FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION

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May 12, 2000

SECRETARY OF LABOR,	:	CIVIL PENALTY PROCEEDING
MINE SAFETY AND HEALTH	:	
ADMINISTRATION (MSHA),	:	Docket No. KENT 98-121
Petitioner	:	A.C. No. 15-07201-03712
	:	
v.	:	
	:	C-2 Mine
HARLAN CUMBERLAND COAL CO.,	:	
Respondent	:	

DECISION

Appearances: Thomas A. Grooms, Esq.,
U.S. Department of Labor, Nashville, Tennessee,
for Petitioner;
H. Kent Hendrickson, Esq., Harlan, Kentucky,
for Respondent.

Before: Judge Cetti

This case is before me upon a petition for assessment of civil penalty under §105(d) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 801 *et seq*., the "Mine Act" in which the Secretary charged Harlan Cumberland Coal Company (Harlan) with a violation of a mandatory safety standard 30 C.F.R. § 75.202(a).

The general issues before me are whether Harlan violated the cited standard as alleged in the citation and, if so, the appropriate civil penalty to be assessed for the violation taking into consideration the criteria in § 110(i) of the Mine Act.

The Mandatory Standard

The cited standard involved in this case is 30 C.F.R. § 75.202(a) which is a broadly worded mandatory standard that reads as follows:

> (a) The roof, face and ribs of areas where persons work or travel shall be supported or otherwise controlled to protect persons from hazards related to falls of the roof, face or ribs and coal or rock bursts.

The Cited Condition or Practice

The 104(a) citation charges Harlan with an S&S violation of 30 C.F.R. § 75.202(a) for its alleged failure to protect persons from the hazard of a coal burst from a pillar block while retreat mining pillars. The citation charges the operator with moderate negligence for its failure to prevent what some of the mine experts who testified agree was an unpredictable coal burst. The citation reads as follows:

> The coal ribs were not controlled to protect persons from the hazards of a coal burst in the three rooms in Second Left (MMU-005-0) off the Nine Right Panel, an active working section where persons worked and traveled. On November 20, 1996, retreat mining was started in the rooms and as the initial cut of coal was taken from the middle of the No. 1 pillar block, a coal burst was triggered. The coal burst damaged the coal ribs of all nine pillars in the rooms, blowing in excess of 1,500 tons of coal into the room entries and crosscuts. The blown coal injured six miners, two fatally. The potential for a coal burst was known to the mine operator, expecially (sic) when mining beneath areas of high ground cover. The mine operator had made some adjustments to the numbers of and size of the pillars in the rooms in the Second Left section; however, the adjustments were not sufficient to control the high ground pressures experienced by the active working section before the coal burst occurred. This citation is issued as a result of MSHA's fatal accident investigation and the the violation contributed to the occurrence of the accident.

MSHA charges Harlan with "moderate negligence" and proposes a penalty of $50,000.00.

Stipulations

1. The C-2 mine is a medium-sized underground coal mine producing 726,077 tons during the relevant period which, combined with the additional production of 9,000 tons by the controlling entity, results in an overall total production of less than one million tons during the relevant period. (Joint Ex. 1).

2. The amount of the appropriate penalty, if any, is in issue but the proposed penalty "will not put Respondent out of business."

3. The history of previous violations is shown on the computer printout received into evidence as Government's Exhibit 1.

4. The operator demonstrated good faith in attempting to achieve rapid compliance after notification of the alleged violation.

Background

The Harlan Cumberland Coal Company's C-2 mine is a medium-sized mine located near Dione, Harlan County, Kentucky where the operator is engaged in the mining of underground coal. The C-2 mine employs a total of 55 miners and produces coal two shifts a day, six days a week. Equipment maintenance is performed on a separate non-producing shift. The mine has an active advancing unit and an active retreat pillar-extraction unit.

The mine is developed and serviced through three portals consisting of drift openings into the Creech coal seam. The coal seam ranges in thickness from 42 to 96 inches. Overburden above the mine varies in the mountainous terrain from under 100 feet to over 1,600 feet at the deepest point under Black Mountain.

The Coal Burst

On November 20, 1996, there was an unpredicted coal burst in the 005-0 section located in the Second Left panel off Nine Right off of the No. 3 East Main entries of the C-2 mine. The overburden at the site of the accident was 1,420 feet. At the time of the coal burst, the foreman and his crew of eight other miners in the retreat pillar unit were underground engaged in retreat mining in the 005-0 section. Two of the miners sustained fatal injuries and four other miners in the crew sustained varying degrees of injury.

At the time of the November 20, 1996, coal burst, an MSHA regular AAA Safety and Health inspection was ongoing and the previous AAA MSHA inspection was completed less than two months earlier. It is undisputed that at the time of the accident Respondent was following the mine's MSHA approved roof-control plan. The mining method and procedure that was being followed in the deep cover area where the coal burst occurred had been approved by MSHA as well as by the state regulatory mining agency, the Kentucky Department of Mines and Minerals. There was also an ongoing inspection by state inspectors at the time of the coal burst.

On November 20, 1996, the day of the coal burst, the retreat mining day shift crew, consisting of eight miners and their foreman, arrived at 005-0 section about 6:25 a.m. They were met by Ernest Boggs, the maintenance foreman, who had conducted the pre-shift examination earlier that morning. Mr. Boggs reported to foreman Darrell Lewis that nothing unusual had been found during his pre-shift examination. Instructions were issued to the crews and production commenced about 6:30 a.m. Successive cuts were advanced in all three rooms without incident and the room entries and crosscuts were connected to the gob. The continuous mining machine was then moved to the No. 1 room pillar to take the initial cut beginning pillar extraction in that area. It was the practice to extract room pillars first, followed by adjacent entry pillars. This initial cut had advanced into room pillar No. 1 approximately 15 feet when at 2:08 p.m. it triggered the coal burst. The burst damaged the ribs of all nine room pillars, over 1,500 tons of coal was blown into the rooms and room crosscuts and, as previously stated, the burst resulted in the death of two of the retreat section mining crew and the injury of four other miners on that crew. The No. 2 and 3 pillars were damaged, particularly along the gob side.

The timber set at the mouth of the last open crosscut between numbers 1 and 2 rooms were broken and the roof in that area was damaged. Practically all of the test holes which had been drilled during the advance mining cycles contained cracks from 39 to 78 inches into its roof as a result of the force of the coal burst.

There was very little dispute with the conclusion of the MSHA accident investigators that the presence of thick sandstone layers above and below the coal seam enhance the ability of the coal pillars in the area of the burst to withstand high stress and store energy. As room pillar No. 1 was mined, much of its load was released and transferred to the already stressed adjacent pillars. It was this sudden pressure increase on the adjacent pillars that was sufficient to cause failure of coal near or into the core of these pillars resulting in this massive, unpredicted coal burst.

MSHA and the Kentucky Department of Mines and Minerals, as part of the investigation, conducted interviews of persons with knowledge of the facts and circumstances surrounding the coal burst. The parties offered into evidence as joint exhibits Nos. 2 through 26, the statements taken by MSHA. These joint exhibits include the statements MSHA took from the seven surviving members of the crew that were engaged in retreat mining in section 005-0 at the time of the coal burst, namely:

Jim Carr	Continuous Mining Machine Operator (Joint Ex. 27)
David Harris	Continuous Mining Machine Operator (Joint Ex. 13)
John Carroll	Roof Bolter/Scoop Operator (Joint Ex. 8)
Darrell Lewis	Foreman (Joint Ex. 16)
Ron Painter	Shuttle Car Operator (Joint Ex. 22)
Mike Pennington	Shuttle Car Operator (Joint Ex. 24)
Mike Pacholewski	Repairman (Joint Ex. 21)

In general it can be stated that the ground conditions on the 005-0 section prior to the coal burst were thought to be "normal" by the miners working in the section. These miners asserted that there were no "signs of abnormal pressure evident" before the coal burst. (Govt.'s Ex. 2 pg. 10). The MSHA Report of Investigation, Govt.'s Ex. 2, under heading "Summary and Conclusion" sub-heading "Cause of Accident" at pg. 11 states:

Cause of the Accident

> The investigation team concluded that the increasing size of the frontal gob, the existence of a side gob, and increasing depth of overburden (in excess of 1,400 feet), resulted in high stresses and

> pressures on the coal pillars as they were extracted. The side gob had narrowed to approximately 130 feet wide adjacent to the accident site. The narrowness of the side gob may have restricted caving, contributing to excessive loading of the pillar line.
>
> The presence of thick sandstone layers above and below the Creech coal seam enhanced the ability of the coal pillars to withstand high stresses and store energy. As room pillar No. 1 was mined, much of its load was released and transferred to the already highly stressed adjacent pillars. This sudden pressure increase on the adjacent pillars was sufficient to cause failure of coal near or into the core of these pillars, and resulted in the burst.

Curtiss Vance, who issued the citation, was the first witness called by MSHA. In addition to being a Federal Coal Mine Inspector, he is a substitute MSHA investigator. He testified that investigators are assigned to go out to the mine sites where fatalities or accidents have occurred and "investigate them and come up with a conclusion as to the cause of the accident, and any violations that we may find of the law." He participated in the investigation of the coal burst accident and in the preparation of the MSHA accident investigation report which was admitted into evidence as Government's Ex. 2.

Asked as to the basis for his issuance of the citation, Vance read from the citation "The coal ribs were not controlled to protect persons from the hazards of a coal burst in the three rooms in the Second Left off of the Nine Right panel, an active working section where persons work and travel."

When questioned further on this point the witness testified, over objection by counsel for Respondent, that it was concluded by the investigator "that the operator had knowledge for a potential coal burst" especially when mining underneath high cover. He testified to better control the coal ribs so as to protect persons from the hazards of a coal burst in the area where the accident occurred, the operator did change his usual mining procedure. The operator "adjusted the mining of the rooms off the panels from five entries down to three entries" to try to better control the ribs, but these adjustments made by the operator were not sufficient to prevent the coal burst. (Tr. 45-46). This obvious conclusion was reached after the coal burst occurred. Vance also testified that the MSHA investigation revealed that Harlan was following the mines' MSHA approved roof-control plan at the time of the coal burst.

On cross-examination Mr. Vance conceded that "you want good caving" to take the weight of the overburden off the pillars that you're trying to extract so as to reduce the weight that will be transferred to the remaining pillars and that with good caving you typically hear popping and cracking of the roof during the shift and sometimes booming as the top falls. Such sounds indicates you're getting good caving.

Mr. George Karabin was MSHA's only other witness. Mr. Karabin is a supervisory civil engineer with MSHA's Pittsburgh Safety and Health Technology Center in the Roof Control Division. He has been working in the area of roof control at that center for 28 years. He is a registered professional engineer in the State of Pennsylvania. Since the early 1980's his main focus has been to look at mine design aspects that contribute to roof- or ground-control problems. (Tr. 66).

Mr. Karabin testified that "deep cover causes pressure on the pillar proportionate to the depth of the cover, and it causes ground control problems." (Tr. 133). He defined a coal burst or bump as "where a coal pillar from excess pressure suddenly and violently fails and expels coal material from the rib into the opening." (Tr. 60). He stated the coal burst results from "excess pressure. Vertical pressure squeezes the pillar to a point where it can no longer handle that pressure. The strength of the coal pillar is exceeded." He further stated "They [pillars] don't fail in a slow controlled manner. Rather they store energy, perform very little and then suddenly explode." (Tr. 62).

Mr. Karabin was of the opinion that the massive sandstone layer in the roof of the mine contributed to the pressure on the pillars in the mine and to the coal burst which occurred on November 20, 1996. He stated that because of the thickness of the sandstone layer it tended to bend rather than break and cave in. Consequently, the caving which would relieve the pressure on the pillars at the face occurred only in the shale, leaving the unbroken sandstone to continue to put pressure on the pillars in the active mining area. (Tr. 120-122). He explained the sandstone did not cave well because of its thickness.

Mr. Karabin also testified that areas of the underground mine adjacent to the fatal coal burst site included the property line representing the end of the coal seam in which Harlan had ownership rights. This included a "point" or "corner" along this property line where it formed a right angle, angling to within 240 feet of the face where the coal burst occurred. (Tr. 87-90). He testified "the property line itself controls or confines the geometry of the mined area" since Harlan can't mine outside that property line.

Mr. Karabin testified that the Accident Investigation Team found that the corner played a "role in the accident in the burst itself. Essentially, what it did was restricted cave-in directly adjacent to the last set of rooms that were developed." Mr. Karabin stated that by restricting the caving this "point" or "corner" shifted the overburden pressures to the pillars where the burst occurred.

Mr. Karabin testified that prior to the coal burst of November 1996, there had been four incidents, in different areas of the mine, where Harlan had a ground-control problem that would indicate that there was a potentiality of a coal burst in areas of deep cover. He stated that "deep cover" is generally an area that has a depth greater than 1,000 feet.

Mr. Karabin then briefly described the history of four ground-control incidents that occurred at the mine under deep cover during the six years prior to the November 20, 1996, coal

burst. The first event was a non-injury coal burst on January 11, 1990. It occurred in the Second Right panel off the No. 2 East main. There was no damage to equipment and no injury to any person. The second event was a "squeeze" in July 1994 in the Right Eight section. This squeeze was later described by other mining experts as a floor squeeze. The third incident was a broad area of roof deterioration that occurred in May, June or July 1996 in the First Left off No. 3 East main that was resolved by Harlan, not mining the area and thus abandoning 29 pillars in the area. The fourth was a "squeeze" or "pressure point" in the First Left off Nine Right panel in September 1996. That area is about 1,000 feet from the area where the coal burst of November 20, 1996 occurred.

Without being specific, Mr. Karabin asserted that Harlan should have changed its mining method when retreat mining under deep cover. Mr. Karabin conceded, however, that in the Second Left off Nine Right panel, Harlan did make a change in its usual mining method from driving five entries into the barrier pillar to driving three. He indicated this change was a good thing that would increase stability but that it was insufficient. He testified:

> I believe had they mined five rooms, the burst would have occurred. It would probably have covered a broader area, since more rooms had been developed. But, the change from five rooms to three rooms would not produce a significant enough increase in stability to prevent the burst from occurring. (Tr. 165-166).

Mr. Karabin conceded that by the time Harlan got to Nine Right there were several mine plans floating around: Dr. Newman had a plan; Dr. Unrug had a plan; and Mr. Kaiser had a plan. There were "several things" offered to the company at that time insofar as to going forward. Harlan chose to go with Mr. Kaiser's plan which involved driving perpendicular off Nine Right. With hindsight it is now obvious that the plan "did not work out." A massive coal burst occurred on November 20th. At the hearing Dr. Karabin was asked if, in his opinion, one of the other mining plans had been selected, would Harlan have been able to successfully mine the area in question i.e. without a massive coal burst such as the one that occurred on November 20th. Dr. Karabin replied "Obviously, we have no way of knowing, they were not implemented." (Tr. 218 Lines 2, 3).

On cross-examination, Mr. Karabin stated that it was the four events described above, particularly the January 1960 non-injury coal burst that first put the operator on notice that the mine's Creech coal seam was capable of bursting when under deep cover. This non-injury, no-property damage coal burst was almost a mile from the site of the coal burst of November 20, 1996. Mr. Karabin stated that was the first indication to the operator that the coal seam was capable of bursting. He went on to testify that because the operator was aware of this and of the increasing pressure under deeper cover, Harlan made adjustments in its mining procedure to better control the ground in the 005-0 section. He conceded that this modification of the mining procedure under deep cover was a good thing but was not effective in preventing that November 1996 coal burst. Without giving any specifics or details as to his reasoning, Mr. Karabin

asserted that Harlan should have been able to determine that this modification would be inadequate.

Dr. Konstantine Unrug is a professor of mining engineering at the University of Kentucky. He has had the position for the last 20 years. During that time, his interest and research was focused on strata control of coal fields. At the university he is responsible for mine design, underground construction and rock mechanics. He has dealt with the presence of high pressure and high load conditions in deep mine-construction projects.

Dr. Unrug stated that pressure exists in all mines. In destressing to get pressure release, noises occur which are mainly thumping of different intensities. In stiffer material the sound can be stronger than in material which is soft. In trying to get caving you expect to hear popping, crackling and thumping. The absence of such noise is an indication that the coal pillar is storing energy. It is the absence of destressing noise rather than the existence of such noise that would be cause for concern. A coal burst occurs when the stored elastic energy in the coal is violently released by ejection of the coal matter to the surrounding space. (Tr. 297).

In 1994 when the "squeeze" incident occurred, Dr. Unrug was called to the mine as a consultant by Harlan's mine manager and the mine engineer. Dr. Unrug testified that his inspection and investigation indicated the 1994 incident was a "floor heave", that it was not a coal burst. The floor of the mine actually heaved up. Dr. Unrug explained: "A floor heave is a type of failure where the floor is the weakest element of the three components which are the mine roof, the pillar, and the floor." Dr. Unrug explained that the 1994 floor heave was caused by the failure of a small seam of coal which was about eight or nine inches below the surface of the floor. Dr. Unrug again emphasized that this 1994 incident was a "floor heave" and was not a "coal burst." He explained a "coal burst is an event in which the stored elastic energy in the coal is violently released by ejection of coal matter to the surrounding space." (Tr. 298). I credit Dr. Unrug's testimony and find this 1994 incident was not a "coal burst." It was a floor heave that was located approximately 2,000 feet from the area where the November 1996 coal burst occurred. (Tr. 296). Dr. Unrug testified that the occurrence of the 1994 floor heave was not an indication that a coal burst would occur at a later date. (Tr. 331).

It was Dr. Unrug's opinion that none of the ground control incidents described by Mr. Karabin were indicative of a future coal burst. Based on the testimony of Dr. Unrug, I find that the four prior incidents of ground control did not indicate that in the future it was likely there would be a coal burst such as the one that occurred on November 20, 1996 while Harlan was engaged in retreat mining.

It is undisputed that Harlan was following the approved mining procedure for pillar extraction set forth in the mine's roof-control plan. This mine plan under 30 C.F.R., MSHA § 75.223(d) requires the district manager to review the plan every six months. "The goal of this mine plan approval and adoption process is a mine specific plan with provisions understood by both the Secretary and the operator and with which they are in full accord." Once the plan is

approved and adopted, these provisions are enforceable at the mine as mandatory safety standards - cf *Jim Walter Resources, Inc*. 9 FMSHRC at 907.

Dr. David A. Newman, the second mining expert called by Harlan, is a registered professional engineer in Kentucky, West Virginia and Indiana and is a registered geologist in Kentucky. From 1984 to 1988 he was an Assistant Professor of Mining Engineering at the University of Kentucky during which time his focus was on yielding pillars. (Tr. 99). His area of expertise is rock mechanics, with particular concentration on underground stability. (Tr. 398). As a mine expert and consultant, Dr. Newman was contacted by Harlan to go underground and inspect the 2-C mine. He inspected the same area Dr. Unrug inspected which included the 1994 floor heave described by Dr. Unrug. He testified the floor heave "really has nothing to do with the coal burst of November 1996 and has everything to do with the weakness of the floor." (Tr. 406-407). Prior to the coal burst of November 1996, Dr. Newman was consulted on other mining problems by Harlan but states he was not consulted and made no recommendation with respect to the retreat mining of the Second Left off Nine Right. When he did visit the area after the coal burst and was told of Mr. Kaiser's recommendations to come off Nine Right and mine perpendicular to Nine Right, Dr. Newman had no problem with Mr. Kaiser's proposal.

With respect to the four ground-control incidents Harlan had in different areas of the mine during the past six years, Dr. Newman testified that each of those four incidents was unique to the area where they occurred and were not indicative that a coal burst such as the one that occurred on November 20, 1996, would happen. (Tr. 421-426, 432-434).

Dr. Newman testified that Harlan never refused any of the recommendations he made that would affect safety of the miners. He added that in one area where he made recommendations, Harlan chose to abandon (not mine) the area. (Tr. 481).

When Dr. Newman was asked if he agreed with the MSHA assumption that the operator should have known and have been aware of a likely coal burst such as occurred on November 20, 1996, he replied as follows:

> I disagree. The thing I would rely upon most heavily for that is the men who were in the mine, who had a better feel than I would for the typical noises on that section, for the typical behavior of the pillars, for the typical behavior of the roof, and who in other areas of the mine, did abandon areas that they found — where they did believe it to be unsafe. I would more rely upon their habitual feel for what the conditions would be as more of an indicator of a potential for burst. I mean, they saw it every shift, every day, were familiar, as is born out in the sworn testimonies, familiar with the behavior of the key cut, familiar with the behavior and immediate- ly after the key cut and familiar to the behavior of the typical pillar recovery. (Tr. 434-435).

FURTHER DISCUSSION, FINDINGS AND CONCLUSION

The Secretary argues that looking back almost six years from January 1990 to November 20, 1996, there were four incidents in different areas of the mine where Harlan encountered ground-control problems under deep cover exceeding 1,000 feet and Harlan, therefore, should have been aware of the potential for a coal burst such as occurred on November 20, 1996, in the Second Left off the Nine Right panel. Because of these four ground-control incidents under deep cover the MSHA now argues that Harlan should have changed its method of retreat mining the pillars in the Second Left MMU0050 off the Nine Right panel so as to prevent a potential coal burst such as the one that occurred November 20, 1996.

On evaluation of the expert testimony presented at the hearing, I credit the testimony of Dr. Unrug and David Alan Newman. Based on testimony of these experts, I find the only prior coal burst at the C-2 mine was the non-injury, no equipment damaged coal burst that occurred in January 1990. With respect to that incident Dr. Unrug testified a coal burst occurring in January 1990 with no coal burst in 1991 would not lead one to predict there would be another coal burst one mile away, six years later. The reason for this Dr. Newman explained is the "differences in geological composition" between different areas in the mine. He states that in the carboniferous strata of the mine "changes are rapid" in the geological composition. (Tr. 329).

Dr. Unrug stated the differences in geologic composition in a mine can be illustrated by the difference in geological composition that one sees as one drives through Kentucky viewing the difference in geological composition of strata along the roadway highwalls. (Tr. 329-330). Different coal strengths exist in different parts of the mine. (Tr. 336). This is why a coal burst occurring in 1990, with no coal bursts in 1991, would not lead one to predict that there would be another, one mile away, six years in the future. (Tr. 329).

Hindsight alone will not support the citation. Hindsight is improperly judging what should have been done in light of what ultimately happened, not in light of the circumstances at the time. The Commission has consistently held with respect to this broadly worded standard, 30 C.F.R. § 75.202(a) that "the adequacy of particular roof support or other control must be measured against the test of whether the support or control is what a reasonably prudent person, familiar with the mining industry and protective purpose of the standard, would have provided in order to meet the protection intended by the standard." *Canon Coal Co*., 9 FMSHRC 667, 668 (Apr. 1987) (cited in *Helen Mining Co*., 10 FMSHRC 1672, 1675 (Dec. 1988) and in *Harlan Cumberland Coal Co*., 20 FMSHRC 1275, 1277 (Dec. 1998).

The Petitioner has the burden of proof. Harlan was mining the 005-0 section in compliance with its approved mine plan. Upon review, an evaluation of all the evidence, I find that a preponderance of the evidence of record fails to establish that Harlan did not provide what a reasonable, prudent person, familiar with the industry and the protective purpose of the standard, would have provided in light of the known facts and circumstances that existed prior to the November 20, 1996, coal burst. Consequently, the cited standard was not violated. The citation should therefore be vacated.

ORDER

Citation No. 4622390 is **VACATED** and the proposed $50,000.00 penalty is set aside.

August F. Cetti
Administrative Law Judge

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