ERRATA

1. Replace second page of Exhibits in Table of Contents with new second page of Exhibits.
2. Replace Section 1.2 Geology with new Section 1.2 Geology. Retain Figure I General Geologic Map and Figure II Columnar Sections of Rocks in Wasatch Plateau from old Section 1.2.
3. Replace page with Section 2.1, Introduction and first part of Section 2.2, Description of Mining Operations, and page immediately following this page (second page starts section Mining Method Description) with the new first two pages of Section 2.
4. Replace Figure VI, Section 2 with new Figure VI, Sequence of Pillar Recovery and Typical Ventilation.
5. Replace Figure X, Section 2 with New Figure X, Typical Longwall Panel with Ventilation.
6. Replace in Section 2 the page with Production Sequence on it and the following page with Summary for 5-Year Plan on it with the three new pages supplied. The first of the three new pages starts with "translates into the need for three miner sections and two longwalls . . ." Page 2 has the new Production Sequence. Page 3 has the new Summary for 5-Year Plan.
7. Replace Exhibit A with New Exhibit A.
8. Replace Exhibit B with New Exhibit B.
9. Replace Exhibit C with New Exhibit C.
10. Replace Exhibit D with New Exhibit D.
11. Replace Exhibit E with New Exhibit E.
12. Replace Exhibit F with New Exhibit F.
13. Replace Exhibit G with New Exhibit G.
14. Add Exhibit M1.

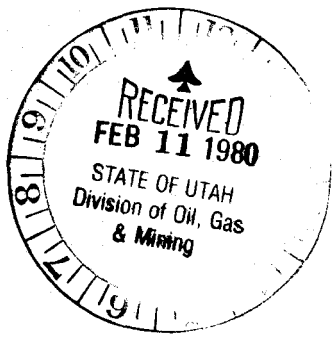


Exhibit H1	Cross Section 7
Exhibit I1	Cross Section 8
Exhibit J1	Cross Section 9
Exhibit K1	Cross Section 10
Exhibit L1	Cross Section 11

1.2 Geology

783.14 For the past few years, Utah Power & Light Co. has been evaluating the coal reserves contained within their East Mountain property. The objective of these exploration programs has been to establish control points on half-mile centers by mapping and drilling. Because of these exploration efforts much data has been gathered regarding the geology of the Cottonwood Mine area.

To date, eighteen exploration drill holes (see Exhibits A and B for locations) have been completed within the boundaries of the Cottonwood Mine. Data collected from these holes reflects the geologic conditions which will be encountered when mining. Drill logs from these holes indicate that two coal seams are of minable thickness within the area. The upper, or Blind Canyon Seam, and the lower, or Hiawatha Seam, are both interstratified with the lenticular sandstones, siltstones, and mudstones of the lower portion of the Blackhawk Formation. The Hiawatha Seam forms the basal unit of the Blackhawk Formation and is underlain by the massive Starpoint Sandstone. See Appendix B for coal lithology.

The Blackhawk Formation ranges from 700' to 800' thick in the area, consists of ever-increasing amounts of sandstone in its upper portions, and is conformably overlain by the Castlegate Sandstone. The Castlegate averages about 300' thick in the area and consists nearly entirely of massive, medium to coarse-grained sandstone. The Castlegate forms a massive cliff and is conformably overlain by the lenticular sandstones of the Price River Formation. The Price River Formation is about 600' thick and grades upwards from predominantly sandy beds to interbedded sandstone, siltstone, and mudstone. The formation is overlain conformably by the slope-forming mudstones, siltstones, sandstones, and occasional limestone lenses of the North Horn Formation. The North Horn Formation ranges from 900' to 1100' thick in the area and is unconformably overlain by the lowermost remnants of the Flagstaff Limestone.

The weathering of strata in the area has resulted in the exposure of the coal seams along lower canyon walls and mesa cliffs. The sediments which enclose the coal seams form steep slopes which are capped by the cliff-

forming Castlegate Sandstone. The earth materials just above the Castlegate form steep slopes that gradually lessen in intensity higher in the stratigraphic section, particularly in the North Horn Formation. The Flagstaff Limestone caps the highest points of the East Mountain Mesa.

