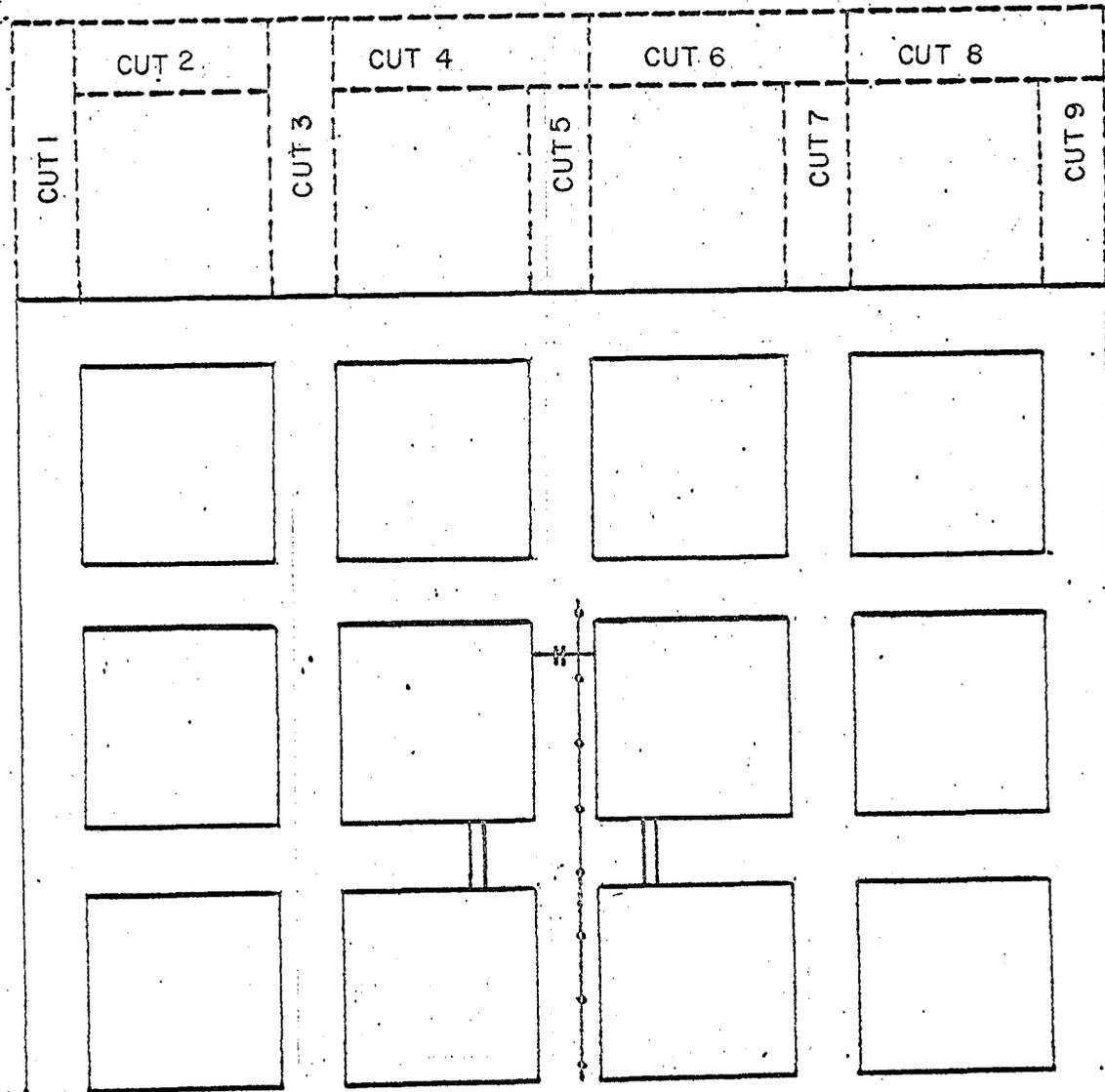
Tower Resources, Inc.

Pinnacle Mine
USBM# 42-01474

Scale 1"=10'

CUT SEQUENCE
5 ENTRY SYSTEM

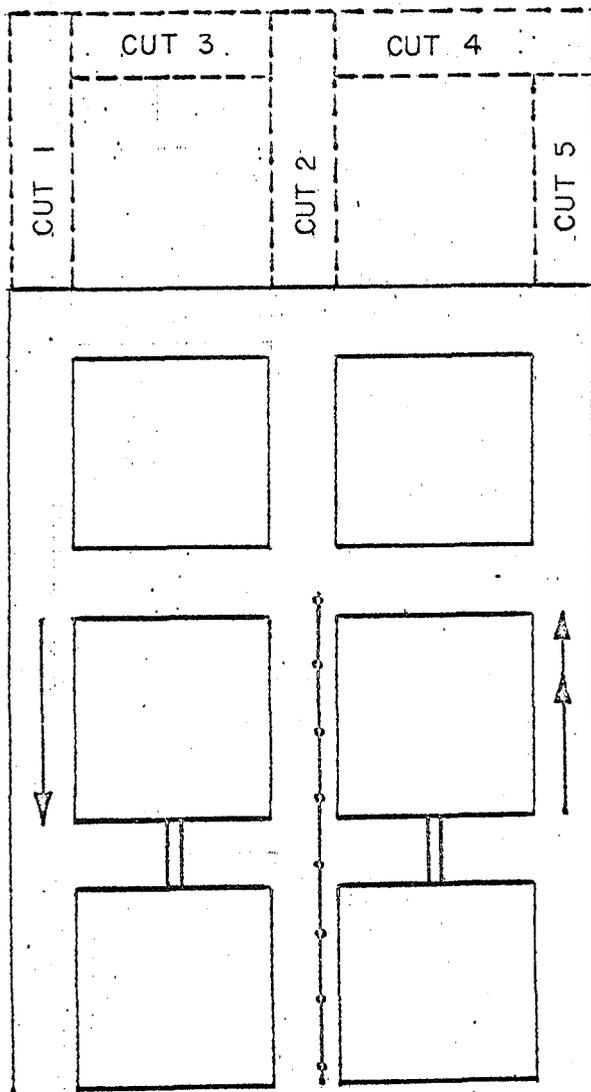
TOWER RESOURCES, INC.
PINNACLE MINE
USBM #42-01474



- | | | | |
|--|---------------|--|----------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | LINE CURTAIN |
| | STOPPING | | ESCAPEWAY |

CUT SEQUENCE
3 ENTRY SYSTEM

TOWER RESOURCES, INC.
PINNACLE MINE
USBM # 42-01474



- | | | | |
|--|---------------|--|----------------|
| | INTAKE | | TRAVEL CURTAIN |
| | RETURN | | CONVEYOR BELT |
| | CHECK CURTAIN | | LINE CURTAIN |
| | STOPPING | | ESCAPEWAY |

SAFETY PRECAUTIONS FOR CONVENTIONAL PLANS

1. This is the minimum roof control plan and was formulated for normal roof conditions while using the mining system(s) described. In areas where subnormal roof conditions are encountered, indicated or anticipated, the operator shall provide additional support where necessary. If changes are to be made in the mining system that necessitates any change in the roof control plan, the plan shall be revised and approved prior to implementing the new mining system.
2. All personnel required to install roof supports shall be trained by a qualified supervisor designated by mine management before being assigned to perform such work. This training shall insure that such persons are familiar with the functions of the support being used, proper installation procedures, and the approved roof control plan. Supervisors in charge and miners who install supports shall be informed of an approved roof control plan and any change in a previously approved roof control plan no later than their first working shift following receipt of the approved plan. As soon as possible, but not later than three weeks after receipt of this approved plan, all provisions contained herein shall be fully explained to all miners whose duties require them to be on a "working section". All new members shall have the hazards of mine roof and ribs and the content of this plan explained to them before they start to work.
3. (a) Where required, temporary support shall be installed immediately after the loading cycle is completed.
 - (i) Except when the District Manager has determined that more than 5 minutes are needed, "immediately" is interpreted to mean that the installation of such temporary supports shall be started not later than 5 minutes after mining of the cut started, the installation of supports shall be continued until at least the minimum number are installed as required in the approved plan.
 - (b) Only those persons engaged in installing temporary supports shall be allowed to proceed beyond the last row of permanent supports

until temporary supports are installed. Before any person proceeds inby permanently supported roof, a thorough visual examination of the unsupported roof and ribs shall be made. If the visual examination does not disclose any hazardous condition, persons proceeding inby permanent supports for the purpose of testing the roof by the sound and vibration method and installing supports shall do so with caution and shall be within 5 feet of a temporary or permanent support. If hazardous conditions are detected, corrective action shall be taken to give adequate protection to the workmen in the area involved.

4. Work such as extending line curtains, other ventilating devices or making methane tests inby the permanent supports shall not be done unless a minimum of two temporary supports is installed. The minimum is applicable only if they are within 5 feet of the face or rib and the work is done between such supports and the nearest face or rib. Other methods of providing temporary supports for this work will be accepted if equivalent protection is provided.
5. (a) Where loose material is being taken down, a minimum of two temporary supports on not more than 5-foot centers shall be installed between the workmen and the material being taken down unless such work can be done from an area supported adequately by permanent roof supports.

(b) To enable miners to perform their duties from a safe position without exposure to falling material, a bar of suitable length and design shall be provided on all mobile face-equipment, except haulage equipment, and such bar shall be used when prying down loose material. (The length of bar shall be suitable for the area involved in its use, i.e., construction areas, roof falls, and other mining areas require a bar of suitable length.)
6. All metal jacks shall be installed with a cap block between the jack and the roof unless an oversize bearing plate of not less than 36 square inches is provided.
7. The roof in the face of an entry or room shall be supported according to the approved plan before any side cuts are started.

- 8.. All posts installed under roof that is cracked, broken or susceptible to sloughing shall have a wooden cap block, plank, or crossbar between the post and the roof. Where crossbars or planks are installed, they shall be blocked to equally distribute the load across their length.
9. A supply of suitable roof support material, including temporary supports, sufficient to support the roof during one complete cycle of mining shall be provided as close as practicable to each working face.
10. Posts shall be installed tight and on solid footing. Not more than two wooden wedges shall be used to install a post.
11. An additional supply of supplementary roof support material shall be provided at the dumping point or within 500 feet of the faces, whichever is closer. Such supplementary support shall consist of at least 20 posts of proper length with sufficient cap pieces and wedges and a minimum of two crossbars for each active place or at least six per section. Where spot roof bolting has been incorporated in the roof control plan, at least 50 roof bolts of the approved length or longer shall be provided and such roof bolts may be used in lieu of the crossbars. If such bolts are used, the approved spot bolting plan shall be compiled with. Tools and equipment necessary to install such supports shall be available within the above specified distance.
12. A suitable roof sounding device shall be provided with all mobile face equipment, except haulage equipment. If face workmen who are not operators or helpers on such equipment do not carry a roof sounding device, such device shall be available within 50 feet of their working area.
- 13.. When an opening is no longer needed for storing of supplies or for travel of equipment, the roof at the entrance of all such openings along travelways shall be supported by extending the post line across the opening.
- 14.. (a) Where roof falls have occurred and at all overcasts, boom holes, and other construction sites that require removal of mine roof material, (e.g., by blasting, by ripping with a continuous mining machine, by cutting with a cutting machine, or any other mean), the roof shall be considered unsupported. If miners are required to enter such areas, either to travel over the fallen material, to

clean it up, or to perform other duties, the roof shall be supported adequately. Mine management shall devise and have posted in writing at the scene of such unsupported roof a plan incorporating the following procedures:

- (i) Such work shall be under the direct and, unless the miners are specially trained to do such work, constant supervision of a certified person.
 - (ii) Adequate temporary support on not more than 5-foot centers should be set at the edge of the fall where work is to be started. A minimum of four posts or jacks shall be used.
 - (iii) Temporary support mentioned above shall be replaced by permanent supports and advanced as cleanup work progresses.
 - (iv) Installation of supports shall proceed from permanently supported roof to the temporary supports before other work is performed and the roof supports shall be advanced as cleanup work progresses.
 - (v) Where necessary to load material before support can be set, such loading shall be done from areas of permanent support with the operator and other persons in the area under supported roof at all times.
 - (vi) Where feasible, permanent supports shall be placed in the entire fall area before loading starts.
- (b) All roof falls in active working areas and other areas of unsupported roof that are not being cleaned up shall be posted off at each entrance to the fall and unsupported areas by at least two rows of posts (or the equivalent) installed on not more than 5-foot centers across the opening.

