

REPORT OF INVESTIGATION
(UNDERGROUND COAL MINE)

NONINJURY COAL MINE (BOUNCE) ACCIDENT

Wilberg Mine (I.D. No. 42-00080)
Emery Mining Corporation
Orangeville, Emery County, Utah

June 28, 1983

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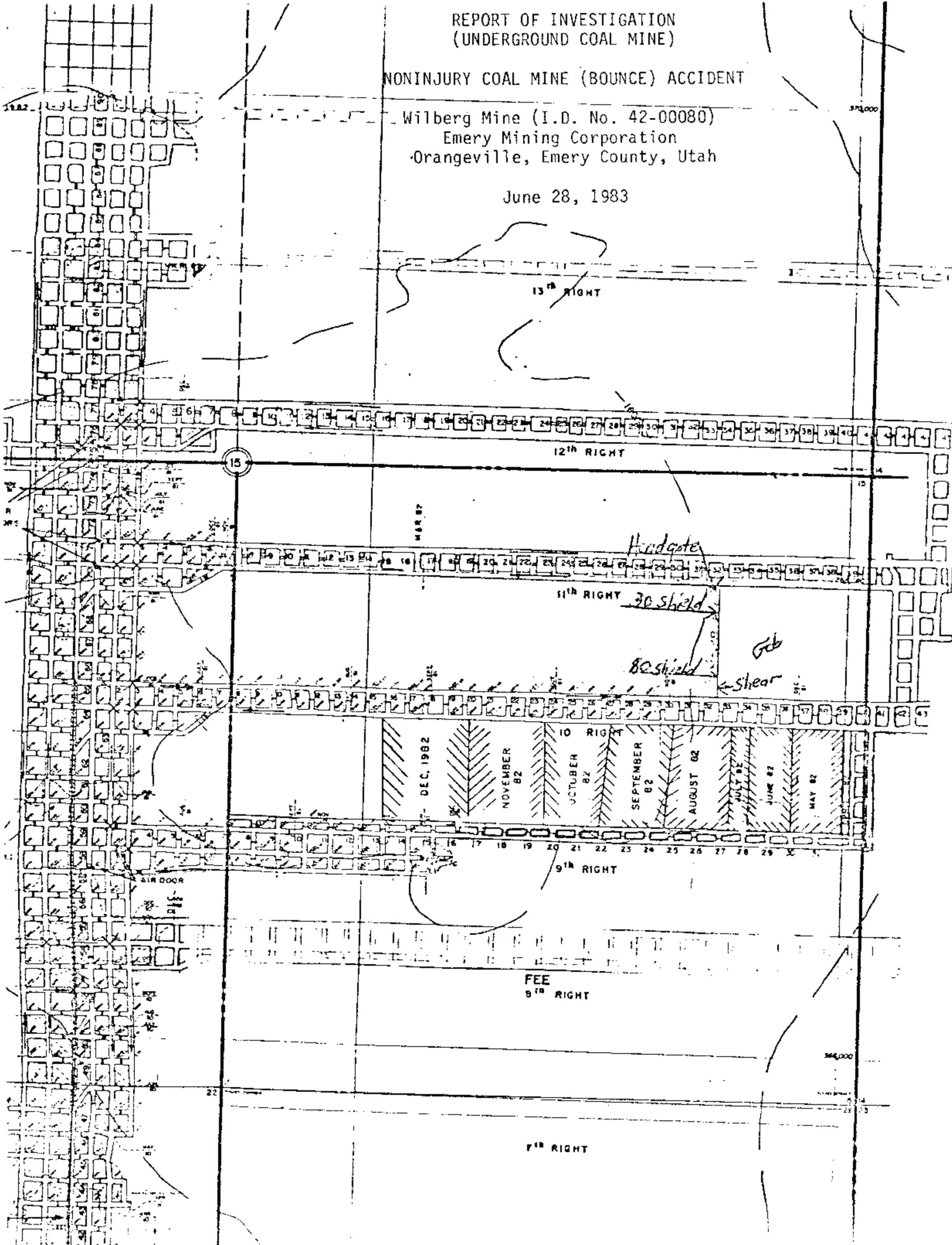
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13th RIGHT

12th RIGHT

11th RIGHT

10 RIGHT

9th RIGHT

FEE
8th RIGHT

7th RIGHT

DEC. 1982

NOVEMBER
82

OCTOBER
82

SEPTEMBER
82

AUGUST 82

JULY 82

JUNE 82

MAY 82

Headgate

30 shield

80 shield

Gob

Shear

AIR DOOR

DIS

370,000

360,000

15

22

23

Abstract of Investigation

U.S. Department of Labor
Mine Safety and Health Administration



Authority—

This report is based on an investigation made pursuant to the Federal Mine Safety and Health Act of 1977, Public Law 95-173, as amended by Public Law 95-164.