Structurally, the area is fairly simple (see Figure I and Figure II). The gentle down-folded strata crossing the area from southwest to northeast form the Straight Canyon Syncline. Dips into the syncline range from 2^{o} to 4^{o}. The Flat Canyon Anticline is located just to the north of the subject area.

Several faults have been recognized in the rock exposures on East Mountain. However, the subject area is free of significant faulting with the exception of a northeasterly trending fault which is located along the Straight Canyon synclinal axis. Although the fault displacement has not been measured within the subject area, it is believed to have a displacement of 30' being downthrown on the north side. This fault probably disrupts the hydrologic regime in the area by allowing water to percolate down from higher stratigraphic positions and the ground surface into the coal-bearing strata. This fault is not believed to be active.

The cleating in the coals is well defined in an east-west direction (face cleat). A butt cleat is locally present that is at nearly right angles to the face cleat.

The seams of the area contain good quality steam coals. The average quality of these coals falls within the following ranges:

Moisture	5.0 - 8.3%
Ash	5.6 - 13.2%
BTU	11,400 - 12,900
Sulfur	0.51 - 0.55%
Fixed Carbon	43 - 49%
Volatile Matter	36 - 42%

The extent of the coal deposit is best defined in terms of coal seam isopach maps. Accordingly, isopach Maps (Exhibits C through G) have been prepared and illustrate the lateral distribution and variations in thickness of the Hiawatha and Blind Canyon Seams, respectively.

Hiawatha Seam

The isopach map of the Hiawatha Seam indicates that the seam is well developed in the southern portion of the Cottonwood Mine area. Present data has shown that a persistent east-west trending thin coal zone is present across the center of the leases. Underground mine drill holes and outcrop investigations in Deer Creek Canyon indicate the presence of a distributary channel sandstone at the position that the Hiawatha Seam would normally be found. The paleochannel sandstone was deposited contemporaneous with the accumulation of Hiawatha coals in adjacent swamps.

Outcrop and drill hole data indicate that the Hiawatha Seam contains rock splits within the coal at several locations. Generally, these rock splits diminish in an easterly direction.

Local pinching of the coal seam due to differential compaction has been noticed in the Wilberg Mine located to the east. In these areas the coal seam may be much thinner than surrounding areas, pinching out entirely in local areas. It is likely that similar features will be present in the Cottonwood area.

Blind Canyon Seam

The Blind Canyon Seam is of minable thickness throughout the northern portion of the Cottonwood Mine area. In the southern part of the area the coal swamps were poorly developed because of a fluvial channel system present in that area. The seam appears to thin in a westerly direction indicating that a fluvial channel might be present west of the property.

At various locations within the Deer Creek Mine located to the east, the top of the coal seam has been scoured by channel water reducing the

seam's thickness. Drill hole data indicates the presence of one of these channels which is present within the Cottonwood area. This channel trends in a north-east direction from drill hole EM-6 to hole EM-11C. It is likely that other channels of this nature will be identified when the area is mined.

Chemical and Physical Properties

783.14 The chemical and physical properties of the overburden have not been determined as yet. Representative samples have been collected and sent to a laboratory for analysis. Each sample will be analyzed for the following parameters:

pH	Electroconductivity
Calcium	Magnesium
Sodium	Sodium Absorption Ratio
Iron	Zinc
Sulfate	Organic Sulfur
Pyritic Sulfur	Selenium
Molybdenum	Boron
Fracture properties	Clay content (below coal seams)

Following receipt of the overburden quality data, copies of the data will be forwarded to the regulatory agencies.

1.3 Groundwater Information

783.13 The general area within which the Wilberg Mine's Cottonwood Portal and related facilities are proposed is a part of the Montana - Arizona Plateau groundwater province. This province, for the most part, is an arid to semiarid plateau region underlain by sedimentary formations not violently deformed but sufficiently warped and broken to produce a close relation between rock structure and the occurrence of groundwater and to cause rather rapid variation in groundwater conditions from place to place. On the whole, water supplies are not plentiful and not of very satisfactory quality. Where thick formations of nearly impervious material, such as the Mancos shale, are at the surface, or where the plateau is greatly dissected, water supplies are very scarce. Locally, however, sandstone aquifers, such as the sandstones of the Kootenai formation, the Dakota sandstone, or the Mesaverde formation, are within reach of the drill and may yield very satisfactory supplies, in some places giving rise to flowing wells. Locally there are also water-bearing gravels of Quaternary age (Meinzer, 1923).