15. During development, except where old workings are involved, mine openings shall not be holed through into unsupported areas. When a mine opening holes through into a permanently supported entry, room, or crosscut, the intersection so created shall be considered unsupported and no work shall be done in or inby such intersection until either:

- (a) The newly created opening is permanently supported as indicated in the approved roof control plan, or:

(b) The newly created opening is timbered off with at least two rows of posts installed on no more than 4-foot centers across the opening.

16. Permanent roof supports shall not be recovered unless the operator has included a detailed system for such recovery in the approved roof control plan.

NOTE: Part 80, Title 30, Code of Federal Regulations, provides that all unintentional roof falls described therein shall be investigated and the results of the investigation shall be maintained in accordance with Section 80.23, 30 CFR, Part 80. Such falls shall also be shown on a map of the mine. Failure to do so will be a violation of Part 80.

SAFETY PRECAUTIONS FOR SPOT BOLTING

1. Spot roof bolting shall be used only as a supplement to the approved roof control plan.
2. In addition to permanent posts, at least two (four at intersections) temporary supports on not more than 5-foot centers shall be installed before roof bolts are installed at spot locations. (Each plan should indicate the location of such temporary supports).
3. Roof bolts (spot bolting) shall be installed in accordance with roof conditions, but in no case shall spacing exceed 4-foot lengthwise and crosswise. Where roof bolts are installed at spot locations, roof bolting shall begin under safe roof and continue for the length of the adverse roof condition until safe roof is again encountered.
4. An approved calibrated torque wrench that will indicate the actual torque on the roof bolts by a direct reading shall be provided on each roof bolting machine in operation.
5. Immediately after the first bolt is installed in each place, the torque shall be tested and thereafter at least one roof bolt out of every four shall be tested by a qualified person. If any of the bolts tested do not fall within the required range, the remaining previously installed bolts on this cycle should be tested.

If the majority of the bolts still fall outside the required torque range, necessary adjustments shall be made immediately. If, after these adjustments are made, the required torque ranges are still not obtained, supplementary supports such as different length roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

6. When roof bolts (spot bolting) are installed in by the outby corner of the last open crosscut, a spot-check on torques shall be made during each 24-hour period on at least one out of every ten roof bolts installed in such area. Such torque checks are necessary only on advancing sections in working places producing coal during any portion of the aforementioned 24-hour period.

The results of these tests shall be recorded in the onshift examination book. The record should show the number of bolts tested and number above and below the required range.

If the results show that the majority of the bolts are not maintaining at least ** 105 foot-pounds of torque or have loaded up to where

* 75

they exceed 375 foot-pounds of torque, supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

7. Devices such as spherical washers, angle washers, or slotted wood wedges, shall be used to compensate for the angle when roof bolts are installed at angles greater than 5° from the perpendicular to the roof line.
8. All roof bolt materials shall be stored and handled in such a manner that will minimize rusting and/or damaging.
9. At locations where roof bolts are installed (spot bolting), the first roof bolt hole shall be drilled to a depth of at least 12 inches above the anchorage horizon of the bolts intended for use to determine the nature of the strata. If the area to be bolted exceeds 100 feet, additional test holes shall be drilled at intervals not to exceed 50 feet.

** Plates used directly against roof.

* Plates used against wood.

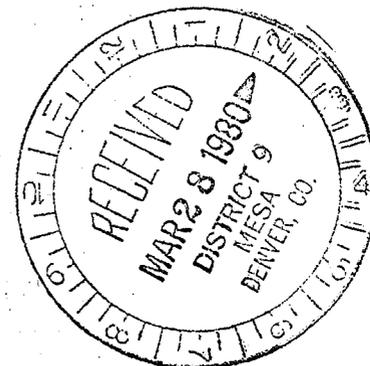
SAFETY PRECAUTIONS FOR RESIN GROUTED RODS

1. Persons responsible for installation of resins shall be instructed in safe handling precautions for such materials.
2. The relationship between the hole dimensions, rod size, and the size and number of resin cartridges is critical; therefore, adequate training and supervision shall be provided to assure proper installation.
3. All safety precautions required in the regular roof control plan shall apply--except Nos. 5, 6, & 9. (The torque checks specified for conventional roof bolts do not apply.)
4. Resin grouted rods shall be installed as soon as possible (to be determined on a mine-to-mine basis--normally not more than 8 hours) after the working place is exposed. Where required, temporary supports shall be installed immediately after the loading cycle is completed unless roof bolting machines are equipped with acceptable automated supports.
 - (a) Except when the District Manager has determined that more than 5 minutes are needed, "immediately" is interpreted to mean that the installation of such temporary supports shall be started not later than 5 minutes after mining of the cut is completed and, after the installation of such supports is started, the installation of supports shall be continued until at least the minimum number are installed as required in the approved plan.
5. Resin grouted rods and conventional roof bolts shall not be intermixed unless they are either used as supplementary support or a systematic plan has been approved by the District Manager for combining the two roof support systems.
6. Drill steel shall be equivalent in length to the rods used or adequately marked to assure the proper hole depth. Each drill hole shall be filled the entire length with resin.
7.
 - (a) All resin grouted rods shall be used with bearing plates approved for use at the mine.
 - (b) Bearing plates shall be installed tight against the mine roof.

8. (a) The resin shall not be used if manufacturer's recommended shelf life is exceeded.
- (b) Resin packages shall be protected from excessive heat and cold during storage, and shall not be used in areas where the ambient temperature falls outside the range recommended by the manufacturer.
- (c) Broken cartridges of resin or cartridges that show signs of deterioration shall be removed from the underground portion of the mine.
- (d) Resin grouted rods shall be installed in accordance with the manufacturer's recommendations.
9. For test purposes the first resin grouted rods installed in each cycle in each working place, after a minimum curing time of 10 minutes, shall be checked with a torque wrench after installing the first line of permanent support and prior to removing any temporary supports. The torque applied should be 150-foot pounds. Should the rod turn in the hole, a second rod shall be tested in the same manner. If this rod also turns, resin installation shall be discontinued until reasons for failure of the resin is determined. (a click type torque wrench is recommended for this test.)

SAFETY PRECAUTIONS--SPECIAL ROOF CONTROL PLAN

Because the number of mines having a special roof control plan is minimal and the latitude of variation in requirements peculiar to special roof control plans is so great, it is believed that safety precautions to be included in such plans shall be formulated on a mine-to-mine basis.



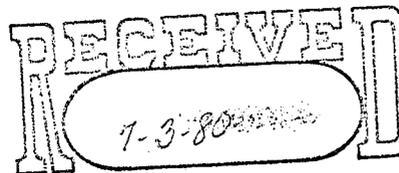
U. S. Department of Labor

Mine Safety and Health Administration
P O Box 25367
Denver, Colorado 80225



Coal Mine Safety and Health
District 9

June 30, 1980



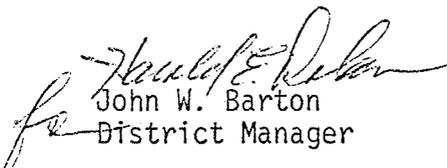
Samuel C. Quigley
Western Project Manager
Tower Resources, Incorporated
P. O. Box 1027
Price, Utah 84501

Re: Pinnacle Mine
I. D. No. 42-01474
Roof Control Plan

Dear Mr. Quigley:

The roof control plan for the subject mine, dated June 24, 1980, has been reviewed and is approved. This plan supercedes all previously approved plans, supplements and addendums. As required by 30 CFR, 75.200, the plan must be reviewed by MSHA every six months.

Sincerely,


John W. Barton
District Manager

Enclosures

Coal Mine Safety and Health
District 9

June 30, 1980

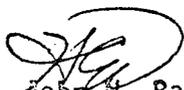
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Sincerely,



John W. Barton
District Manager

Enclosures

JWB:A.Kendzerski:mh

cc: Price
DTSC
State Dept of Mines

POWER RESOURCES, INC.

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

June 24, 1980

Mr. John Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Co. 80225

Re: Rehabilitation Plan, Zions "Old Works"
Pinnacle Mine
I. D. No. 42-01474

Dear Mr. Barton,

Enclosed for your review is the rehabilitation plan for the Zions Mine "old works" section of the new Pinnacle Mine. These plans call for full roof bolting and timber and cribs where necessary as requested during a visit and preview by Mr. Lamar Bishop and Mr. Steve Miller on June 17, 1980.

During the rehabilitation work a roof control plan will be submitted along with the appropriate ventilation system to advance the mine in normal production cycles.

We would appreciate your staff's attention of this matter and thank you for the time and effort thus far.

Sincerely,

Samuel C. Quigley
Samuel C. Quigley
Western Project Manager

SCQ/lm

Enclosure
cc: Lamar Bishop



MINE IN SUCH A MANNER THAT SAID PLAN WOULD BE APPLICABLE TO SAID MINE WORKERS.

ROOF CONTROL PLAN
General Information

Date: 6/29/80 Mine I.D. No. 42-01474

A. Company: Tower Resources, Inc.

Address: P. O. Box 1027 Price Utah 84501
City State Zip

B. Mine: Pinnacle Mine

Mine Location:
Price Utah
City County State

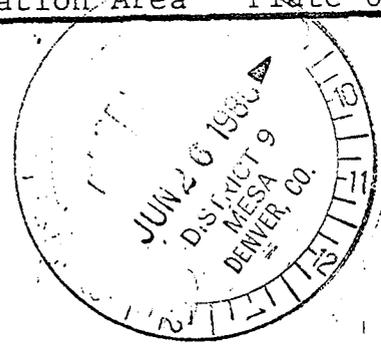
C. Location (reference to nearest highway route, direction, and distance)
6.2 Miles North Off Route No. 6 & 50

D. Type(s) of Plan: Full Roof Bolting
supplement.

E. Area(s) of mine covered by the plan Rehabilitation Area - Plate 6

F. Maximum Cover: 250 Feet

Main Roof Sandstone & Siltstone interbedded
Immediate Roof Sandstone
Coal Bed Gilson Seam 6' 7"
Bottom Siltstone & Sandstone



G. _____ Manager 6-18-80
Title Date

Company Official's Signature _____
Roof Control Investigator A. Kordzinski 6-30-80
The Roof Control Plan approved this date hereby supersedes all previously approved plans.

Approved by _____
Title _____

ROOF SUPPORT MATERIALS - All components of the roof bolt assembly shall comply with the American National Standards Institute "Specifications for Roof Bolting Materials in Coal Mines".

H.

ROOF BOLTS

Manufacturer CF&I Corp, Armco Steel Corp, Mikco Industries, Bethlehem Steel or equivalent.

Manufacturer's Designation R-1
N/A

CP-2103-80 DET CP-519-8 DET

Minimum Length 42"

Diameter 3/4" or 5/8"

Type Steel Extra high strength - 5/8"
High Strength - 3/4"

Type Thread Rolled or cut

Length of Thread 4" minimum

Type Head Standard

Dimensions of Bolt Head: Nut 1/8" Flange 1 3/4"

I.

BEARING PLATES

Manufacturer Mikco Industries, CF&I Steel, Armco Steel or equivalent

Manufacturer's Designation _____

Dimensions 6" x 6" x 3/16"

18" x 6" x 3/16"

Shape: Square or rectangular embossed, double-embossed or flat.

Center Hole 11/16" to 13/16"
Size: 1" for resin bolts

J.

WASHERS

Manufacturer Kaiser Steel

Manufacturer's Designation _____

*Type Steel Hardened

Size 2" OD

*Washers shall be through hardened to a hardness of 35 to 45 as measured on the Rockwell C Scale.

Shape Round - flat

Hole Size 13/16"

K.

ANCHORAGE UNIT

Manufacturer Ohio Brass, Pattin D, Bethlehem or equivalent

Manufacturer's Designation 22378

Type Expansion

Size

Finishing Bit 1 3/8" ± .030

Installed Torque 3/4"=150-250 ft lbs, 5/8"=150 to 240 ft lbs

WHW 3/4"-125 to 170 ft lbs, WHW 5/8"= 125 to 165 ft lbs.

L.

MATERIALS USED IN CONJUNCTION WITH ROOF BOLTS

Cottonwood blocks 2" x 6" x 12" minimum

Roof Mats - 16 gauge minimum

Prior approval shall be obtained before making any changes in the materials listed.

• Dimensions of Post--The length of post shall be as required. The diameter must be at least 1 inch for each 15 inches in length but not less than 4 inches--Split posts shall have a cross-sectional area equal to that required for round posts of equivalent length. Smaller posts may be used provided they are set in clusters to provide equivalent support.

Type of Post--Round or split of solid straight grain wood with the ends sawed square and free from defects which would affect their strength.

*Cap blocks, size, and shape--Cap Blocks and footers shall have flat paralleled sides and be not less than 2" x 6" x 12" in size.
(insert minimum)

Wedges, size and shape-- 3½" wide x 10" long x 1" thick, tapered.

*Crossbars, type and size--Crossbars shall be of straight grain solid wood and they shall be not less than 3-inches thick by 8-inches wide of varying length.

*Planks, size-- A minimum of 1-inch thick by 8-inches wide of varying length.

Cribbing blocks, size and shape--Cribbing blocks shall have flat paralleled sides and be not less than 30-inches in length.

*Note: Where wood material is used between roof bolt bearing plates and the roof for additional bearing surface, the use shall be limited to short life openings (not to exceed 3 years) unless treated.

ROOF SUPPORT MATERIALS FOR RESIN GROUTED RODS

RODS
Manufacturer Mikco Industries, Manufacturer's
Bethlehem Steel, Designation M-6
Birmingham or ap-
proved equivalent

Minimum Length 36" Diameter 3/4"

Type Steel ASTM 8615 Type Head Hex or square
Grade 40 rebar

Dimensions of Rod: Head 1-1/8" Flange 2"

BEARING PLATES

Dimensions 6" x 6" x 3/16"
18" x 6" x 1/4"

Shape Square Center Hole Size 1"

RESIN
Manufacturer Dupont, Faslock, Manufacturer's
Celtite, Carbolay or Designation _____
any approved equiv-
alent

Type Resin Size of
Finishing Bit 1" ± .030

Prior approval shall be obtained before making any changes in the materials listed.

N.. FACE EQUIPMENT AND SECTION HAULAGE EQUIPMENT ASSOCIATED WITH EACH:

1. Lee Norse or Joy Continuous Miners
2. Long Airdox or Lee Norse roof drills - Rotary - Percussion
3. Joy shuttle cars
4. Eimco or Wagner diesel scoop trams or teletrams
5. Diesel support equipment - tractors - John Deere, Kabota

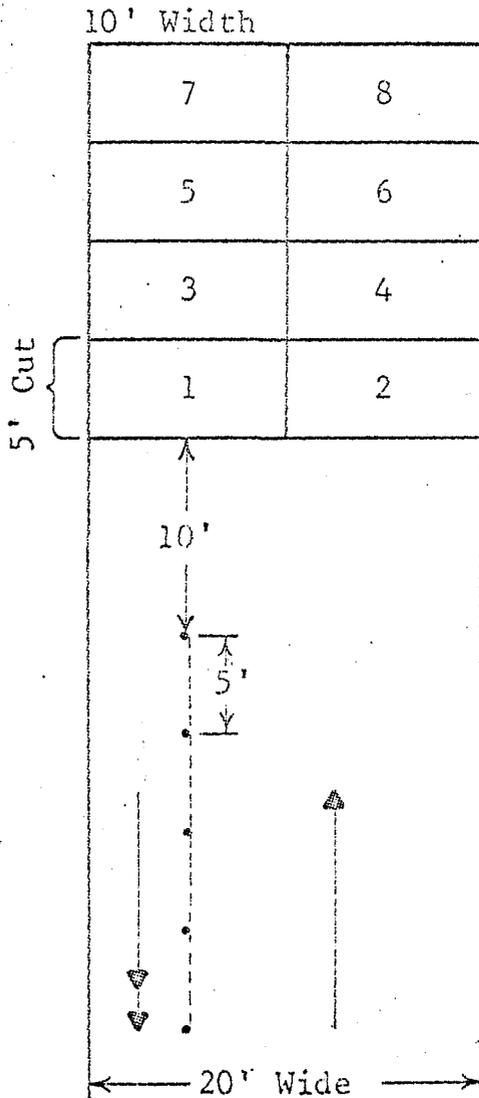
O. SEQUENCE OF MINING AND INSTALLATION OF SUPPORTS INCLUDING TEMPORARY SUPPORTS:

Drawings shall be attached showing the maximum width of entries, rooms, inter-sections, crosscuts, and (if applicable) pillar splits; the sequence of support installation--including temporary supports; the spacing of supports; and where applicable the sequence of mining pillars, including cut sequence in those pillars necessary to establish a uniform pillar line that eliminates pillar points and pillars that project inby the breakline.

SIGHT LINES SHALL BE ESTABLISHED TO ASSURE THAT MINING PROJECTIONS IN ENTRIES, ROOMS, CROSSCUTS, AND PILLAR SPLITS ARE FOLLOWED.

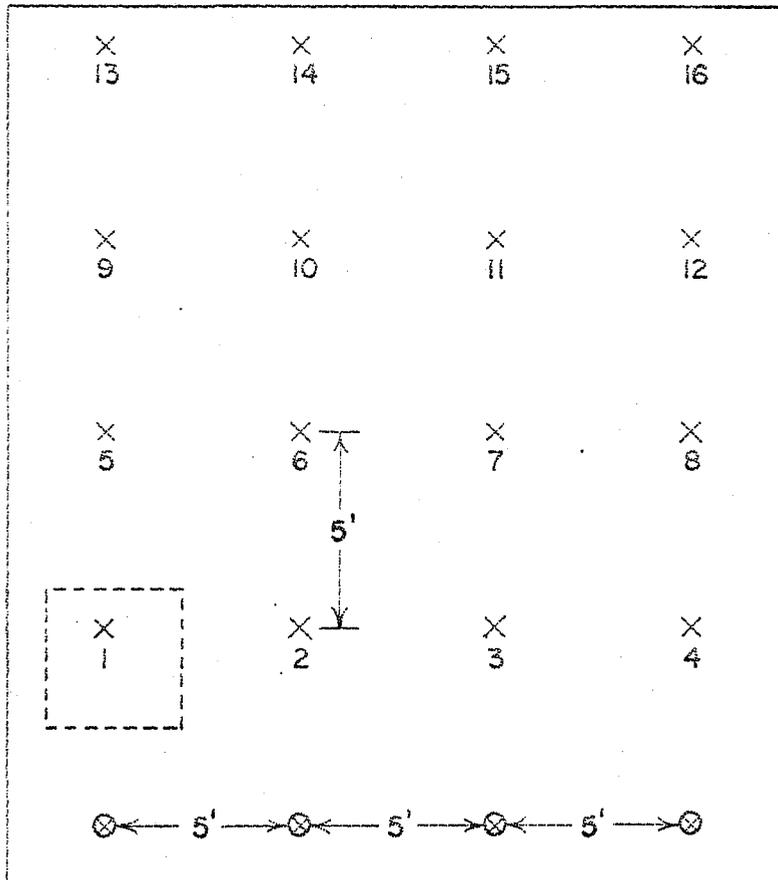
Entry Width	<u>20 feet</u>	Centers	<u>120' Max. 80' Min.</u>
Crosscut Width	<u>20 feet</u>	Centers	<u>120' Max. 80' Min.</u>
Room Width	<u>20 feet</u>	Centers	<u>120' Max. 80' Min.</u>
Room Crosscut Width	<u>20 feet</u>	Centers	<u>120' Max. 80' Min.</u>
Slope Width (anthracite)	<u></u>		
Gangway Width (anthracite)	<u></u>		

MINING CYCLES 20' CUTS



The sequence is to make the odd number box cuts from a squared off face (the brattice side) with the timber and line brattice extended to within 10 ft. of the face allowing clearance for the continuous miner and face equipment. Once the odd number box cut is complete the brattice and timber is advanced five feet and the face is ready to begin the even box cuts.

BOLTING SEQUENCE

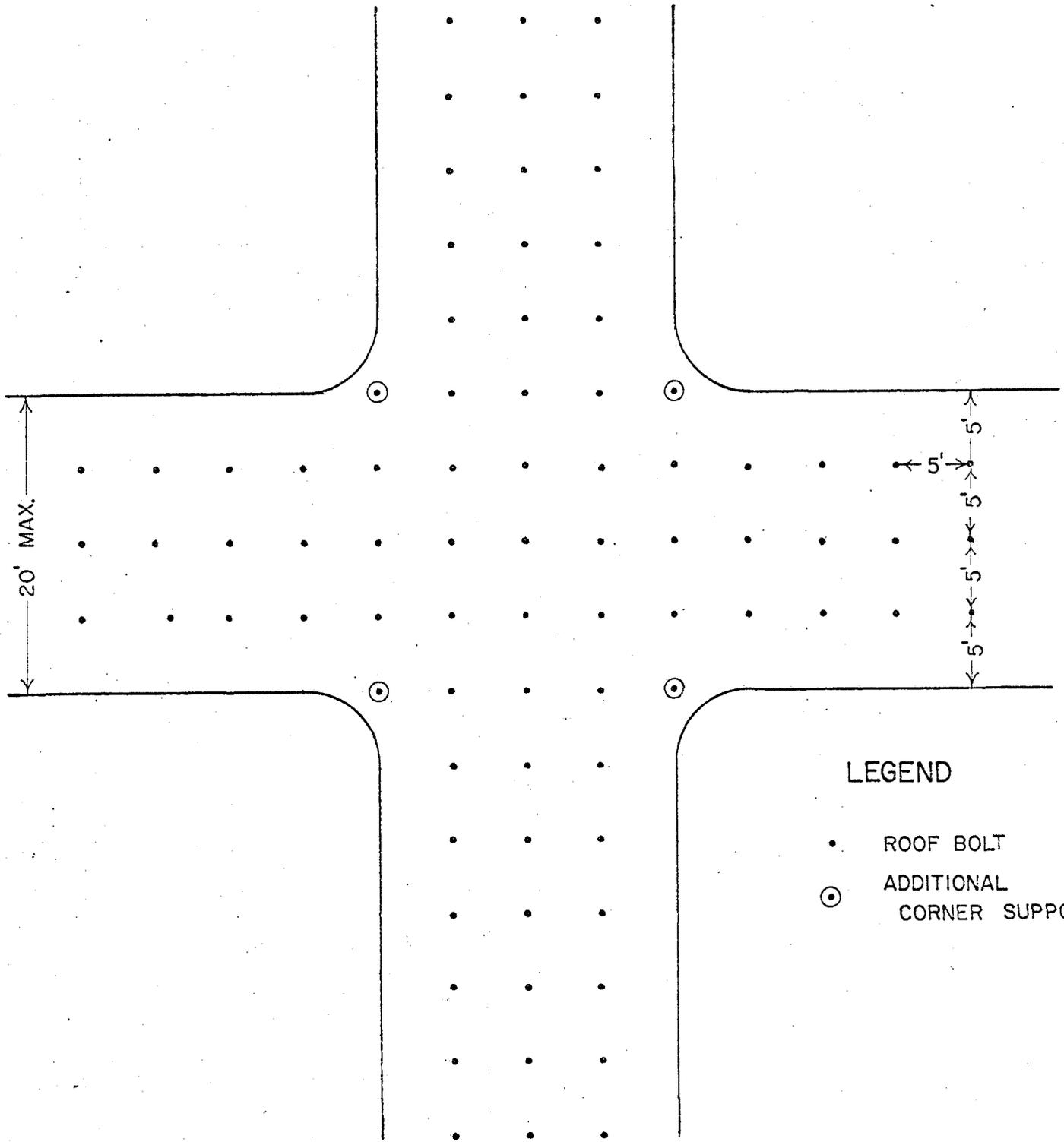


⊗ Last row of permanent supports

X Supports to be installed in sequence of numbers



Temporary support by Hydraulic Canopy



LEGEND

- ROOF BOLT
- ⊙ ADDITIONAL CORNER SUPPORT

SCALE 1" = 10"

FIGURE 5

SAFETY PRECAUTIONS

FOR

FULL BOLTING AND COMBINATION PLANS

1. This is the minimum roof control plan and was formulated for normal roof conditions while using the mining system (s) described. In areas where subnormal roof conditions are encountered, indicated, or anticipated, the operator shall provide additional support where necessary. If changes are to be made in the mining system that necessitates any change in the roof control plan, the plan shall be revised and approved prior to implementing the new mining system.
2. All personnel required to install roof supports shall be trained by a qualified supervisor designated by mine management before being assigned to perform such work. This training shall insure that such persons are familiar with the functions of the support being used, proper installation procedures, and the approved roof control plan.

Supervisors in charge and miners who install supports shall be informed of an approved roof control plan and any changes in a previously approved roof control plan not later than their first working shift following receipt of the approved plan. As soon as possible but no later than three weeks after receipt of this approved plan, all provisions contained herein shall be fully explained to all miners whose duties require them to be on a "working section". All new miners shall have the hazards of mine roof and ribs and the content of this plan explained to them before they start to work.

3. (a) Upon completion of the loading cycle, a reflectorized warning device, such as a "stop" sign, shall be conspicuously placed to warn persons approaching any area that is not permanently supported. It is to be emphasized that the warning device has been placed to cause the person to stop, examine, and evaluate the roof and rib conditions prior to entering the area--even if temporary supports have been installed.

(b) Where required, temporary supports shall be installed immediately after the loading cycle is completed unless roof bolting machines are equipped with acceptable automated temporary supports.

- (i) Except when the District Manager has determined that more than 5 minutes are needed, "immediately" is interpreted to mean that the installation of such temporary supports shall be started no later than 5 minutes after mining of the cut is completed and, after the installation of such supports is started, the installation of supports shall be continued until at least the minimum number are installed as required in the approved plan.

(c) Only those persons engaged in installing temporary supports shall be allowed to proceed beyond the last row of permanent supports until temporary supports are installed. Before any person proceeds in by permanently supported roof, a thorough visual examination of the unsupported roof and ribs shall be made. If the visual examination does not disclose any hazardous condition, persons proceeding in by permanent supports for the purpose of testing the roof by the sound and vibration method and installing supports shall do so with caution and shall be within 5 feet (less if indicated on Sketch No.) of a temporary or permanent support. If hazardous conditions are detected, corrective action shall be taken to give adequate protection to the workmen in the area involved.

4. When installing permanent supports, temporary supports may be repositioned in the sequence indicated on the attached sketch (No.). However, if it is necessary to remove temporary supports (other than those specified above) before permanent supports are installed, such temporary supports shall be removed by some remote means, or another temporary support shall be installed in such a manner that the workman removing the support remains in a supported area. Means of removal of such supports shall be approved by the District Manager.
5. Work such as extending line curtains, other ventilating devices or making methane tests in by the roof bolts shall be done at the line of the last temporary supports.
6. Where rehabilitation work is being done, the following temporary support pattern shall apply:
 - a. Where bolts are being replaced in isolated instances (such as where equipment has knocked bolts loose) one temporary support shall be installed within a radius of 2 feet from each bolt to be replaced, unless the equipment has an acceptable automated temporary support.
 - b. Where crossbars or roof bolts are being installed in an area where roof failure is indicated, a minimum of two rows of temporary supports shall be installed on not more than 5 foot centers across the place so that the work in progress is done between the installed temporary supports and adequate permanent supports in sound roof.
7. (a) Where loose material is being taken down, a minimum of two temporary supports on not more than 5 foot centers shall be installed between the miner and the material being taken down unless such work can be done from an area supported adequately by permanent roof supports.

(b) To enable miners to perform their duties from a safe position without exposure to falling material, a bar of suitable length and design shall be provided on all mobile face equipment, except haulage equipment, and such bar shall be used when prying down loose material. (The length of bar shall be suitable for the area involved in its use, i.e., construction areas, roof fall areas, and other mining areas require a bar of suitable length.)

8. All metal jacks shall be installed with a cap block between the jack and the roof unless an oversize bearing plate of not less than 36 square inches is provided.

9. In each active working place where roof bolts are installed, at least one roof bolt hole shall be drilled to a depth of at least 12 inches above the anchorage horizon of the bolts being used to determine the nature of the strata. Such test holes shall be drilled at intervals not to exceed 50 feet. The test hole shall be either left open for examination or a roof bolt of a length equal to (or greater than) the required test hole depth may be installed and tightened provided adequate anchorage is obtained.

10. (a) Sidecuts shall be started only in areas that are supported with permanent roof supports. Where the installation of additional supports is required prior to starting the sidecut, such supports shall be shown on a sketch. Once the sidecut has been completed, the sidecut shall be supported by either temporary or permanent supports prior to working in the intersection.

(b) During development, except where old workings are involved, mine openings shall not be holed through into unsupported areas. When a mine opening holes through into a permanently supported entry, room or crosscut, the intersection so created shall be considered unsupported and no work shall be done in or inby such intersection until either:

(i) The newly created opening is permanently supported as indicated in the approved roof control plan, or;

(ii) The newly created opening is timbered off with at least two rows of posts installed on not more than 4 foot centers across the opening.

11. An approved, calibrated torque wrench that will indicate the actual torque on the roof bolts by a direct reading shall be provided on each roof bolting machine in operation.

12. Immediately after the first bolt is installed in each place, the torque shall be tested and thereafter at least one roof bolt out of every four shall be tested by a qualified person. If any of the bolts tested do not fall within the required torque range, the remaining previously installed bolts on this cycle shall be tested. Does not apply to resin bolting.

If the majority of the bolts still fall outside the required torque range, necessary adjustments shall be made immediately. If, after these adjustments are made, the required torque ranges are still not obtained, supplementary supports such as different length roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

13. A spot-check on torques shall be made during each 24-hour period on at least one roof bolt out of every ten from the outby corner of the last open crosscut to the face. Such torque checks are necessary only in advancing sections in working places producing coal during any portion of the aforementioned 24-hour period.

The results of these tests shall be recorded in the on shift examination book. The record shall show the number of bolts tested and number above and below the required range.

If the results show that the majority of the bolts are not maintaining at least ** 95 foot-pounds of torque or have
* 65

loaded up to where they exceed 350 foot-pounds of torque, supplementary support such as additional roof bolts, longer roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed.

14. Posts installed under roof that is cracked, broken, or susceptible to sloughing shall have a wooden cap block, plank, or crossbar between the post and the roof. Where crossbars or planks are installed, they shall be blocked to equally distribute the load across their length.
15. Post shall be installed tight and on solid footing. Not more than two wooden wedges shall be used to install a post.
16. A supply of suitable roof support material, including temporary supports sufficient to support the roof during one complete cycle of mining, shall be provided (within 500 ft. of the working face).
17. A suitable roof sounding device shall be provided with all mobile face equipment, except haulage equipment. If face workmen who are not operators or helpers on such equipment do not carry a roof sounding device, such device shall be available within 50 feet of their working area.
18. (a) Where roof falls have occurred and at all overcasts, boom holes, and other construction sites that require removal of mine roof material, (e.g., by blasting, by ripping with a continuous mining machine, by cutting with a cutting machine, or any other means), the roof shall be considered unsupported.

**Plates directly against roof.

*Plates against wood.

If miners are required to enter such areas, either to travel over the fallen material, to clean it up, or to perform other duties, the roof shall be supported adequately. Mine management shall devise and have posted in writing at the scene of such unsupported roof a plan incorporating the following procedures:

- (i) Such work shall be under the direct and, unless the miners are specially trained to do such work, constant supervision of a certified person.
- (ii) Adequate temporary support on not more than 5-foot centers shall be set at the edge of the fall where work is to be started. A minimum of four posts or jacks shall be used.
- (iii) Temporary support mentioned above shall be replaced by permanent supports (roof bolts and/or posts) and advanced as cleanup work progresses.
- (iv) Bolting or timbering shall proceed from permanently supported roof to the temporary supports before other work is performed and roof supports shall be advanced as the cleanup work progresses.
- (v) Where necessary to load material before support can be set, such loading shall be done from areas of permanent supported roof at all times.
- (vi) Where feasible, permanent supports shall be placed in the entire fall area before loading starts.

(b) All roof falls and other areas in the active workings where the mine roof material has been removed from its natural location by any means and is not being cleaned up shall be posted off at each entrance to the area by at least two rows of posts (or the equivalent) installed on not more than 5-foot centers across the opening.

- 19. On haulageways, all crossbars or beams shall be installed with some means of support that will prevent the beam or crossbar from falling in the event the supporting legs are accidentally dislodged. (The District Manager may utilize this requirement, or waive this requirement on a mine-by-mine basis.)
- 20. Permanent roof supports shall not be recovered unless the operator has included a detailed system for such recovery in the approved roof control plan.
- 21. Devices such as spherical washers, or slotted wood wedges, should be used to compensate for the angle when roof bolts are installed at angles greater than 5° from the perpendicular to the roof line.

22. All roof bolt materials shall be stored and handled in such a manner that will minimize rusting and/or damaging.

NOTE: Part 80, Title 30, Code of Federal Regulations, provides that all unintentional roof falls described therein be investigated and the results of the investigation shall be maintained in accordance with Section 80.23 of Part 80. Such falls shall also be shown on a map of the mine. Failure to do so will be a violation of Part 80.

SAFETY PRECAUTIONS FOR RESIN GROUTED RODS

1. All safety precautions required in the regular roof control plan will be followed, except the torque test required for conventional-type roof bolts will not apply. If failure occurs, the bolting operation will discontinue until the reason for failure has been determined. If the reason for failure cannot be determined, changes in the roof bolting procedure will be made to adequately support the roof, or supplemental supports will be used.
2. Persons responsible for the installation of resin rods will be taught the installation procedures recommended by the manufacturer, including the safe handling precautions of the resin material.
3. Drill steels will be equivalent in length to the rods used or adequately marked to assure proper hole depth. Each drill hole will be filled the entire length with resin.
4. All resin grouted rods will be used with bearing plates approved for use. The bearing plate or the wood material between the bearing plate and the roof will be tight against the mine roof.
5. Resin packages will be stored in an area where the temperature is within the range recommended by the manufacturer.
6. Broken cartridges or cartridges which show signs of deterioration will not be used and will be removed from the mine.
7. Resin grouted rods and conventional roof bolts will not be intermixed during systematic bolting cycles, except that intermixing may occur in areas where supplementary supports are required.
8. Resin cartridges will not be used if the recommended shelf-life has been exceeded, unless written authorization for use is permitted by the manufacturer or an authorized representative of the manufacturer.



December 24, 1980

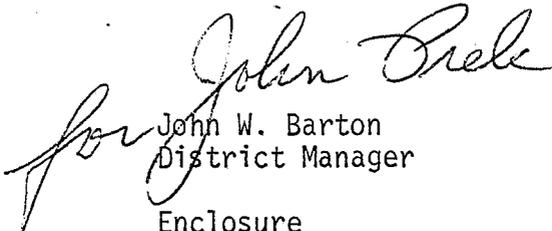
Mr. Samuel C. Quigley
Western Project Manager
Tower Resources, Inc.
P.O. Box 1027
Price, UT 84501

Re: Roof Control Plan
Pinnacle Mine
I.D. No. 42-01474

Dear Mr. Quigley:

The roof control plan consisting of 18 pages, received at this office on December 22, 1980, has been reviewed and is approved. This is a minimum roof control plan and will supercede all previously approved plans, supplements and addendums. As required by 30 CFR, 75.200, the plan must be reviewed by MSHA every six months.

Sincerely,


John W. Barton
District Manager

Enclosure

TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

December 19, 1980

Mr. John Barton
District Manager
M.S.H.A.
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Colorado 80225



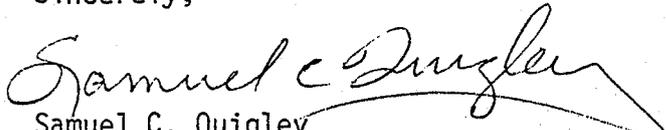
Re: Roof Control Plan
Pinnacle Mine
I.D. No. 42-01474

Dear Mr. Barton:

Pursuant to your correspondence of December 5, 1980, I have enclosed a revised plan incorporating the two statements which you requested. These can be found on page 5 of the Safety Precautions section of the plan.

Thank you for your assistance in this matter.

Sincerely,


Samuel C. Quigley
Western Project Manager

SCQ/ac

Enclosure

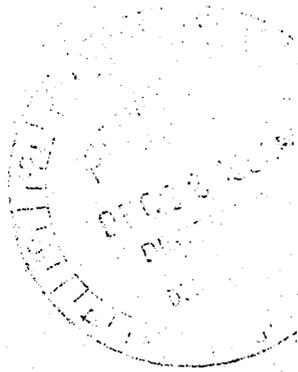
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ROOF CONTROL PLAN

PINNACLE MINE

I.D. NO. 42-01474

TOWER RESOURCES, INC.



POST A COPY OF THIS PLAN NEAR EACH PORTAL WHERE WORKERS ENTER THE MINE IN SUCH A MANNER THAT SAID PLAN WILL BE AVAILABLE TO THE MINE WORKERS.

ROOF CONTROL PLAN

General Information

Date: 12-19-80 Mine I.D. No. 42-01474

A. Company: Tower Resources, Inc.

Address: P.O. Box 1027 Price Utah 84501
City State Zip Code

B. Mine: Pinnacle Mine

Mine Location:

Price Carbon Utah
City County State

C. Location (reference to nearest highway route, direction, and distance)

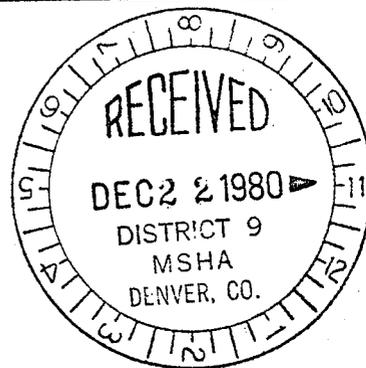
10 Miles North Off Route No. 6 & 50

D. Type(s) of Plan: Full Roof Bolting System with 120' face advance

E. Area(s) of mine covered by the plan: Entire mine

F. Maximum Cover: 2,500 Feet

Main Roof	Sandstone & Siltstone interbedded
Immediate Roof	Sandstone
Coal Bed	Gilson Seam 6'7"
Bottom	Siltstone & Sandstone



G. Samuel C. Duzler Manager 12-19-80
Company Official's Signature Title Date

Roof Control Investigator A. Kerdzinski 12-24-80

The Roof Control Plan approved this date hereby supersedes all previously approved plans.

Approved by: _____

Title: _____

ROOF SUPPORT MATERIALS - All components of the roof bolt assembly shall comply with the American National Standards Institute "Specifications for Roof Bolting Materials in Coal Mines".

H. ROOF BOLTS

Manufacturer CF&I Corp., Amrco Steel Corp., Mikco Industries, Bethlehem Steel or equivalent. Manufacturer's Designation R-1
N/A
CP-2103-80 DET CP-519-8 DET

Minimum Length 42" Diameter 3/4" or 5/8"
Type Steel Extra high strength-5/8" High Strength-3/4" Type Thread Rolled or cut

Length of Thread 4" minimum Type Head Standard
Dimensions of Bolt Head: Nut 1-1/8" Flange 1-1/2"

I. BEARING PLATES

Manufacturer Mikco Industries, CF&I Steel, Armco Steel or equivalent. Manufacturer's Designation _____

Dimensions 6" x 6" x 3/16"
18" x 6" x 3/16"

Shape: Square or rectangular embossed, double-embossed or flat. Center Hole 11/16" to 13/16"
Size: 1" for resin bolts

J. WASHERS

Manufacturer Kaiser Steel or equivalent Manufacturer's Designation _____
Size 2" OD

*Type Steel Hardened
*Washers shall be through hardened to a hardness of 35 to 45 as measured on the Rockwell C Scale.

Shape Round - flat Hole Size 13/16"

K. ANCHORAGE UNIT

Manufacturer Ohio Brass, Pattin D, Bethlehem or equivalent Manufacturer's Designation 22378
Size _____

Type Expansion Finishing Bit 1-3/8" ± .030
(Finishing bits shall be easily identifiable by sight or reel)

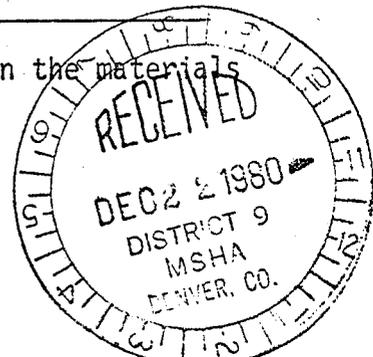
Installed Torque 3/4" = 150-250 ft. lbs., 5/8" = 150 to 240 ft. lbs., WHW 3/4"-125 to 170 ft. lbs., WHW 5/8" = 125 to 165 ft. lbs.

L. MATERIALS USED IN CONJUNCTION WITH ROOF BOLTS

Cottonwood blocks 2" x 6" x 12" minimum

Roof Mats - 16 guage minimum

Prior approval shall be obtained before making any changes in the materials listed.



Dimensions of Post--The length of post shall be as required. The diameter must be at least 1 inch for each 15 inches in length but not less than 4 inches-- Split posts shall have a corss-sectional area equal to that re- quired for round posts of equivalent length. Smaller posts may be used provided they are set in clusters to provide equivalent support.

Type of Post--Round or split of solid straight grain wood with the ends sawed square and free from defects which would affect their strength.

*Cap blocks, size, and shape--Cap Blocks and footers shall have flat para- lleled sides and be not less than 2" x 6" x 12" in size.
(insert minimum)

Wedges, size and shape--3½" wide x 10" long x 1" thick, tapered.

*Crossbars, type and size--Crossbars shall be of straight grain solid wood and they shall be not less than 3-inches thick by 8-inches wide of varying lenght, or equivalent.

*Planks, size--A minimum of 1-inch thick by 8-inches wide of varying length.

Cribbing blocks, size and shape--Cribbing blocks shall have flat paralleled sides and be not less than 30-inches in length.

*NOTE: Where wood material is used between roof bolt bearing plates and the roof for additional bearing surface, the use shall be limited to short life openings (not to exceed 3 years) unless treated.

ROOF SUPPORT MATERIALS FOR RESIN GROUTED RODS

RODS

Manufacturer Mico Industries, Manufacturer's
Bethlehem Steel, Designation M-6
Burlingham or approved
equivalent.

Minimum Length 36" Diameter 3/4"

Type Steel ASTM 8615 Type Head Hex or square
Grade 40 rebar

Dimensions of Rod: Head 1-1/8" Flange 2"

BEARING PLATES

Dimensions 6" x 6" x 3/16"

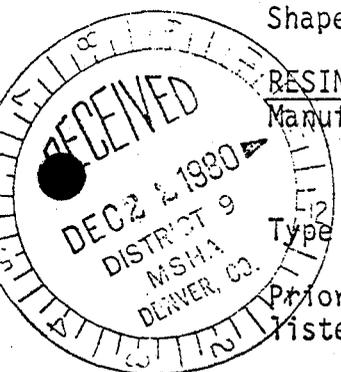
Shape Square Center Hole Size 1"

RESIN

Manufacturer Dupont, Faslock, Manufacturer's
Celtite, Carbolay or Designation _____
any approved equivalent

Type Resin Size of Finishing Bit 1" ± .030

Prior approval shall be obtained before making any changes in the materials listed.



N. FACE EQUIPMENT AND SECTION HAULAGE EQUIPMENT ASSOCIATED WITH EACH:

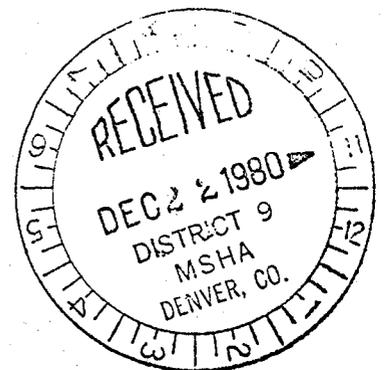
1. Lee Norse or Joy Continuous Miners , equivalent
2. Long Airdox or Lee Norse roof drills - Rotary - Percussion, or equivalent
3. Joy shuttle cars or equivalent
4. Eimco or Wagner diesel scoop trams or teletrams or equivalent
5. Diesel support equipment - tractors - John Deere, Kabota or equivalent

O. SEQUENCE OF MINING AND INSTALLATION OF SUPPORTS INCLUDING TEMPORARY SUPPORTS:

Drawings shall be attached showing the maximum width of entries, rooms, inter-sections, crosscuts, and (if applicable) pillar splits; the sequence of support installation--including temporary supports; the spacing of supports; and where applicable the sequence of mining pillars, including cut sequence in those pillars necessary to establish a uniform pillar line that eliminates pillar points and pillars that project inby the breakline.

SIGHT LINES SHALL BE ESTABLISHED TO ASSURE THAT MINING PROJECTIONS IN ENTRIES, ROOMS, CORSSCUTS, AND PILLAR SPLITS ARE FOLLOWED.

Entry Width <u>20 Feet</u>	Centers <u>120' Max. 80' Min.</u>
Crosscut Width <u>20 Feet</u>	Centers <u>120' Max. 80' Min.</u>
Room Width <u>20 Feet</u>	Centers <u>120' Max. 80' Min.</u>
Room Crosscut Width <u>20 Feet</u>	Centers <u>120' Max. 80' Min.</u>
Slope Width (anthracite) _____	
Gangway Width (anthracite) _____	

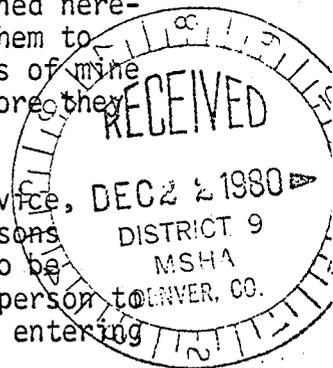


SAFETY PRECAUTIONS FOR A FULL BOLTING PLAN

1. This is the minimum roof control plan and was formulated for normal roof conditions while using the mining system(s) described. In areas where subnormal roof conditions are encountered, indicated or anticipated, the operator shall provide additional support where necessary. If changes are to be made in the mining system that necessitates any change in the roof control plan, the plan shall be revised and approved prior to implementing the new mining system.
2. For the purpose of this plan, where the roof is strong and competent, as determined by a responsible person of higher authority than the section foreman, an entry may be advanced a maximum of 120 feet on conventional support prior to roof bolting. Conventional supports may be removed as roof bolts are installed to provide permanent support. A written record that defines the approved area and is dated and signed by the responsible official shall be kept in a book that is available for examination by interested persons.
3. In the absence of properly recorded approval as described above, an area is to be fully supported. All active faces in a section in an approved area shall automatically revert to a full overhead support if: (a) a roof fall occurs in or inby the last open crosscut in an active section; (b) roof bolts (or crossbars) are installed or needed for a distance in excess of 16 linear feet within such area; or (c) roof bolts (or crossbars) are installed or needed frequently in the general area, regardless of the distance supported in each instance. The official immediately responsible for the area shall report such change to the mine foreman; and the mine foreman shall record the loss of approval for the area in the aforesaid record book. The area may be re-approved per preceding paragraph.
4. All personnel required to install roof supports shall be trained by a qualified supervisor designated by mine management before being assigned to perform such work. This training shall insure that such persons are familiar with the functions of the support being used, proper installation procedures, and the approved roof control plan.

Supervisors in charge and miners who install supports shall be informed of an approved roof control plan and any changes in a previously approved roof control plan not later than their first working shift following receipt of the approved plan. As soon as possible but no later than three weeks after receipt of this approved plan, all provisions contained herein shall be fully explained to all miners whose duties require them to be on a "working section". All new miners shall have the hazards of mine roof and ribs and the content of this plan explained to them before they start to work.

5. Upon completion of the loading cycle, a reflectorized warning device, such as a "stop" sign, shall be conspicuously placed to warn persons approaching any area that is not permanently supported. It is to be emphasized that the warning device has been placed to cause the person to stop, examine, and evaluate the roof and rib conditions prior to entering the area--even though conventional supports have been installed.
6. After the loading cycle is completed, only those persons engaged in installing temporary supports or roof bolting shall be allowed to proceed beyond the last row of permanent supports. Before any person proceeds inby permanently supported roof, a thorough visual examination of the



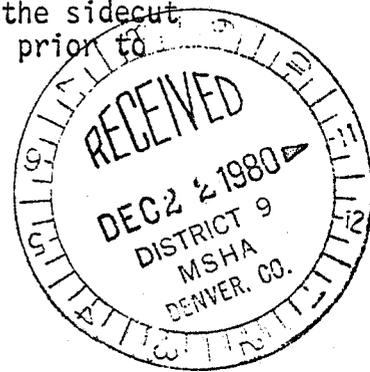
unsupported roof and ribs shall be made. If the visual examination does not disclose any hazardous condition, persons proceeding in by permanent supports for the purpose of testing the roof by the sound and vibration method and installing supports, shall do so with caution and shall be within 5 feet of a temporary or permanent support. If hazardous conditions are detected, corrective action shall be taken to provide adequate protection to the workmen in the area involved.

Work such as extending line curtains, other ventilation devices or making methane tests in by the roof bolts shall be done at the line of last conventional support. In an unbolted entry the fireboss shall travel between the row of conventional supports and the rib.

Where crossbars or roof bolts are being installed in an area where roof failure is indicated, a minimum of two rows of temporary supports shall be installed on not more than 5 foot centers across the places so that the work in progress is done between the installed temporary supports and adequate permanent supports in sound roof.

7. (a) Where loose material is being taken down, a minimum of two temporary supports on not more than 5-foot centers shall be installed between the workmen and the material being taken down unless such work can be done from an area supported adequately by permanent roof supports.

(b) To enable miners to perform their duties from a safe position without exposure to falling material, a bar of suitable length and design shall be provided on all mobile face-equipment, except haulage equipment, and such bar shall be used when prying down loose material. (The length of bar shall be suitable for the area involved in its use, i.e., construction areas, roof falls, and other mining areas require a bar of suitable length.)
8. All metal jacks shall be installed with a cap block between the jack and the roof unless an oversized, non-metal bearing plate of not less than 36 square inches is provided.
9. In each active working place where roof bolts are installed, at least one roof bolt hole shall be drilled to a depth of at least 12 inches above the anchorage horizon of the bolts being used to determine the nature of the strata. Such test holes shall be drilled at intervals not to exceed 50 feet. The test hole shall be either left open for examination or a roof bolt of a length equal to (or greater than) the required test hole depth may be installed and tightened provided adequate anchorage is obtained.
10. An approved, calibrated torque wrench that will indicate the actual torque on the roof bolts by a direct reading shall be provided on each roof bolting machine in operation. Does not apply to resin bolting.
11. (a) Sidecuts shall be started only in areas that are supported with permanent roof supports. Once the sidecut has been completed, the sidecut shall be supported by either temporary or permanent supports prior to working in the intersection.



(b) During development, except where old workings are involved, mine openings shall not be holed through into an area devoid of permanent or temporary supports. Work shall not be done in or inby the adjacent place until:

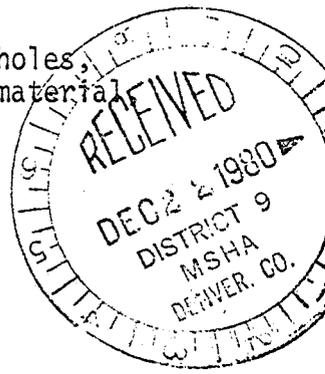
- 1) The newly created opening is permanently supported as indicated in the approved roof control plan or:
 - 2) The newly created opening is timbered off with at least two rows of posts installed on not more than 4 foot centers across the opening.
12. Immediately after the first bolt is installed in each place, the torque shall be tested and thereafter, at least one roof bolt out of every four shall be tested by a qualified person. If any of the bolts tested do not fall within the required torque range, the remaining previously installed bolts on this cycle shall be tested. Does not apply to resin bolting.

If the majority of the bolts still fall outside the required torque range, necessary adjustments shall be made immediately. If after these adjustments are made, the required torque ranges are still not obtained, supplementary supports such as different length roof bolts with adequate anchorage, posts, cribs, or crossbars, will be installed.

13. A spot check on torques shall be made during each 24 hour period on at least one roof bolt out of every ten from the outby corner of the last open crosscut to the face. Such torque checks are necessary only in advancing sections in working places producing coal during any portion of the aforementioned 24 hour period. The results of these tests shall be recorded in the onshift examination book. The record shall show the number of bolts tested and the number above and below the required range. Not required for resin bolts.

If the results show that the majority of the bolts are not maintaining at least 95 foot-pounds of torque if the plate is directly against the roof or 65 pounds of torque if the plates are against wood, supplementary support such as, additional roof bolts with adequate anchorage, posts, cribs, or crossbars shall be installed. Not required for resin bolts.

14. All posts installed under roof that is disturbed or susceptible to sloughing shall have a wooden cap block, plank or crossbar between them and the roof. When crossbars or planks are installed, they shall be blocked to equally distribute the load across their length.
15. All posts shall be installed on tight footing and not more than two wooden wedges shall be used to install a post.
16. A supply of suitable roof support material, including temporary supports sufficient to support the roof during one complete cycle of mining, shall be provided within 500 feet of the working face.
17. (a) Where roof falls have occurred and at all overcasts, boom holes, and other construction sites that require removal of mine roof material,



(e.g., by blasting, by ripping with a continuous mining machine, by cutting with a cutting machine, or any other means), the roof shall be considered unsupported. If miners are required to enter such areas, either to travel over the fallen material, to clean it up, or to perform other duties, the roof shall be supported adequately. Mine management shall devise and have posted in writing at the scene of such unsupported roof, a plan incorporating the following procedures:

1) Such work shall be under the direct and, unless the miners are specifically trained to do such work, constant supervision of a certified person.

2) Adequate temporary support on not more than 5 foot centers should be set at the edge of the fall where work is to be started. A minimum of four posts or jacks shall be used.

3) Temporary support mentioned above shall be replaced by permanent supports (roof bolts and/or posts) and advanced as clean-up work progresses.

4) Bolting or timbering shall proceed from permanently supported roof to the temporary supports before other work is performed and roof supports shall be advanced as the clean-up work progresses.

5) Where necessary to load material before support can be set, such loading shall be done from areas of permanent support with the operator and other persons in the area under supported roof at all times.

6) Where feasible, permanent supports shall be placed in the entire fall area before loading starts.

(b) All roof falls and other areas in the active workings where the mine roof material has been removed from its natural location by any means and is not being cleaned up shall be posted off at each entrance to the area by at least two rows of posts (or the equivalent) installed on not more than 5-foot centers across the opening.

18. Devices such as spherical washers, angle washers, or slotted wood wedges, should be used to compensate for the angle when roof bolts are installed at angles greater than 5 degrees from the perpendicular to the roof line.

19. All roof bolt materials shall be stored and handled in such a manner that will minimize rusting and/or damaging.

20. Permanent roof supports shall not be recovered unless the operator has included a detailed system for such recovery in the approved roof control plan.

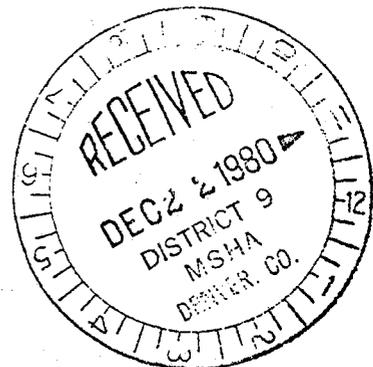
21. A suitable roof sounding device shall be provided with all mobile face equipment, except haulage equipment. If face workmen who are not operators or helpers on such equipment do not carry a roof sounding device, such device shall be available within 50 feet of their working area.

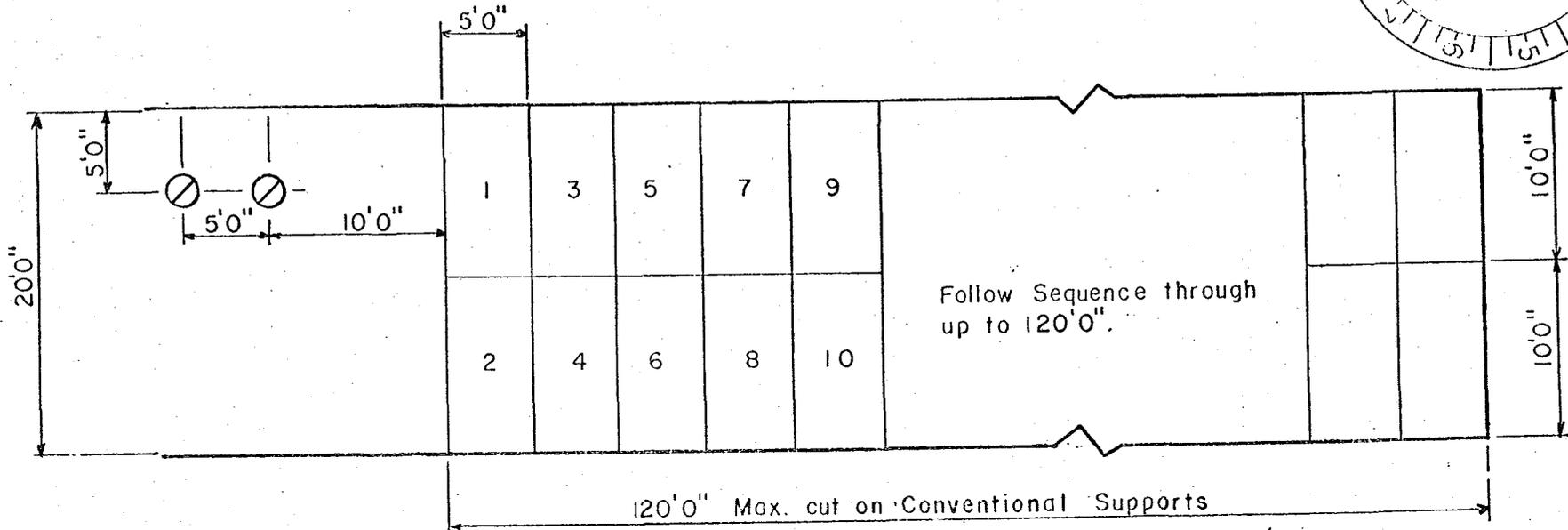
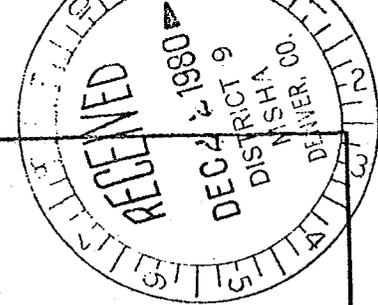
NOTE: Part 80, Title 30, Code of Federal Regulations, provides that all unintentional roof falls described therein shall be investigated and the results of the investigation shall be maintained in accordance with Section 80.11 30 CFR, Part 80. Such falls shall also be shown on a map of the mine. Failure to do so will be a violation of Part 80.



SAFETY PRECAUTIONS FOR RESIN GROUTED RODS

1. All safety precautions required in the regular roof control plan will be followed, except the torque test required for conventional-type roof bolts will not apply. If failure occurs, the bolting operation will discontinue until the reason for failure has been determined. If the reason for failure cannot be determined, changes in the roof bolting procedure will be made to adequately support the roof, or supplemental supports will be used.
2. Persons responsible for the installation of resin rods will be taught the installation procedures recommended by the manufacturer, including the safe handling precautions of the resin material.
3. Drill steels will be equivalent in length to the rods used or adequately marked to assure proper hole depth. Each drill hole will be filled the entire length with resin.
4. All resin grouted rods will be used with bearing plates approved for use. The bearing plate or the wood material between the bearing plate and the roof will be tight against the mine roof.
5. Resin packages will be stored in an area where the temperature is within the range recommended by the manufacturer.
6. Broken cartridges or cartridges which show signs of deterioration will not be used and will be removed from the mine.
7. Resin grouted rods and conventional roof bolts will not be intermixed during systematic bolting cycles, except that intermixing may occur in areas where supplementary supports are required.
8. Resin cartridges will not be used if the recommended shelf-life has been exceeded, unless written authorization for use is permitted by the manufacturer or an authorized representative of the manufacturer.





NOTE

Cutting sequence is to make the odd number box cuts from a squared-off face. Prior to commencing the conventional supports will be installed to within 10' of the face; as the odd number cut is completed the conventional supports will be advanced 5'.

Conventional supports may be removed as permanent support is installed.

** No person is permitted inby the last permanent support on the opposite side of the operators station during the bolting cycle.

LEGEND

⊘ Conventional Support

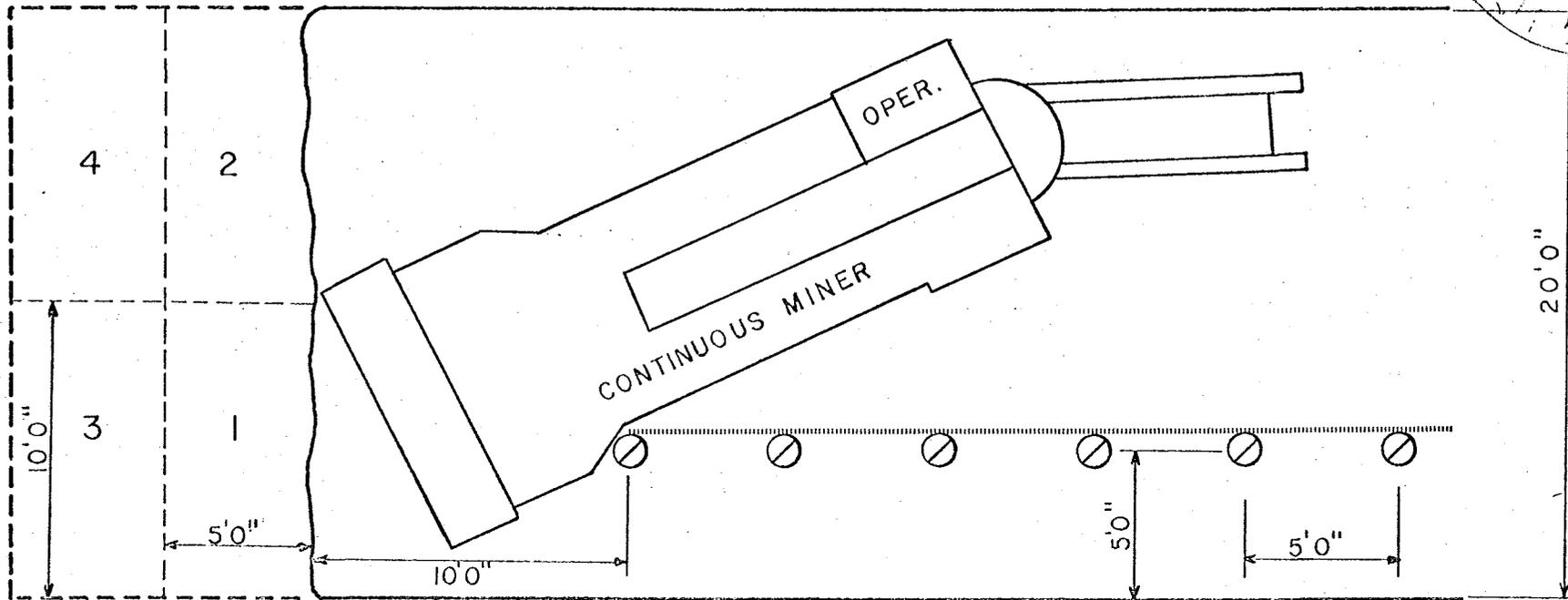
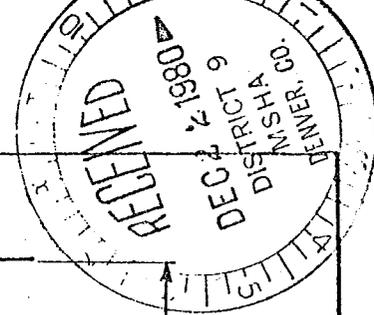
TOWER RESOURCES, INC.

PRICE, UTAH

**Pinnacle Mine
Mining Cycles 120' Cuts
Figure 1**

DRAWN BY J.C.B.
APPROVED

DATE 11-20-80
SCALE 1"=100'0"



LEGEND

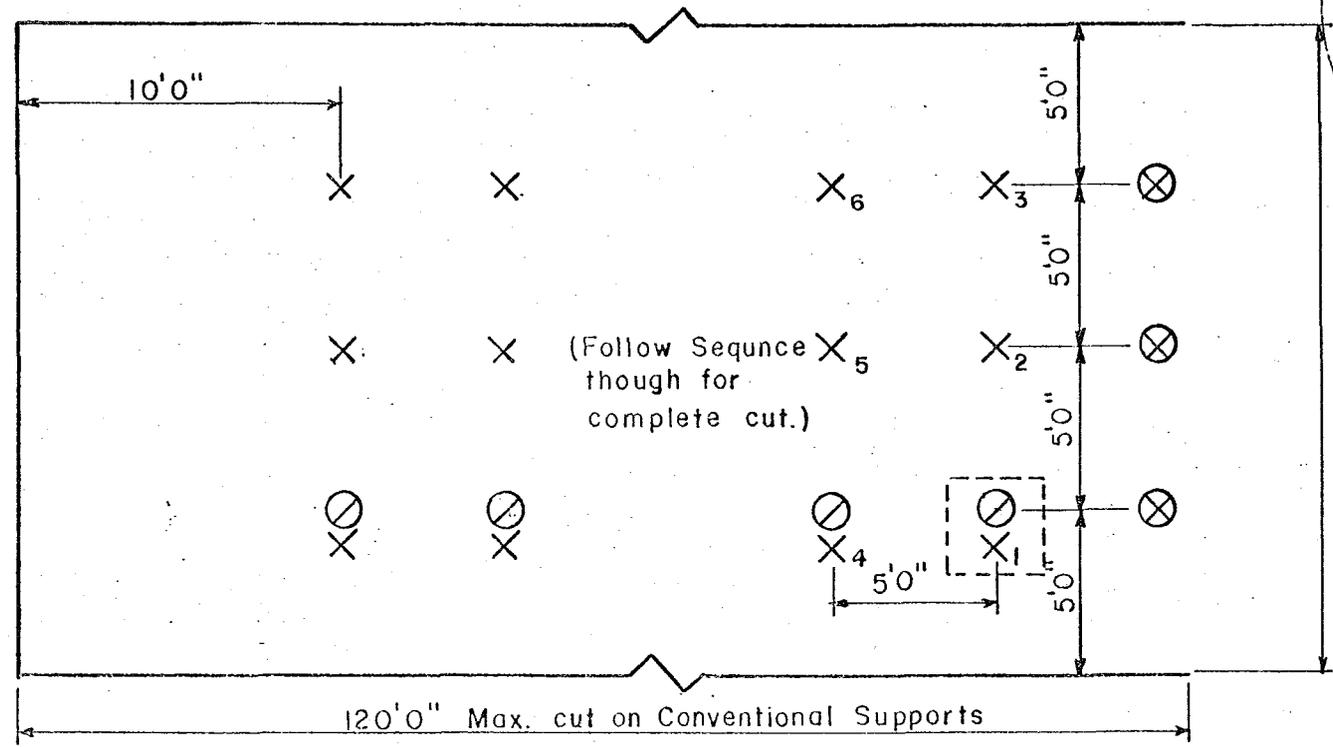
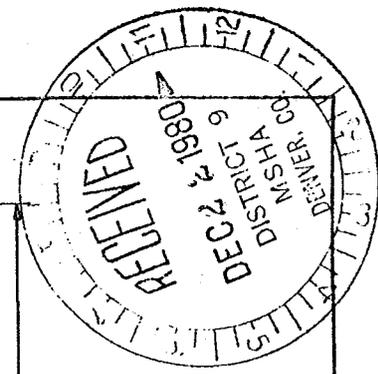
⊗ Conventional Support

..... Line Curtain

NOTE

The line curtain will be advanced after completing box cut no. 1.

TOWER RESOURCES, INC. PRICE, UTAH	
Pinnacle Mine Face Ventilation During Mining Cycle Figure 2	
DRAWN BY J.C.B APPROVED	DATE 11-20-80 SCALE 1"=6'0"

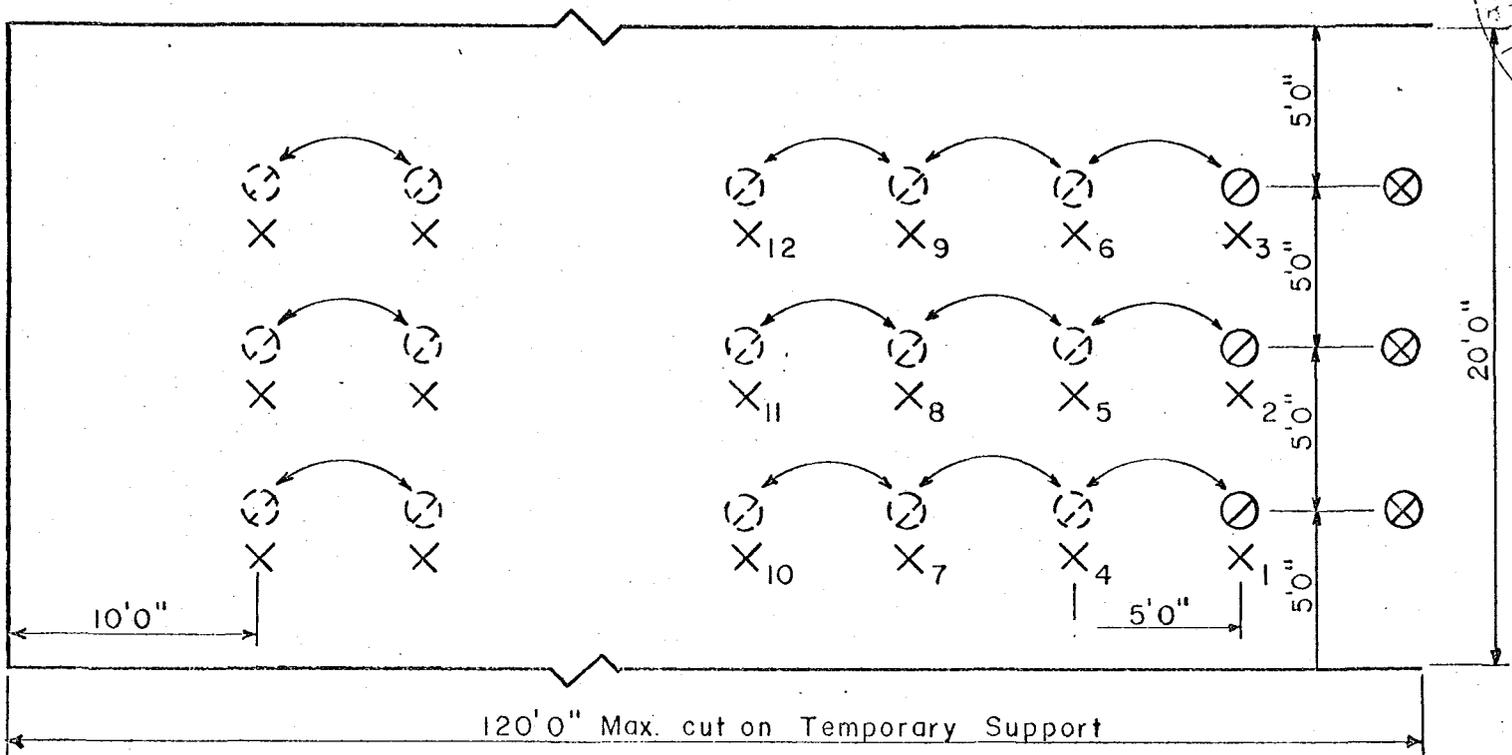
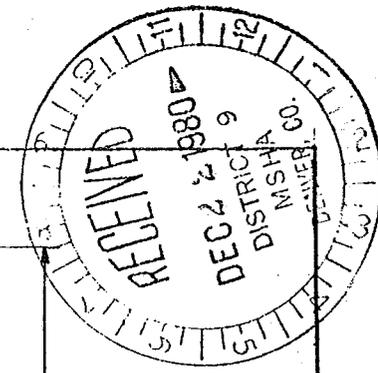


** No person is permitted inby the last permanent support on the opposite side of the operators station during the bolting cycle.

LEGEND

- ⊗ Last Row of Permanent Supports
- ⊙ Conventional Supports
- × New Permanent Support, to be installed in sequence of numbers - left to right under the ATS System.
- ⊠ ATS system on roof bolter

TOWER RESOURCES, INC. PRICE, UTAH	
Pinnacle Mine Bolting Sequence Figure 3	
DRAWN BY J.C.B APPROVED	DATE 11-20-80 SCALE 1" = 6'0"

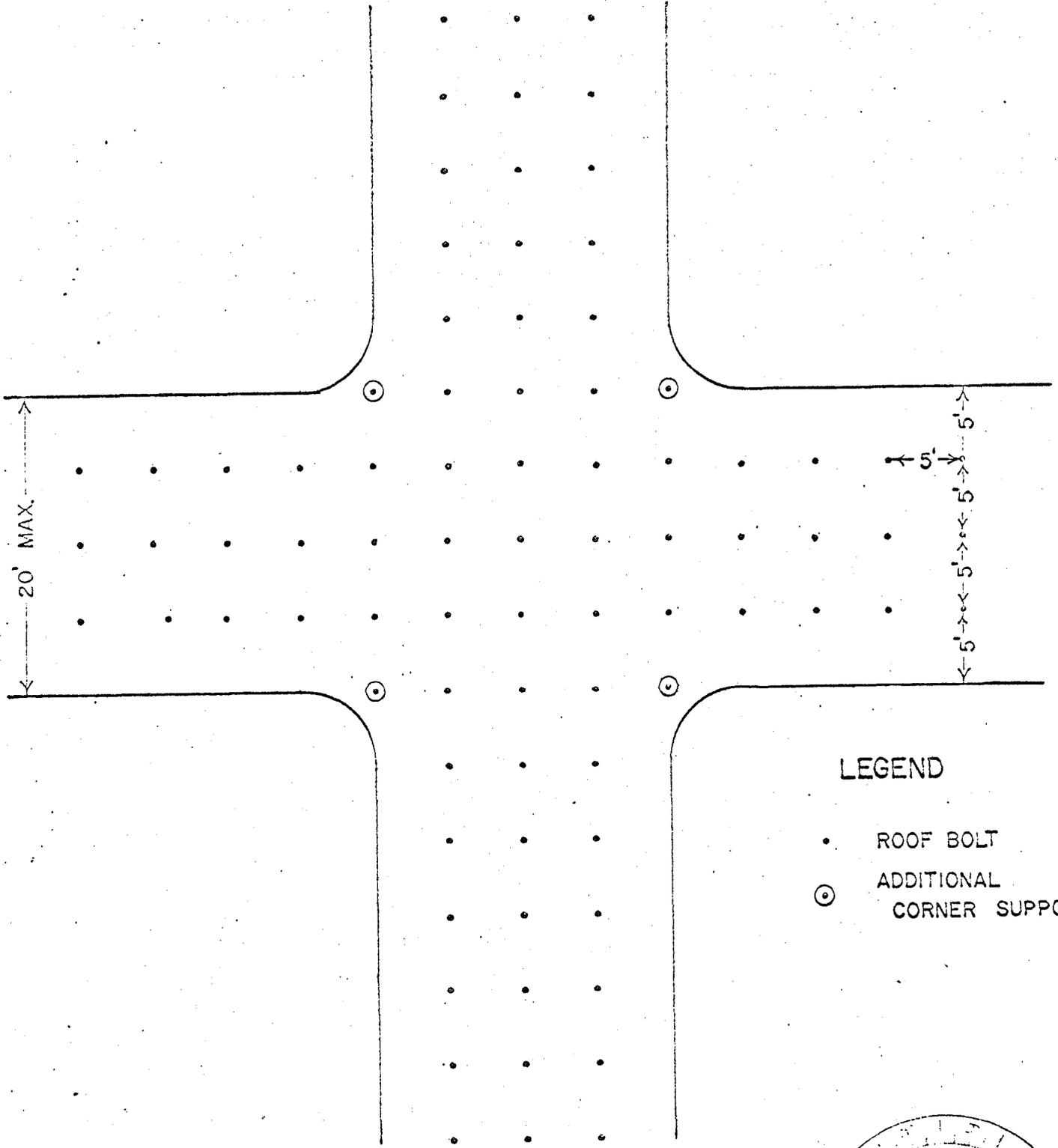


** TEMPORARY SUPPORTS WILL BE INSTALLED ONLY IF THE ATS SYSTEM ON THE ROOF BOLTER IS INOPERATIVE AND THE BOLTING CYCLE IS CONTINUED.

LEGEND

- ⊗ Permanent Support
- Temporary Support
- × Permanent support to be installed in sequence of numbers

TOWER RESOURCES, INC. PRICE, UTAH	
Pinnacle Mine Sequence for the Installation of Conventional Support -- Figure 4	
DRAWN BY JCB APPROVED	DATE 11-20-80 SCALE 1" = 6'

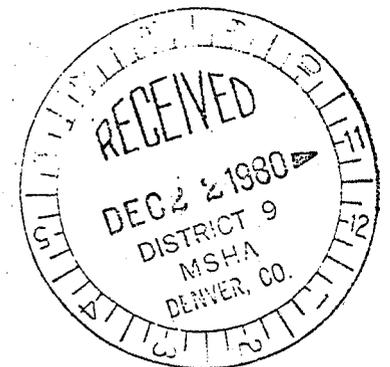


LEGEND

- ROOF BOLT
- ⊙ ADDITIONAL CORNER SUPPORT

SCALE 1" = 10"

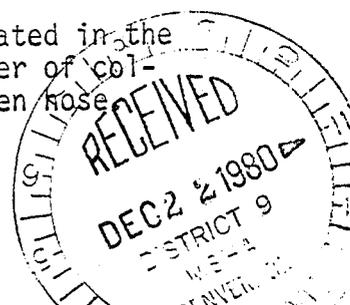
FIGURE 5



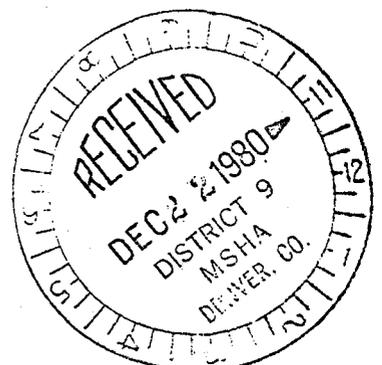
AUTOMATED TEMPORARY ROOF SUPPORT (ATS) SAFETY PRECAUTIONS

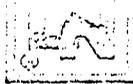
A.	<u>Roof Bolter Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Minimum Load Carrying Capacity</u>
1.	Lee Norse Co.	TD31	21359	18,000 lbs.
2.				
3.				
4.				
5.				

- B. A registered professional engineer shall certify that each ATS is capable of supporting the above minimum load carrying capacities. Evidence of the certification shall be furnished by attaching a plate, label, or other appropriate marking to the ATS system. Written evidence of this certification shall be retained by the operator.
- C. Two safety jacks must be kept on the bolting machine at all times to be used when adverse roof conditions are encountered and the automated support does not supply adequate protection for the bolter operator.
- D. No one shall proceed inby the automated temporary support system unless a minimum of 2 temporary supports are installed. This minimum is applicable only if the supports are not more than 5-feet apart, within 5-feet of permanent support, face, or rib and the work is done between such supports and the nearest face or rib.
- E. Holes will not be drilled or bolts will not be installed to the left or right of the outer roof contact points of the automated temporary support system unless the coal rib or a temporary support is within 5-feet of these contacts.
- F. The automated temporary support system shall be placed firmly against the roof not more than 5-feet inby the last row of permanent supports, before any person proceeds inby permanent support.
- G. There will be no installation of roof bolts inby the temporary roof support.
- H. The controls necessary to position and set the automated support shall be located in such a manner that they can be operated from under permanent support.
- I. A check valve or equivalent protection shall be incorporated in the automated temporary support system to eliminate the danger of collapse through sudden loss of hydraulic fluid from a broken hose.



- J. The temporary roof supports as required in the approved roof control plan do not apply where the roof bolting machine is equipped with an acceptable ATS system. This does not preclude the use of temporary supports where needed to make necessary tests or for ventilation purposes.
- K. The drawing in figure 2 shows how the ATS system shall be positioned and re-positioned as bolting progresses, and shows the sequence of installation of roof bolts in a typical face area.
- L. It should be noted that certification or approval of an ATS by equipment manufacturer's does not constitute approval of an ATS system in lieu of temporary supports. Only the District Manager or his representative can approve an ATS system in lieu of temporary supports.





INTER-OFFICE CORRESPONDENCE

To: WHOM IT MAY CONCERN:

Date: September 16, 1977

Copies To:

From: Steve Huntsman

Subject: Certification of Operator Station Canopy for Roof Bolters

9/16 21359

Per the procedure of MESA publication IR-1002 dated 1974, I have tested an assembly of the following components:

<u>Lee-Norse P/N</u>	<u>Change No. and Date</u>	<u>Description</u>
4-600303-005	32812 3-2-77	Support Arm
4-000090-168	33153 4-26-77	Canopy & Fasteners
4-600263-026	33153 4-26-77	Canopy

On behalf of Lee-Norse Company, a Division of Ingersoll-Rand Company, Inc., I hereby certify that this canopy and support arm assembly meets the structural capacity requirements of the Code of Federal Regulations, Title 30, Part 75.1710-1.

However, should the canopy or support arm become deformed, be altered, the design revised, or the fasteners changed, it may no longer meet the requirements and this certification is thereby not valid.



Very truly yours,

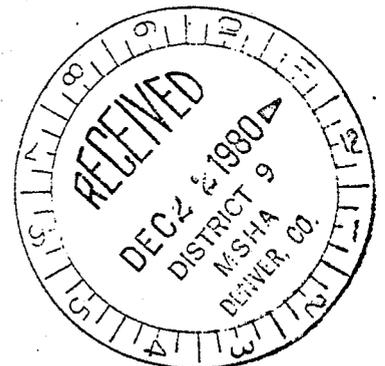
LEE-NORSE COMPANY

Steven D. Huntsman

Steven D. Huntsman, P.E.
Design Engineer

Indiana Professional Engineer #11641

SH/cak



Lee-Norse Company

P.O. Box 2683
Pittsburgh, Pennsylvania 15230
(412) 787-7500

A subsidiary of
Ingersoll-Rand Company

July 31, 1980

TO WHOM IT MAY CONCERN:

Ref: Machine Serial Number 21359

Subj: Canopy 4-600430-000 Certification



Company records indicate the machine referenced above was manufactured and shipped with canopy 4-600430-000. This canopy is specified by the following:

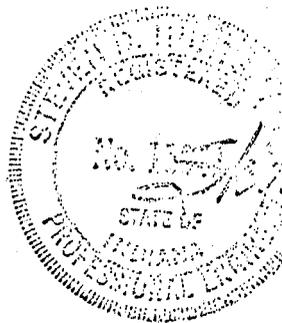
4-000090-162

I certify that the design of this canopy meets the minimum requirements for structural capacity set forth in Section 75.1710-1 of Title 30, Code of Federal Regulations (37 Federal Register 20690).

However, should the canopy become deformed or be altered, it may no longer meet the requirements and this certification would no longer be valid.

Very truly yours,

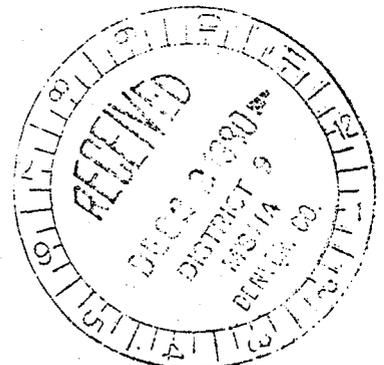
LEE-NORSE COMPANY



Steven D. Huntsman
Steven D. Huntsman, P.E.
Certifying Engineer

Indiana Registration #11641
Pennsylvania Registration #PE-027200-E

SDH:vi



TOWER RESOURCES, INC

P. O. BOX 1027
PRICE, UTAH 84501
(801) 637-5385

January 2, 1981

Mr. John Barton
District Manager
MSHA
Coal Mine Safety & Health
P.O. Box 25367-DFC
Denver, Colorado 80225

Re: Pinnacle Mine
I.D. No. 42-01474
Sump Plan

Dear Mr. Barton:

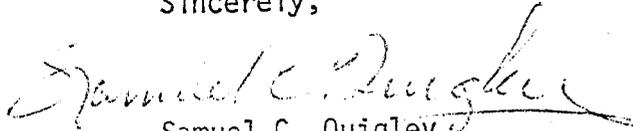
Enclosed please find two maps showing a plan to cut a sump area in the Pinnacle Mine for the purpose of underground water storage.

Our current roof control plan calls for entry and crosscut centers of 80' minimum. The configuration of our Western boundary and the "old works" limits the pillar design in this case to 80' centers in one case and 60' centers in the other. At one point, it will be necessary to reduce the right hand pillar to 50' to allow clearance for the "old works". Crosscuts will remain on 80' centers as shown.

The coverlines demonstrate that in the area of the sump the overburden is 300 feet or less.

If any questions arise in the consideration of this proposal, please contact my office.

Sincerely,


Samuel C. Quigley
Western Project Manager

SCQ/ac

Enclosures