SECTION ONE - IDENTIFICATION DATA	
1. Title of investigation:	Noninjury Coal Mine (Bounce) Accident
2. Date MSHA investigation started:	06-29-83
3. Report release date:	07-07-83
4. Mine:	Wilberg Mine
5. Mine ID number:	42-00080
6. Company:	Emery Mining Corporation
7. Town, County, State:	Orangeville, Emery, Utah
8. Author(s):	Robert Huggins/Robert Baker

SECTION TWO - MINE INFORMATION	
9. Daily production:	5,834
10. Surface employment:	25
11. Underground employment:	279
12. Name of coalbed:	Hiawatha
13. Thickness of coalbed:	19 feet

SECTION THREE - ORIGINAL SOURCE	
18. Mine Safety and Health Administration Coal Mine Health and Safety District No.:	9
Address:	Drawer J, Price, UT 84501

SECTION FOUR - LAST OCCURRENCE RATING	
14. Industry:	8.14
15. This operation:	14.13
16. Training program approved:	Yes
17. Mine Profile Rating:	878

SECTION FIVE - ABSTRACT	
<p>On Tuesday, June 28, 1983, at 5:30 p.m., a bounce occurred in the face area of the 11th right longwall section. Twenty-five legs on the shields were damaged and four shields collapsed. The accident occurred due to mining in another seam of coal 90 to 100 feet above that left partial pillars and a 50 foot barrier that put pressure on the coal seam below. No injuries were reported.</p>	

SECTION SIX - MINE OFFICIALS		
Company officials:	Name	Address
19. President:	Neal Savage	P.O. Box 310, Huntington, UT 84528
20. Superintendent:	Vic Congolani	P.O. Box 310, Huntington, UT 84528
21. Safety Director:	Nelson Sitterud	P.O. Box 310, Huntington, UT 84528
22. Principle officer—H&S:	Evert Winder	P.O. Box 310, Huntington, UT 84528
23. Labor Organization:	UMWA-District 22	P.O. Box 783, Price, UT 84501
24. Chairman—H&S Committee:	Robert L. Jennings	P.O. Box 783, Price, UT 84501

COMMENTARY

On Tuesday, June 28, 1983, the afternoon shift mining crew under the supervision of Donald Durrant, Section Foreman, entered the mine at 4:00 p.m. and traveled to the 11th right longwall section arriving about 4:20 p.m. Durrant examined the section and assigned various work assignments to the crew. Regular work commenced until the accident occurred at 5:30 p.m. The shear was at the tailgate when the bounce occurred. The bounce damaged twenty-five legs on the shields between #30 shield and #80 shield. No persons were injured.

The accident was reported to MSHA at 9:20 p.m. to John Turner, Coal Mine Safety and Health Inspector and the investigation was started the next morning at 7:00 a.m.

DISCUSSION AND EVALUATION

The investigation revealed the following factors relevant to the occurrence of the bounce.

1. The force of the bounce pushed the mine floor up under the pan line from #30 shield to #80 shield 12 to 15 inches.
2. The force of the bounce damaged 25 legs on the shields causing them to fail.
3. Coal had been extracted from a coal seam 90 to 100 feet above leaving partial pillars and a 50 foot barrier.
4. The bounce did disrupt the miners normal mining cycle for more than one hour due to the damage to the shields.

FINDINGS OF FACT

Evidence and findings of the investigation indicated there were no violations of Title 30 CFR which contributed to the occurrence of the accident.

CONCLUSION

Probable cause of the bounce was due to the coal seam 90 to 100 feet above where partial pillars and a 50 foot barrier were left putting pressure on the coal seam below.