2.1 Introduction

The objective of this section is to provide comprehensive and reliable information on proposed underground mining operations and surface facilities associated with the proposed Cottonwood portal of the Wilberg Mine.

2.2 Description of Mining Operations

784.11 The Cottonwood Portal mining plan is based on the geologic information of coal reserves as outlined in the geology section of this report (Section 1.2). Fair knowledge of the entire property is available from the outcrop and scattered drilling and detailed knowledge of a small part is known from earlier and current mining operations.

The status of reserve and minability information is as follows:

- 18 scattered deep holes representing roughly 10 square miles;
- 4 shallower holes representing about 1 square mile; and,
- 8 earlier holes into the present mine workings which are no longer helpful.

The main west entries of the Wilberg Mine have proven reserves over nearly 7 square miles. Actual mining or development work combined with 40 underground drill holes represent some 7 square miles in and around, above and below the present workings of the Wilberg Mine.

A drilling plan involving 5 deep drill holes on roughly 1-mile spacing is proceeding during 1979. Structural and stratigraphic complexities such as faulting and thinning may be encountered by drilling or by mine development workings which could result in revisions to this mining plan.

Mining Area Definitions - The proposed mining areas are bounded by natural and imposed limits with varying degrees of confidence as to location and extent:

- Lease boundaries - definately located and invariable in the short term
- Faults - may vary hundreds of feet in location

- Stratigraphic thinning (pinchouts) - mining limits may vary hundreds or thousands of feet as drilling information becomes available and as mining recovery economics and practicality are studied further.

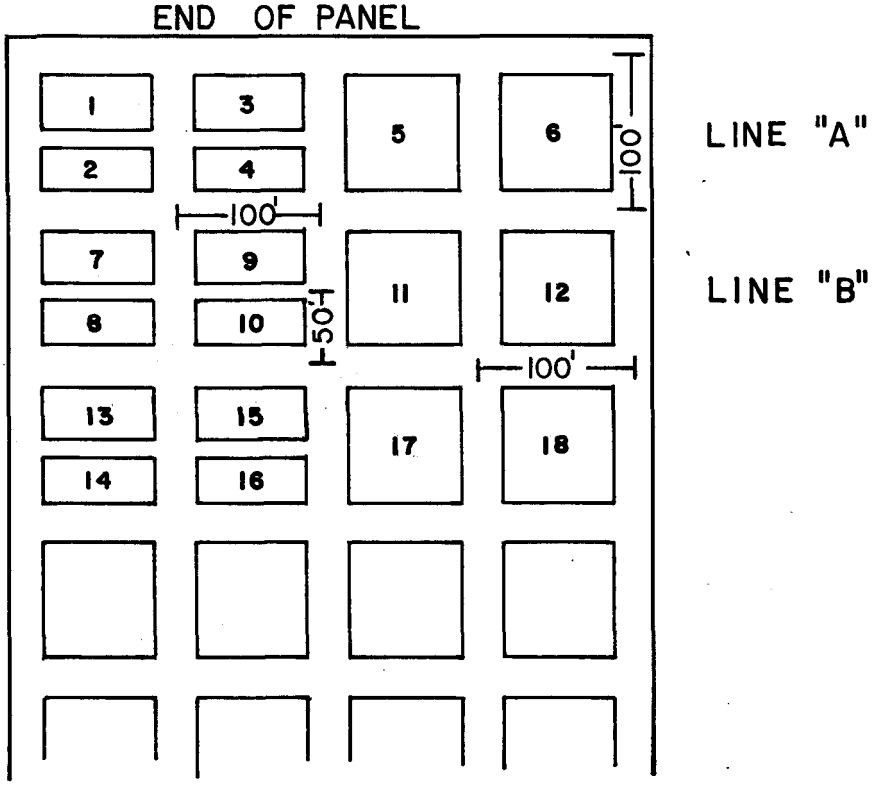
The lower or Hiawatha Seam extends from the portal to approximately 10,000 feet in from the portal. Further beyond, the Hiawatha Seam is less than 5 feet thick and is unminable under our current mining system. The upper or Blind Canyon Seam is only about 2 feet thick at the portal area and is not of minable thickness for approximately 8,000 feet in from the portal. The interburden in the area where the two seams overlap averages about 80 feet.

Mining Method Description - **784.11 (a)** Coal will be extracted at the Cottonwood Portal using the room-and-pillar and longwall methods. The mine plan presented here follows a systematic, orderly approach to coal extraction. Such an approach serves to promote safety, and enhance the overall recovery of the mineral resources. It is the object of the plan to produce the highest percentage of recovery of reserves as possible consistent with safety.

The plan presented is predicated on a geographic dedication of reserves.

Planning has taken into consideration the multiple seam nature of the operations to the extent that main entries, protective barrier pillars, panel design, and so forth are vertically superimposed insofar as possible. Additionally, development and extraction in the upper (Blind Canyon) seam would proceed well in advance of the workings in the lower bed in those areas where both seams are of economic thickness.

Figure V illustrates the basic configuration of the main entries and panels. (Because of space limitations, the corresponding panel to the left of the main entries has not been shown). A six-entry system is planned for the main headings with openings driven 20 feet wide on 100



Pillars in Line A will be recovered first, starting at pillar #1 going to #6. Then the pillars in Line B will be recovered

FIGURE VI

SEQUENCE OF PILLAR RECOVERY

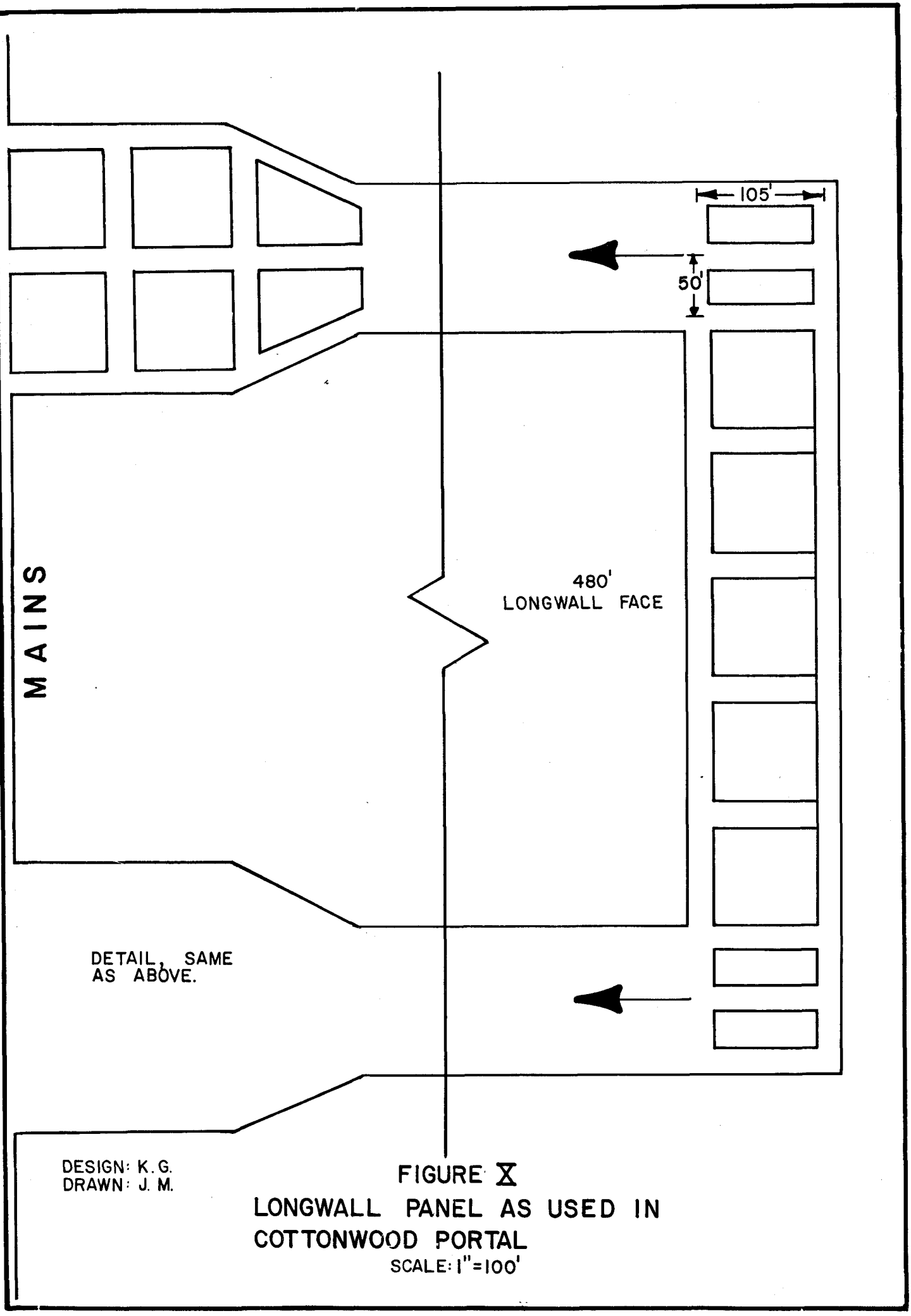


FIGURE X

LONGWALL PANEL AS USED IN COTTONWOOD PORTAL

SCALE: 1"=100'

panels on the West side of the Blind Canyon mains until December, 1984.

- Unit #2 - Moved to the Blind Canyon seam in August, 1982, and develops longwall panels on the east side of the Blind Canyon mains until December, 1984.
- Unit #3 - Moved to the Blind Canyon seam in May, 1983 and mines six-entry mains until September, 1984. Moves to east mains and mines until December, 1984.
- Longwall Unit #2 - Starts mining in 1st East longwall panel July, 1984, and mines in that panel until December, 1984.

Refer to Appendix D for further production sequence information.

Summary for 5-year Plan

Three continuous mining units working development in both seams. Two longwall units - one in the lower seam and one in the upper seam. Full production achieved by mid-1984. Refer to the Hiawatha and Blind Canyon seams mining plans (Exhibits A and B) for further clarification.

Possible Changes in Mines and Plans

Consideration of several improvements to the mines are presently underway which may affect these plans. Better knowledge of the geology and quality parameters of the coal reserve through planned drilling and mine development work and continued operating experience at the Huntington and Hunter Plants would serve to stimulate improvement of mine plans in a dynamic fashion.

A variety of engineering principles and techniques will be followed in both the mining and reclamation operations. For example, rock mechanics studies are a necessary part of mine planning since the stability of the openings directly affects personnel safety as well as mine production. The nearby Beehive Mine was the site of a U. S. Bureau of Mines sponsored study to measure the behavior of panel pillars under the effects of an approaching cave line. Results from this program, combined with on-going stress testing, indicates the possibility of reducing

translates into the need for three miner sections and two longwall sections operating two shifts/day, 230 days/year in order to achieve the required coal output at full production. During the interim, until the upper productivity level is reached, three operating sections are planned with two units working together in the six entry mains for one year. This plan will be necessary to expedite the development of the rock slope between the two coal seams.

Basically, the approach followed in developing the sequence of mining involves giving priorities to the different mine areas based on existing development, production requirements, and so forth, calculating the machine months for mining the areas (or sub-areas if necessary) and then assigning the number of sections operating in a given area to achieve a logical development pattern. Uppermost in importance was the need to maintain extraction on the Blind Canyon seam at least twelve machine-months in advance of mining on the Hiawatha in those areas where both seams are of economic thickness.

Production Sequence

Cottonwood Portal/Hiawatha Seam

- Unit #1 - Begins mining at the portal in October, 1980. Unit #1 is joined by Unit #2 on January 1, 1981 and both units mine the six-entry mains until April, 1982.
- Unit #2 - Begins mining January, 1981, and mines in six-entry mains with Unit #1 until April, 1982.
- Unit #3 - Begins mining in longwall panels west of mains in 9th Left in January, 1982, and mines progressively in panels until May, 1983.
- Longwall Unite #1 - Starts mining in 9th Left panel on October, 1982, and mines progressively in panels west of mains until December, 1984.

Cottonwood Portal/Blind Canyon Seam

- Unit #1 - Moved from Hiawatha seam and starts mining in six-entry mains June, 1982 until December, 1982. Moves to 1st Left longwall development panel in January, 1983 and develops longwall