Respectfully submitted,

Robert L. Huggins
Robert L. Huggins
Coal Mine Safety & Health Inspector

Robert L. Baker
Robert L. Baker
Coal Mine Safety & Health Inspector

Approved:

Jensen L. Bishop
Jensen L. Bishop
Subdistrict Manager

APPENDIX

The investigation was conducted by the Mine Safety and Health Administration and those persons furnishing information and/or present during the investigation were:

Emery Mining Corporation Officials

Dave Bocook	Mine Manager
Evert Winder	Corporate Safety Manager
Neldon Sitterud	Safety Director
Kiven Tuttle	Safety Inspector
Morgan Moon	Engineer

Emery Mining Corporation Employees

Robert Price	Shear Operator
Vic Staley	Mechanic

United Mine Workers of America
Representative of Miners

Robert L. Jennings	Safety Committee
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Mine Safety and Health Administration

Robert L. Huggins	Coal Mine Safety and Health Inspector
Robert L. Baker	Coal Mine Safety and Health Inspector

U. S. Department of Labor

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



SAFETY AND HEALTH TECHNOLOGY CENTER
Ground Support Division

July 19, 1983

File: 6017

MEMORANDUM FOR: JOHN C. BARTON
District Manager - CMS&H
Denver, CO

THROUGH: ACTING CHIEF *Servy Davidson*
Ground Support Division
Denver, CO

FROM: BILLY D. OWENS *J. Slavanang*
Mining Engineer *for B.D. Owens*
Denver, CO

SUBJECT: Ground Control Investigation, Wilberg and Deer Creek
Mines, Orangeville and Huntington, Utah

INTRODUCTION

A ground control investigation was conducted at the Wilberg Mine on July 12, 1983. The purpose of the investigation was to ascertain possible reasons for abnormal ground movement in the Wilberg and Deer Creek Mines. Due to miner's vacation at the Deer Creek Mine, personal underground observations were not possible; therefore, observations and comments by other MSHA personnel provided data for the conclusions stated in this memorandum.

Due to other urgent Division activities a memorandum report is being forwarded at this time. A more formal report will be prepared in the near future.

If there are any questions, please contact this office at 234-4905.

OBSERVATIONS

The area from Seven Right to Eight Right off the First North Mains appeared to be in a total state of failure. The support system is, in many cases, supporting large slabs of rock rather than the typical mine roof. The roof is fractured, has shifted in many places and is no longer keyed together. The support systems consist of timbers, cribs, steel sets and resin bolts. Many of the steel sets have failed. Eight-inch steel beams have been compressed down to 1 inch in thickness. Several of the steel sets have failed due to torsional loading. The cribs are being compressed but are still supporting the roof; however, the timbers are being crushed out due to the heavy compressive loading.

The area in the Deer Creek Mine directly above the area of the Wilberg Mine, described in the preceding paragraph, is 7th East to 5th East off the First South Mains. The Fifth, Sixth and Seventh East are mined out longwall panels. The Fifth and Sixth East panels left 380-foot barrier pillars to protect the South Mains while the Seventh East panel left a 280-foot barrier. According to mine maps and observations by MSHA personnel, the two entries of the South Mains outby Seventh East are inaccessible and floor has heaved until only 3.5 feet remains open of an original 8 feet high entry. The rest of the area also has floor heave and fractured roof. Many seals and stoppings have been broken by the shifting floor and roof.

CONCLUSIONS

The Seventh and Eight Right entries of the Wilberg Mine were directly under the barrier pillars left by the Seventh and Sixth East panels of the Deer Creek Mine. Because the barrier pillars were undermined, a new state of equilibrium had to be achieved. As the barrier pillars adjusted to reach equilibrium, floor heave was induced into the First South entries of the Deer Creek Mine while high compressive loads were transmitted to the First North entries of the Wilberg Mine. If the Wilberg Mines Management's present mining plan is continued, this office anticipates that ground conditions will continue to deteriorate in both the Wilberg Mine and the Deer Creek Mine. This office considers the present mining plan for the Wilberg Mine inadequate to prevent hazardous ground movement in both the Wilberg and Deer Creek Mines.

cc: Center File
J. Mulhern
H. Dolan

1 the possibility of cantilever loading from mined-out areas onto
2 remaining mine structures in the same block.

3 WILBERG MINE OPERATING HISTORY

4 Mining in the Wilberg Mine area began in 1898 and continued
5 intermittently until 1936 in several small "wagon mine" operations, the
6 Fox, Straight Canyon, Castle Valley, Crow, and Reed mines (23). In
7 1936, the Wilberg family acquired these small properties and
8 consolidated them into the Wilberg Mine, which the family operated at
9 small production fairly continuously until 1967. Peabody Coal Company
10 acquired and reopened the mine in 1968 (35). In 1976, the Utah Power
11 and Light Company (UP&L) acquired most of the East Mountain coal
12 properties, including the Deer Creek and Wilberg Mines (29). The mines
13 were operated for UP&L by American Coal until 1978, when the contract
14 mining rights were acquired by Emery Mining Corporation, a subsidiary of
15 Savage Brothers Transportation Company.

16 Longwall operations were begun first in the Deer Creek Mine in 1979.
17 Following the successful development and extraction of several Deer
18 Creek panels, all but the first of which utilized two-entry gate roads
19 with 26.4-m-(87 ft-) wide chain pillars (36), longwall operations in the
20 Wilberg Mine commenced in April 1982. The First North submain entries,
21 accessing the longwall area, and the first sets of gate road entries,
22 9th through 12th Right, were developed during 1979 to 1982 in an area
23 bounded on the east by the Deer Creek Fault, immediately east of the
24 panel starting rooms, and on the west by the Pleasant Valley Fault,

1 approximately 122 m (400 ft) west of the First North submains (figure
2 9). Except for gate roads adjacent to barrier pillars, where a third
3 entry was utilized as a bleeder entry, all gate roads were developed
4 with a two-entry configuration. The first set of panels was
5 consecutively extracted northward, beginning with 10th Right. This
6 panel utilized 9th Right, with 9.1-m- (30-ft-) wide pillars, as tailgate
7 and 10th Right, which had 22.8-m- (75-ft-) wide pillars, for the
8 headgate and was successfully extracted to the planned end barrier with
9 few significant ground-related problems. The 11th Right and 12th Right
10 panels were developed with 24.3-m- (80-ft-) wide pillars in both the
11 headgates and tailgates. When an exceptionally hard, unmineable clastic
12 dike was encountered during 11th Right extraction, mining was halted at
13 about 74 percent of the planned panel length. The 12th Right panel,
14 however, was completely extracted to the planned end barrier. Violent
15 tailgate pillar bumps occurred during the retreat of both panels. The
16 13th Right headgate pillars were developed 9.1 m (30 ft) wide to
17 alleviate the violent bump conditions experienced in the preceding two
18 panels. This panel was mined without significant bump occurrences until
19 the December 1984 mine fire forced panel closure at approximately 182 m
20 (600 ft) retreat distance.

21 Beginning in September 1983, a second set of panels was consecutively
22 extracted southward from the 106-m (350-ft) barrier separating the two
23 panel sets (figure 9). The 7th to 5th Right set, therefore, was mined
24 concurrently with 11th to 13th Right. In order to avoid or alleviate
25 anticipated bump-prone conditions arising from a broad sandstone channel
26 in the immediate roof throughout much of the longwall area, the 7th to

1 5th Right two-entry gate roads were developed with 9.1-m- (30-ft-) wide
2 (nominal) yield pillars. The 7th and 6th Right panels were extracted to
3 the planned end barriers despite gradually worsening gate road roof
4 conditions. During 5th Right panel mining, however, roof conditions in
5 the tailgate (6th Right) entry were so severe that despite spot
6 rebolting and solid wood cribbing along the full extent of the entry,
7 nearly 152 m (500 ft) of the tailgate entry was partially to completely
8 closed by roof falls (37). This was the tailgate condition when the
9 December 1984 fire, which originated near the 5th Right gate road neck,
10 caused a number of fatalities in the 5th Right panel working area. In
11 efforts to isolate and extinguish the fire, the mine was sealed and
12 closed.

13 USBM FIELD STUDIES

14 Beginning in late 1983 and continuing through 1985, the USBM conducted
15 gate road pillar design investigations in three study sites (Sites 1 to
16 3) located respectively in the 10th, 12th, and 6th Right entries (figure
17 9). One pillar in each of these gate roads was instrumented with USBM-
18 fabricated borehole pressure cells, as shown in figures 10 to 12. The
19 instrumented pillars in Sites 1 and 2 were 22.8 m (75 ft) and 24.3 (80
20 ft) wide, respectively, and the width of the Site 3 pillar was 8.5 m (28
21 ft). Each site was monitored during both first- and second-panel
22 mining. Vertical pressure profiles for each pillar at different stages
23 of first- and second-panel extraction are shown in figures 13 to 15.
24 The study results are described by Lu: