FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION
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December 22, 2003

SECRETARY OF LABOR,	:	CIVIL PENALTY PROCEEDINGS
MINE SAFETY AND HEALTH	:	
ADMINISTRATION (MSHA),	:	Docket No. WEST 2002-207
Petitioner	:	A.C. No. 42-02113-03574
	:	
v.	:	Docket No. WEST 2002-278
	:	A.C. No. 42-02113-03575
PLATEAU MINING CORPORATION,	:	
Respondent	:	Willow Creek Mine

DECISION

Appearances: Kristi L. Floyd, Esq. and Lydia Tzagoloff, Esq., Office of the Solicitor, U.S. Department of Labor, Denver, Colorado, for the Secretary of Labor; R. Henry Moore, Esq., Buchanan Ingersoll, Pittsburgh, Pennsylvania, for Plateau Mining Corporation.

Before: Judge Manning

These cases are before me on two petitions for assessment of civil penalty filed by the Secretary of Labor, acting through the Mine Safety and Health Administration ("MSHA"), against Plateau Mining Corporation ("Plateau"), pursuant to sections 105 and 110 of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. §§ 815 and 820 (the "Mine Act"). The cases involve three citations issued by the Secretary under section 104(a) of the Mine Act following a fatal accident at the Willow Creek Mine.[1] The Secretary seeks a total penalty of $45,340. An evidentiary hearing was held in the Commission's courtroom in Denver, Colorado. The parties presented testimony and documentary evidence and filed post-hearing briefs.

I. BACKGROUND

The Willow Creek Mine was an underground coal mine in Carbon County, Utah, operated by Plateau, a subsidiary of RAG American Coal, Inc. The mine was developed in 1996 and it was closed in 2000 after the accident at issue in this case. At the time of the accident, the mine had three operating sections: the D-3 longwall panel and two continuous miner sections. This longwall panel was the third longwall panel that had been developed at the mine.

[1] Docket No. WEST 2002-278 initially included two additional citations but, in an order dated October 4, 2002, I approved the parties' proposed settlement of those citations.

The D-3 longwall panel (the "panel") started retreat mining on July 17, 2000, 15 days prior to the accident. The face was 815 feet wide and the panel was projected to be about 4200 feet long. At the time of the accident the face had been mined about 250 feet. MSHA had granted Plateau the right to use a two-entry system of mining on this panel and on the two other panels that had been previously mined. This D-3 panel immediately abutted the D-2 panel, which had been sealed off.

The panel was ventilated by a flow-through bleeder system that included multiple bleeder entries. The ventilation plan in use at the time of the accident was reviewed and approved by the MSHA District 9 manager on March 25, 1999. An amendment to the ventilation plan addressing retreat mining in the panel was approved by MSHA on July 7, 2000. The mine liberates substantial quantities of methane. In addition, the extraction of coal results in the release of liquid hydrocarbons. An analysis of these hydrocarbons noted that the composition of this liquid was roughly equivalent to a mixture of 15% gasoline, 35% kerosene, and 50% light lubricating oil. Vapors from the liquid hydrocarbons were present in the mine and the ventilation system was designed to remove these vapors along with the methane.

Two miners were killed and eight miners were injured on the night of July 31, 2000 - August 1, 2000, as a result of a series of events that occurred on the panel. The events that transpired that night are at issue in this case. Each party presented extensive testimony and documentary evidence to support its position.

A. Secretary of Labor's Interpretation of the Events.

The Secretary believes that at about 10:14 p.m. on July 31, 2000, a sudden release of methane in the face area caused the longwall shearer to de-energize as it approached the tailgate on its third clean-up pass. Using various methods, the crew was able to re-energize the longwall shearer 42 minutes later at 10:56 p.m. The shearer operator completed the cutout at the headgate side and the clean-up pass along the first eight shields. About 12 miners were on the panel at that time.

At 11:48 p.m., a relatively small roof fall occurred on the headgate side of the gob, between the longwall face and the setup rooms. The fall ignited a small pocket of methane and other gaseous hydrocarbons. The flame traveled inby to a small methane accumulation in the back of the gob near the longwall setup rooms, which resulted in the first explosion (the "first event"). The miners on the panel assumed that the forces that they felt were a result of the first major cave in the gob. The miners remained on the panel to extinguish a fire at the base of the shields on the headgate side of the longwall face. This first event disrupted longwall ventilation on the panel, which prevented methane from being removed from the gob through the bleeder entries. As liquid hydrocarbons started to burn, two subsequent explosions occurred at 11:55 p.m. and 11:56 p.m. The Secretary believes that one miner was killed during the second explosion when he was thrown to Shield No. 4 and was asphyxiated by carbon monoxide. Miners near the headgate side of the longwall shearer were signaled to evacuate. Moments later,

at about 11:56 p.m., a third explosion occurred. The forces of this explosion likely killed the second miner. At about 12:17 a.m., August 1, 2000, a fourth explosion occurred.

Following its investigation of the accident, MSHA concluded that Plateau's bleeder system did not adequately control the air passing through the worked-out area of the panel. The ventilation system did not dilute and render harmless concentrations of methane and other gaseous hydrocarbons in the worked-out area where potential ignition sources existed. In addition, the investigation revealed that Plateau failed to comply with the approved ventilation plan. Finally, MSHA concluded that, in the week preceding the accident, Plateau failed to adequately ensure that its bleeder system was functioning properly.

B. Plateau's Interpretation of the Events.

On the evening of July 31, 2000, the ventilation system was functioning properly to move air away from the active areas through the gob and into the bleeder entries. Airflow at the face exceeded the requirements of the approved ventilation plan. At about 11:48 p.m., the shearer was stopped on the headgate side of the face while Shield No. 1 was advanced. The roof in the gob had not yet experienced its first large cave. At that time there was an event in the gob that was described by everyone on the face of the panel as a large roof fall in the gob. Plateau believes that this roof fall was the first event. This event was a significant cave and it was accompanied by an air blast coming out of the gob area which threw at least one miner working on the face and knocked down another miner. The miners felt no heat in this blast of air. This cave was accompanied by a fire on the mine floor between some of the longwall shields. The miners on the face tried to fight the fire with extinguishers.

When it became clear that the miners were not going to be able to extinguish the fire, the shift supervisor ordered an immediate evacuation. Before the miners were able to evacuate, three explosions occurred. Plateau believes that the first event, which was the large cave, likely damaged ventilation controls inby the longwall face resulting in a disruption of ventilation in the panel. This disruption in the ventilation permitted methane in the gob to come in contact with an ignition source, which was the hydrocarbon fire and, in all likelihood, caused the explosions which occurred after this first event.

C. Description of the Willow Creek Mine.

Plateau was mining in accordance with a ventilation plan approved by MSHA. The plan for the D-3 panel had been developed during a series of meetings between MSHA and Plateau during 2000. The review and approval of the plan was given particular attention by MSHA because the mining conditions at the mine were difficult and because there had been a fire on the mine's first longwall panel in November 1998.

Mining at Willow Creek presented a number of challenges because of the amount of methane liberation, the depth of the cover over the coal seam, and the resulting roof conditions,

including roof and rib bounces. The D-3 panel was going to be the first panel at the mine that would not be separated from the previous panel by a solid barrier of coal. Finally, as discussed above, liquid hydrocarbons were also present in the coal seam. The mine was operating under a petition for modification which allowed it to use a two-entry longwall mining system to minimize the hazards created by the roof conditions.

At the time of the accident, the panel had been mined about 250 feet on retreat. The gob was immediately behind the shields for the longwall. Behind the rubble zone of the gob two entries had been developed that ran the width of the panel from the headgate to the tailgate.[2] These entries were about 80 feet apart when they were developed and were called the "setup rooms" because the area was used to set up the longwall machinery when the panel was first mined. There were connecting crosscuts between the two setup rooms. Once longwall mining commenced, the setup room closest to the longwall shields (No. 2 setup room) became part of the rubble zone. Immediately behind the setup rooms were two short L-shaped crosscuts, one on the headgate and one on the tailgate that were called "doglegs." The dogleg on the headgate side connected the No. 1 headgate entry with the No. 1 setup room. Behind the doglegs and setup rooms was a large block of coal. Behind this block of coal were three bleeder entries, which ran perpendicular to the panel. The No. 1 bleeder entry was used to bring intake air to a sump pump at the back of the bleeders. The other two bleeder entries were return entries. Plateau established a number of Measuring Point Locations ("MPLs") throughout the panel and the bleeders to monitor carbon monoxide, oxygen, methane, and air flow, as discussed below. A map of the face, gob, and bleeder entries at the panel is attached to this decision to illustrate the configuration of the panel.[3]

Plateau's ventilation plan was reviewed by high level MSHA personnel prior to the accident. The ventilation was evaluated by MSHA District 9 personnel, MSHA's technical support group, including John Urosek, Chief of the Ventilation Division, and personnel from MSHA's national headquarters. MSHA gave its approval for the ventilation plan for the D-3 longwall panel on July 7, 2000. The ventilation plan includes three alternative methods of ventilating the panel. The approved ventilation system being used on July 31, 2000, ventilated the panel by forcing air across the longwall face from the headgate to the tailgate. Intake air was brought to the longwall face through the last open crosscut from the No. 2 entry of the headgate. The vast majority of air was directed along the longwall face. After the air ventilated the face, it was coursed back through the tailgate inby toward bleeder entries and passed through MPLs 7

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[2] The parties used the terms "gob," "mined-out area," and "pillared area" interchangeably at the hearing. In this decision, I use the term "gob" to describe the area between the longwall shields and the bleeder entries including the setup rooms and the headgate and tailgate entries inby the shields. I use the term "rubble zone" to refer to that area of the gob that had been mined by the longwall system.

[3] The attached map is a portion of Appendix I of Ex. G-31 with a few additional labels for clarification.

and 8 as it entered the bleeders. A small portion of the intake air entering the last open crosscut from the No. 2 entry of the headgate was directed out the belt entry, which was the No. 1 headgate entry. As discussed below, a portion of the intake air entering the last open crosscut from the No. 2 entry of the headgate traveled through the gob into the bleeder entries. Intake air also traveled up the No. 2 headgate entry directly into the bleeders at MPLs 5 and 6.

Intake air also traveled up the No. 2 entry of the tailgate through MPLs 7 and 8. Use of the tailgate to bring intake air into the longwall helped maintain ventilation pressure on the tailgate corner of the gob to prevent methane from coming back into the face. The elevations on the panel dipped down from the tailgate to the headgate and down to the inby headgate corner of the gob. As a consequence, the corner of the gob closest to the face at the tailgate had the highest elevation while the corner of the gob on the headgate side closest to the bleeder entries had the lowest elevation. Methane would tend to migrate to the tailgate side of the gob because methane is significantly lighter than air.

Intake air traveled through the unsupported area of the gob where the roof was expected to fall. The path of the air moving through the rubble zone would be impossible to predict or determine, especially during the first few weeks of longwall mining. Air flowed out of the rubble zone into the setup rooms. From there, the air traveled to the tailgate side and into the bleeders at MPLs 7 and 8. Intake air also entered the No. 1 setup room from the headgate through a regulator between the Nos. 1 and 2 entries of the headgate at MPL No. 4. Finally, some intake air traveled up the No. 1 headgate entry inby the longwall shields through a hole in an undercast constructed at the intersection of this entry and the No. 1 setup room and then into the bleeders at MPLs 7 and 8. These two air courses were designed to help dilute methane as it came out of the rubble zone into the setup entries. The ventilation pathways are illustrated in Exhibit G-3.

Seals were constructed in the crosscuts between the Nos. 1 and 2 entries of the headgate as the longwall progressed outby each crosscut. The ventilation system was not designed to course air from the headgate entries through the gob and then back out the headgate entries to the bleeders because this portion of the gob was at the lowest elevation in the gob. The sump pump in the back corner of the bleeders was present to keep water from accumulating in the bleeders and backing up into the headgate entries inby the setup rooms.

After the longwall retreated about 500 feet, it was expected that Plateau would change the ventilation system. This change was included in the ventilation plan approved by MSHA. Under this plan, which was never implemented because the longwall had only retreated about 250 feet at the time of the accident, intake air would ventilate the longwall face from the tailgate to the headgate. In addition, gob vent boreholes had been drilled from the surface to supplement the ventilation system. These gob vent boreholes could remove methane from the face and gob as the longwall retreated beyond them. None of these gob vent boreholes had been intersected by the longwall at the time of the accident so they had not been used.

The MSHA-approved plan also included the use of a computerized atmospheric monitoring system ("AMS"). This system was designed to present instantaneous information to mine personnel about the functioning of the ventilation system on the panel. The information monitored included air velocities, as well as methane, oxygen and carbon monoxide levels at the MPLs discussed above.

II. DISCUSSION WITH FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. Citation No. 7143395, Section 75.334(b)(1)

Citation No. 7143395, issued on July 16, 2001, by Chad A. Weaver and Gary J. Wirth[4] under section 104(a) of the Mine Act, alleges a violation of the 30 C.F.R. § 75.334(b)(1) as follows:

> During pillar recovery of the D-3 longwall panel, the bleeder system being used did not control and distribute air passing through the worked-out area in a manner which continuously diluted and moved methane-air mixtures and other gases, dusts, and fumes from the worked-out area away from active workings and into a return air course or to the surface of the mine.
>
> The following factors impaired the bleeder system's effectiveness at controlling and diluting the air passing through the worked-out area: a limited mine ventilating potential; the configuration and distribution of airflow in the bleeder system and worked-out area; and temporary controls installed within the worked-out area which restricted airflow through the pillared area. As production increased and pillared area expanded, methane liberation increased and airflow paths changed within the worked-out area. These changing conditions resulted in reduced airflow and elevated methane concentrations within the worked-out area at locations containing potential ignition sources and within close proximity to the active longwall face.
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> On July 31, 2000, an explosive concentration of methane-air mixtures and/or other gases, dusts, and fumes had accumulated in the worked-out area, within 250 feet of the working D-3 longwall face. At approximately 11:48 p.m., a portion of the atmosphere in

[4] At the time the citation was issued, Mr. Wirth was a supervisory mining engineer with MSHA's Coal District 11. He is now an Assistant District Manager for that district.

> the worked-out area was ignited, resulting in an explosion which injured a miner working on the D-3 longwall section. The initial explosion created conditions which resulted in additional explosions within or near the worked-out area. The subsequent explosions resulted in fatal injuries to two miners on the D-3 longwall section.

The inspectors determined that the violation was serious, of a significant and substantial nature, and was the result of Plateau's moderate negligence. The Secretary proposes a penalty of $25,000 for the violation. The cited safety standard provides: "During pillar recovery a bleeder system shall be used to control the air passing through the area and to continuously dilute and move methane-air mixtures and other gases, dusts, and fumes from the worked-out area away from active workings and into a return air course or to the surface of the mine."

1. Arguments of the Parties

The parties introduced extensive evidence on this citation and presented wide-ranging arguments in their briefs. I only summarize the evidence and argument in this decision to emphasize the elements upon which I base my decision. Any evidence or argument not discussed herein that is inconsistent with my findings and conclusions is hereby rejected. I have not discussed all of the testimony and exhibits that were admitted into evidence.[5]

The Secretary maintains that the standard required the operator to establish a bleeder system that directs air through the gob and which controls that airflow to distribute it properly. The airflow must continuously dilute all contaminants in the worked-out area away from the active mining areas and out of the mine. A mine operator violates the safety standard when "airflow is not controlled or properly distributed to continuously dilute the methane and/or other gases or fumes within the worked-out area." Tr. 56. Thus, the Secretary argues that the standard is designed to address the hazards associated with methane entering the active mining areas and also to prevent methane from accumulating within the gob.

The Secretary contends that to comply with the standard, the ventilation system must control and distribute the airflow so as to continuously dilute and render harmless methane and other gases in the worked-out area. This requirement "means that hazardous concentrations of methane must not be allowed to 'accumulate' in a manner that would then allow an ignition source to explode or ignite the accumulation of gases within the gob when and if an ignition source comes into existence." (S. Br. 6). The Secretary acknowledges that not every accumulation of methane in the worked-out area comprises a violation because methane occurs naturally in worked-out areas of a coal mine. Methane and other gases must nevertheless be "coursed continuously out of the mine through the bleeder system." *Id.*

[5] Included in this decision are frequent references to the transcript and exhibits. These references are illustrative only and are not the only support for my findings in the record.

The Secretary maintains that the mine's ventilation system failed to comply with section 75.334(b)(1) in several respects. The primary airflow paths were not fully established within the worked-out area, the mine had a limited "ventilating potential," and temporary controls installed in the worked-out area restricted airflow through the gob. *Id.* at 7. Additional factors that contributed to the violation included reduced air velocities on the panel due to the increased resistance in the worked-out area, especially on the headgate side, combined with increased liberation of methane in the gob. The Secretary believes that the bleeder system was over-extended so that it could not handle the levels of methane that were being liberated.

Plateau maintains that the Secretary did not meet her burden of proof with respect to this citation. Plateau agrees that the goal of a bleeder system is to minimize the hazard from the methane that is present in mined-out areas by moving it away from the active workings through the gob, into the return airway, and out of the mine. The goal is accomplished, in part, by keeping methane away from the most likely sources of ignition, including miners and equipment. As Clete Stephan testified, this goal is also accomplished by keeping the "explosive pocket of [methane in the gob] very small, very thin." (Tr. 532). The presence of explosive levels of methane in the gob does not establish a violation of the Mine Act or the Secretary's safety standards. The only limit in the safety standards is that methane cannot exceed 2% in the return air just before it joins another split of air. 30 C.F.R. § 75.323(e).

Plateau contends that the bleeder system at the mine fully met the requirements of section 75.334(b)(1). Plateau developed a ventilation plan which MSHA determined met the requirements of the standard. The interrelationship between section 75.370 and 75.334 compels a finding that development of an approved ventilation plan satisfies the requirements of section 75.334. Plateau argues that the evidence establishes that Plateau controlled the air in and around the longwall and the gob. It diluted the methane coming out of the rubble as evidenced by the methane levels at MPLs 7 and 8.

2. <u>Analysis of the Issues</u>

Section 75.334(b)(1) applied to the D-3 longwall panel because longwall mining is retreat mining. For purposes of the safety standard, Plateau was engaged in "pillar recovery" at all pertinent times. Under this standard, Plateau was required to use its bleeder system "to control the air passing through the area and to continuously dilute and move methane-air mixtures and other gases . . . from the worked-out area away from active workings and into a return air course . . . ." The issue is whether the Secretary established that Plateau failed to comply with this requirement. The fact that there was a series of explosions or ignitions in the gob does not establish a violation. *Consolidation Coal Co.*, 20 FMSHRC 227, 240 (March 2000). The cause of the tragic events of July 31, 2000, relates to the question whether Plateau violated section 75.334(b)(1), but establishing the cause does not necessarily establish the violation.

I find that the Secretary established a violation of section 75.334(b)(1). I reach this conclusion after a careful examination of the facts presented by the parties. As discussed below,

I find that the Secretary established that the bleeder system was over-extended so that it could not, on July 31, 2000, control the air passing through the area so as to continuously dilute and move methane-air mixtures and other gases from the gob into the bleeders.

I agree with the Secretary that a mine's approved ventilation plan represents the minimum specifications for ventilating the mine. A mine operator may violate section 75.334(b)(1) even though it is fully complying with the approved ventilation plan. First, the mine operator has better knowledge of the conditions that will be encountered when mining commences. More importantly, because an underground coal mine is a dynamic environment, a mine operator must be constantly vigilant when monitoring the conditions underground and it must make changes to its ventilation system as conditions warrant. I agree with the Secretary that Plateau should have been on notice that its bleeder system was not functioning properly on July 31, 2000.

a. <u>Increase in Methane Levels</u>

There is no dispute that methane liberation levels generally increased on the panel as longwall mining progressed. As the rubble zone increased in size, the amount of methane liberated in the gob naturally increased. In addition, as production increased, the amount of methane liberated at the face increased. The increase in methane liberation from these two sources is demonstrated by the amount of methane measured by the mine's AMS at MPLs 7 and 8, as illustrated in Figures 3 and 4 of Exhibit G-31. These MPLs were located at the point where air leaving the gob entered the No. 3 bleeder entry. Longwall mining commenced on the panel on July 17, 2000. On the third day of mining, methane was measured at between 0.5% and 1.0% at MPLs 7 and 8. On July 24, 2000, it reached 3% at one point, but it averaged around 1.5% between July 25 and July 30. On July 31, it averaged between 2.5% and 3.0%. Although the general trend was upward, it spiked up most noticeably at those times that production was high, including above 3.5% on the morning of July 31. (Ex. G-31, Fig. 4). Plateau's "action level" for methane at that location was 4%. (Ex. P-15). If the AMS sensors detect methane at 4% at MPLs 7 or 8, all production is stopped on the panel. At 4.5% methane, the mine is evacuated and MSHA is notified.

The methane level at the measuring point for the bleeder entries established by the Secretary at section 75.323(e) also increased over this same period of time. On July 21, 2000, methane readings averaged between 1.0% and 1.5% at MPL B1.[6] Starting on the evening shift of July 29, the methane concentration at this point began to range between 1.5% and 2.0%. (Ex. G-31, Fig. 3). Early on July 31, the methane concentration went above 2.0% on one occasion. Plateau's action level at this MPL is 1.9% and the safety standard requires that methane concentrations not exceed 2%. If the concentration of methane reaches 2.5%, Plateau evacuates the mine and notifies MSHA. Plateau halted production on the panel several times on July 31 because of high methane levels at the face.

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[6] Bleeder air joined another split of air just outby MPLs B1, B2, and B3. (Ex. G-31, Appendix I). The readings obtained at MPL B1 are used for comparative purposes.

The increase in methane liberation was quite significant. Methane liberation, as measured in the bleeder system at MPLs B1, B2, and B3, was 2.5 million cubic feet per day on July 18 and 19, 2000. (Ex. G-31 p. 27). By July 25, the methane liberation had increased to 6.3 million cubic feet per day. *Id.* On July 31, it was over 7 million cubic feet per day. The airflow at the tailgate bleeder connectors decreased during this same period of time. Although this condition is common during longwall startup, adjustments should be made to the bleeder system to increase ventilating pressure in order to control the methane in the gob. Plateau did not make any changes in its ventilation system to better control, dilute, and move methane as a result of these increases in methane liberation during this period.

Plateau states that it expected methane levels to increase and that its ventilation system was designed to handle the increase. (Tr. 1055-57). As the tailgate side of the gob became restricted by roof falls, Plateau was going to change its ventilation system so that intake air from the tailgate entries would ventilate the longwall face. Until that time, the air velocity on the face would slowly decrease. Plateau denied that its ventilation system was beyond its capacity on July 31. More air than was required under the plan was being coursed into the panel. In addition, the mine was experiencing less downtime for methane than had been experienced on other panels. This mine is subject to coal bursts and other sudden releases of methane at the face. When that occurs, all mining stops until the methane clears. Finally, Plateau maintains that the longwall would have reached the first gob vent borehole within a few days which would have provided an additional means of removing methane from the panel.

b. <u>Control, Dilute, and Move</u>

Under the safety standard, a mine operator must "control" and "dilute" methane-air mixtures in the gob and "move" these mixtures into the bleeder system at the earliest practical point. The purpose is to render these mixtures harmless and carry them away from the active workings. It is impossible for a mine operator to ensure that explosive concentrations of methane never occur in the gob. Methane is explosive at concentrations between 5% and 15%. Because methane is liberated 100%, there will be some zones where explosive levels will exist on a temporary basis. Nevertheless, if the bleeder system is operating correctly, methane-air mixtures will be continuously diluted and swept away into the bleeder entries. Methane must not be allowed to accumulate in the gob because explosive concentrations are likely to develop that could be ignited if the accumulation comes in contact with an ignition source.

The key element in diluting and moving methane-air mixtures from the gob is to ensure that there is a sufficient quantity of air sweeping the gob. On July 31, 2000, the fan ventilating the mine was operating at or near its capacity. In order to properly ventilate the gob, there must be a sufficient pressure drop between the last open crosscut in the headgate entries and the connection between the gob and the bleeder entries. The regulators at MPLs 7 and 8 were open all the way. Although the frame for the regulators provided some resistance, for all practical purposes the entries were wide open. As the methane levels increased, the amount of intake air

sweeping the gob actually decreased because of increased resistance to air movement in the gob. Plateau did not make any changes to its ventilation system during this period.

c. Sweetened Air at the §75.323(e) Measuring Point

Under section 75.323(e), the "concentration of methane in a bleeder split of air immediately before the air in the split joins another split of air . . . shall not exceed 2.0 percent." Monitoring the methane levels at this location is one of the key ways that a mine operator can determine whether it is meeting the requirements of section 75.334(b)(1). This measuring point, MPL B1 in Plateau's AMS, is critical to evaluating the effectiveness of the bleeder system. (Tr. 1370). The evidence in this case establishes that as longwall mining progressed, the level of methane at this location increased significantly. (Ex G-31 Fig. 3). Indeed, on July 31, 2000, methane levels at this location went above 1.9% methane on at least two occasions for a total of 50 minutes and above 2% at least once. These measurements show that the mine's bleeder system had "max'ed out." (Tr. 595). At the same time, the methane levels at MPLs 7 and 8 increased to above 3% while the levels at MPLs 5 and 6 were consistently below 0.5%. Thus, air ventilating the sump pump in the No. 1 bleeder entry and air entering the No. 3 bleeder entry at MPLs 5 and 6 from the headgate entries were mixing with the 2.5% to 3.5% methane concentration entering the bleeders at MPLs 7 and 8.

John Urosek estimates that there was a concentration of 2.3% to 2.6% methane in the bleeders at the point where this mixing occurred near MPLs 7 and 8. (Tr. 599-601). He testified that ordinarily this concentration would have manifested itself at the section 75.323(e) measuring point, MPL B1. Urosek concluded that the methane readings at MPL B1 would have been much higher than was actually recorded by the mine's AMS but for the fact that there was a significant amount of leakage between the No. l bleeder entry, which brought intake air to the sump pump and other electrical installations, and the No. 2 bleeder entry which carried air from the gob through MPL B1. *Id.* Gary Wirth estimated that this leakage amounted to about 50,000 cfm of air. (Tr. 100-01). Thus, a significant amount of "sweet" intake air was entering the bleeders between the gob and the section 75.323(e) measuring point which had the effect of artificially lowering the methane concentrations at that location. This sweetening of air in the bleeders is not typical in longwall mining.[7] (Tr. 603-04). If this sweetening had not occurred, the methane levels at the section 75.323(e) measuring point would have been above 2% on a fairly regular basis since at least the afternoon of July 30, 2000. These readings would have revealed that the bleeder system was not working to control, dilute, and move methane away from the panel. I credit the testimony of Urosek in this regard.

[7] The leakage between the intake bleeder entry and the return bleeder entries was due to the high pressure differential between them. (Tr. 600-01). If the regulator for the intake bleeder had been installed at the mouth of bleeder rather than at the sump pump, this pressure differential would have been reduced. (Tr. 659).

As Mr. Urosek testified, if a mine operator detects a concentration of methane at the section 75.323(e) measuring point that is greater than 2%, the ventilation system needs to be changed in some way to bring more airflow through the gob. (Tr. 1370-71). By bringing in a significant amount of intake air into the bleeder system at a considerable distance outby the gob, the readings at this measuring point become meaningless. As Urosek pointed out, it is as if a split of air containing 40,000 to 50,000 cfm was entering the bleeder entries just inby the section 75.323(e) measuring point. (Tr. 1371 - 73; Exs. G-41 & G-42). It is important to understand that the bleeder entries were about 9,000 feet long, and the point where ventilation from the gob entered the bleeder entries was at least 8,000 feet from the section 75.323(e) measuring point. (Tr. 1258). Although some leakage of intake air into the bleeders is to be expected along this distance, Plateau failed to recognize the effect of the leakage when it established its action level for MPL B1. At the 1.9% level, the true methane concentrations were already well above 2%.

Plateau argues that the safety standard does not require a mine operator to fully dilute methane in the gob before the methane-air mixtures enter the bleeder entries. It argues that, under section 75.334(b)(1), it is appropriate to use the bleeder entries to reduce the concentrations of methane below 2%. I agree that the safety standard does not require that the 2% limit be met as the air from the gob enters the bleeders but, if the mixing occurs thousands of feet outby as a result of air leaking into the bleeders from an intake air course, a mine operator has no means of determining whether it is properly "controlling" the air passing through the gob to "continuously dilute" and "move methane-air mixtures" from the gob away from active workings. In this case, the readings at MPL B1 gave a false impression that Plateau's bleeder system was functioning properly when it actually was not. When methane concentrations in the bleeder entries at the section 75.323(e) measuring point are at or above 2%, the bleeder system can no longer dilute additional methane from the gob down to the 2% level. In this situation, a mine operator is no longer able to "continuously dilute and move" methane from the gob. As a result, there is a high risk that an explosive methane-air mixture will accumulate in the gob. Such an accumulation developed at Willow Creek on July 31, 2000.

Plateau contends that, because the methane readings taken by the AMS at MPLs 7 and 8 were higher than readings taken by bottle samples, the AMS readings are inaccurate. As a consequence, it argues that the Secretary's supposition that the methane readings were higher than Plateau believed is without factual foundation. (P. Br. 28). The Secretary contends that because Plateau's argument is based on one example, it should not given any credence. She argues that many factors come into play when taking hand-held methane samples, including the location at which each sample is taken. Thus, "claiming that the AMS was reading high is not a reasonable assertion, especially given the fact that the AMS was routinely calibrated." (S. Reply Br. 6). I find that Plateau's argument is not well taken.

The data from the AMS showed that the methane levels were steadily increasing at MPLs 7 and 8 and at MPL B1 as longwall mining progressed. Starting on the evening of July 29, 2000, methane levels increased rapidly at MPLs 7 and 8. (Ex. G-31, Fig. 3). Prior to that time methane was about one-quarter of a percentage point greater at MPL 8 that at MPL B1. By the

middle of July 31, the spread was about three-quarters of a percentage point. Methane was accumulating in the gob as measured at MPLs 7 and 8, but this increase was not as perceptible at the section 75.323(e) measuring point because of the 40,000 cfm of intake air that was getting into the bleeder entries well outby the gob. The increasing difference between methane concentrations at the tailgate bleeder connections and those at MPL B1 indicates that gob airflow was becoming a smaller percentage of the total airflow at MPL B1. (Ex. G-31 p. 27, S. Br. 12-13). Quite simply, methane was accumulating in the gob more rapidly than the ventilation system was able to dilute and move it into the bleeders.

d. Distribution of Intake Air Through the Gob

The parties dispute whether Plateau was properly directing the air through the gob so as to sweep out methane from all areas of the gob. Plateau argues that it is impossible to direct air to a particular place within the gob and that the regulation does not contemplate that it do so. As the roof falls within the gob, the area will become more restricted. Air will always flow through those areas within the gob that offer the least resistance. The Secretary contends that Plateau should have configured its ventilation system to direct more air through the headgate side of the gob. She argues that this could have been accomplished through a number of means including having a more direct opening to the bleeder entries from the headgate side. She also contends that the curtains in the setup rooms, the undercast at No. 1 headgate entry, and the check curtain in the dogleg inhibited airflow through the headgate side of the gob.

The "configuration and distribution of airflow in the bleeder system" were established in the mine's ventilation plan. As stated above, MSHA approved the amendment relating to the D-3 on July 7, 2000, under section 75.370(a), which included the approval of the bleeder system. This approval was forthcoming only after several meetings with local and national MSHA officials, including Mr. Urosek. (Ex. J-1). Consequently, the Secretary knew how Plateau intended to configure its bleeder system and she approved the design. Lincoln Derrick, a safety manager for Twentymile Coal Company, another RAG American Coal subsidiary, testified that several issues were addressed in the configuration of the airflow through the gob. One concern was the fact that the coal seam dipped down about 10 to 12 degrees. Since methane is lighter than air, it will migrate to the up-dip side of the gob. In the case of the D-3 panel, the up-dip area was the corner of the tailgate side of the gob closest to the longwall. Plateau wanted to make sure that sufficient air was ventilating the inby tailgate entries to control, dilute, and move the methane-air mixtures in that area into the bleeder entries. (Tr. 1144-46, 1151, 1254). Plateau also knew that this objective presented problems because the tailgate side of the gob would tend to cave more tightly than the headgate side. (Tr. 1022, 1078, 1124-25). Plateau's witnesses testified that because the inby tailgate entries were immediately adjacent to the sealed D-2 panel and because there was no barrier of coal between them, keeping these entries open to ventilation was going to be difficult.

The Secretary believes that the first explosion which set off the subsequent explosions occurred on the headgate side of the gob inby toward the back. Because of the drop in elevation

in this area, it was the lowest part of the rubble zone. Thus, it was an area in which one would not expect to produce conditions that would initiate an explosion. Methane would not tend to accumulate there unless there was an anomaly in the roof, the area was blocked by a roof fall, or the entire gob was not being effectively ventilated. As a consequence, it was not an area that Plateau would be expected to be overly concerned about in its ventilation plan. When Chuck Burggraf, the general manager at Willow Creek, examined the longwall section on July 21, 2000, he learned that the tailgate side of the gob had caved while the headgate side was open. (Tr. 1022). Indeed, he testified that he believed that he could see into the crosscut between the setup rooms that was closest to the headgate entries. (Tr. 1023). The Secretary, on the other hand, contends that the headgate side of the rubble zone was more restrictive to airflow than the tailgate side on July 31, 2000. It is impossible to know exactly what conditions existed in the gob at the time of the accident, how intake air flowed through the gob at the time of the accident, or whether changes in the distribution of the air within the gob would have diluted and moved more methane out of the gob. Nevertheless, I credit the testimony of Derrick and Burggraf that the headgate side of the gob was at least as open, if not more open, to the passage of air than the tailgate side of the gob. Urosek testified that, as a general matter, the middle of a rubble zone in a gob is usually the most resistant to airflow. (Tr. 663).

Based on the foregoing, I find that the Secretary did not establish that the lack of a direct connection between the headgate side of the gob and the bleeder entries contributed to the violation of section 75.334(b)(1). MSHA approved the configuration of the connections between the gob and the bleeder entries when it approved the mine plan for the panel on July 7, 2000. The preponderance of the evidence establishes that the configuration of the ventilation system through the panel was designed the sweep air through the gob, paying particular attention to the up-dip areas that presented the greatest potential for methane accumulations. The evidence shows that the violation occurred because the ventilation system could not handle the increasing levels of methane liberation, not because of the improper distribution of air through the gob. Nevertheless, it is possible that Plateau could have made adjustments to its ventilation system in response to the increased levels of methane that would have included changing the distribution of air through the gob.

e. Temporary Ventilation Controls

In issuing this citation, the Secretary also referenced three "temporary controls within the worked-out area which restricted airflow through the pillared area." These controls were check curtains in the crosscuts between the setup rooms, an undercast at the intersection of the No. 1 headgate entry and the No. 1 (inby) setup room, and a curtain in the dogleg at the No. 1 headgate entry. I discuss each control separately.

Plateau installed check curtains in the crosscuts between the setup rooms. These check curtains were necessary during the startup of the D-3 longwall panel to keep intake air along the longwall face. When the longwall first starts operating, there is nothing behind the longwall shields to keep intake air from flowing directly through the shields into the bleeder entries.

These check curtains blocked the crosscuts between the setup rooms thereby directing air along the working face. The check curtains were constructed of fabric attached on the inby side to a wooden frame. MSHA Inspector Gene Ray inspected the setup rooms on July 16, 2000, and required that one of the curtains be repaired. (Tr. 714). The approved ventilation plan did not require anyone to inspect the setup entries. Moreover, Inspector Ray advised Mr. Burggraf that if he were to see any footprints in the setup rooms, he would issue an unwarrantable failure citation. (Tr. 1019). In response to this instruction, Plateau constructed a chain-link fence at the entrance to this setup room to keep everyone out. (Tr. 494). Although the Secretary does not dispute that the check curtains were necessary at that time, she argues that Plateau should have removed them once the longwall advanced so that air could ventilate all areas of the gob. She contends that these check curtains contributed to the accumulation of methane in the gob.

I find that the Secretary failed to establish that these check curtains were present on July 31, 2000, and, even if they were, that they contributed to the violation of section 75.334(b)(1). On July 17, 2000, before longwall mining commenced, Kerry Hales, the mine manager at Willow Creek, entered the setup rooms and pulled down the corner of each check curtain. (Tr. 735). In addition, the evidence establishes that once longwall mining commenced, the forces generated by roof falls would have knocked out the check curtains. When Burggraf inspected the panel on July 19, 2000, he did not see a check curtain in the crosscut closest to the headgate entries. (Tr. 1023). Consequently, I find that most if not all of the check curtains had been knocked down before July 31, 2000. Moreover, MSHA performed several ventilation simulations during its investigation of the accident. There was no significant difference in the results between the simulation that assumed that check curtains were present in the setup rooms and the simulation that assumed that the check curtains were not present. (Tr. 638, 690-91; Exs. G-28, G-29). Thus, I find that the check curtains in the setup rooms did not restrict airflow through the gob in such a way as to violate section 75.334(b)(1).

Plateau had installed a curtain in the dogleg where it joined the No. 1 headgate entry. As a result of its investigation, MSHA believed that this curtain was a check curtain installed across the dogleg. I credit the evidence of Plateau's witnesses that this curtain was actually a wing curtain that was installed to ensure that intake air ventilated the seal that was across the No. 1 headgate entry just outby MPL 6. (Tr. 738-39, 1026, 1044, 1091). This wing curtain may well have been knocked down before July 31, 2000. In any event, I reject the Secretary's contention that this curtain inhibited airflow through the dogleg. As a consequence, this wing curtain, if it existed at all, did not contribute to the violation of section 75.334(b)(1).

The final ventilation control that the Secretary contends contributed to the violation is an undercast constructed at the intersection of the No. 1 headgate entry and the No. 1 setup room, inby the longwall face.[8] This undercast was necessary during development and setup of the panel. Plateau contends that it could not remove this undercast because it needed the structure present in order to construct a regulator under it. As a consequence, Plateau knocked a three-by-

[8] At the hearing, this undercast was often referred to as an overcast.

four foot hole in the undercast. Its witnesses contend that this opening effectively eliminated the undercast. If it had totally removed the undercast, the mine roof would have been about 18 feet above the floor, making the construction of the regulator very difficult. This regulator was part of the MSHA-approved ventilation plan.

Intake air from the No. 2 headgate entry traveled under the undercast through a regulator into the No. 1 setup room. (Ex. P-3B). Air from the gob traveled up the No. 1 headgate entry, over the undercast to the seal, around the wing curtain, and through the dogleg into the No. 1 setup room. *Id.* Some of the air traveling up the No. 1 headgate entry traveled directly through the opening in the undercast into the No. 1 setup room. *Id.* Although I do not agree with Plateau that the three-by-four foot hole negated the undercast, the hole effectively turned the undercast into a regulator. The hole functioned as a regulator and, as stated above, Plateau constructed another regulator under the undercast.

The panel was inspected by MSHA Inspector Ray on July 26, 2000. He was accompanied by Sid Hanson, an MSHA ventilation specialist. Ray observed the hole in the undercast. (Tr. 493). Inspector Ray noted that air was moving through the hole from the longwall gob, but he did not take an air measurement. (Tr. 494). He characterized the air movement as more than perceptible. Ray did take an air quality measurement and, although he could not remember the results at the hearing, he testified that the air quality was acceptable. He also testified that the undercast was no longer functioning as an undercast because of the hole. (Tr. 496). Water was flowing through the hole toward the sump pump and he could see hydrocarbons in the water. *Id.* I find that the Secretary failed to establish that the presence of the structure at the intersection of the No. 1 headgate entry and the No. 1 setup room contributed to the violation of section 75.334(b)(1). Although the structure was still present, it was no longer completely separating two air courses.

f. Cause of the Accident

I also conclude that the Secretary's evidence concerning the cause of the events of July 31 helps establish a violation of the safety standard. As described above, the Secretary contends that the first event was a methane explosion that was set off by the ignition of a small pocket of an explosive methane-air mixture that accumulated on the headgate side of the rubble zone. She relies on a number of factors in reaching this conclusion. First, she contends that the forces generated by the first event could have only been caused by an explosion. The Secretary argues that the nature and strength of these forces could not have been created by a roof fall. She maintains that, if the first event had been a large enough roof fall to compromise ventilation controls at the back of the headgate entries, then the forces that hit the miners at the face and in the No. 2 headgate would have been much greater. (S. Br. 17; Tr. 445). She also contends that the explosion forces in the first event propagated toward the back of the gob because the explosion pressure wave fed on itself as it traveled through the available fuel. These forces opened up ventilation controls between the headgate entries and the bleeder entries which, because of lower resistance, caused most of the intake air to travel directly into the bleeder

entries, bypassing the gob. These same forces then traveled down the No. 2 headgate entry in an outby direction and into the working section. The Secretary relies on the testimony of Mr. Stephan in arguing that the events that transpired on the night of July 31, 2000, can only be explained if the first event was an explosion. (Tr. 399-458)

Plateau presented evidence and argument that the first event was a large roof fall which not only damaged ventilation controls but also ignited hydrocarbons as a result of a piezoelectric spark created as the fall occurred. It believes that this hydrocarbon fire ignited methane that accumulated as a result of the damaged ventilation controls which, in turn, set off the subsequent explosions. It relies to a great extent on the description of the events given by the miners who were on the panel that night. The miners believed that the first event was a roof fall and that the forces they felt came from directly behind the shields. Although I find that it is not possible to completely resolve the issue on this evidence alone, the Secretary's evidence and argument is more convincing. Very few miners, including the miners on the panel that night, have ever experienced a mine explosion. Because miners are familiar with roof falls, it is natural that they would interpret the first event as a major roof fall, especially since they did not feel any heat. I credit the testimony and evidence presented by Stephan on this issue.

The most convincing evidence to support the Secretary's explosion theory is the carbon monoxide ("CO") readings obtained by Plateau's AMS the night of July 31. CO is released slowly and begins to build when there is a fire. (Tr. 416-19; Ex. G-14). If there is an explosion, however, CO is produced in high quantities very quickly. *Id.* Plateau's theory that a roof fall ignited hydrocarbons is not supported by the CO readings obtained after the first event. The CO sensors on the panel show that CO levels peaked immediately following the first event. Because the CO sensors recorded a sudden, immediate increase in the amount of CO following the first event, it more than likely was an explosion. I credit the testimony of Mr. Urosek on this issue. (Tr. 580-93; Exs. G- 26 & G-27) . Particularly telling are the CO sensors on the headgate entries outby the longwall face. The force of the explosion pushed CO "from the explosion area out into the intake entry." (Tr. 589). Although this entry was an intake air course, the airflow was reversed by the force of the explosion for a short time. Urosek concluded that "CO had to be pushed in front of this [first] event, which means the CO had to . . . come from the explosion for this to occur." (Tr. 590). Thus, the CO sensors indicate that there was a large amount of CO generated by the first event, which points to an explosion rather than a fire caused by a roof fall.

The Secretary also relies on the pressure data from the mine fan to support her theory that the first event was an explosion. (Ex. G-24 & G-25). Willow Creek was ventilated by a blowing main mine fan. The operating pressure of this fan was recorded on two separate systems: a standard Bristol pressure recording chart, and a computer-based Allen-Bradley system. The Bristol pressure chart provides a more visual presentation of the events that night. It showed a pressure spike at the time of the first event. (Ex. G-24). The graph of the Allen-Bradley system is similar. (Ex. G-31, Fig. 2). These charts indicate that ventilation controls were damaged as a result of the first event. The Secretary contends that such damage could only be caused by an explosion, but Plateau argues that a large roof fall can also severely damage ventilation controls.

I conclude that, taken by themselves, the fan pressure charts do not establish whether the first event was an explosion.

Another factor that supports the Secretary's theory is the low likelihood that a roof fall would have ignited hydrocarbons. Hydrocarbons of the type found at Willow Creek do not give off ignitable vapors at the temperatures found at the mine. (Tr. 1335-36; Ex. G-39 p. 8). While there may have been some vapors present, it is highly unlikely that they could have been ignited by a roof fall.[9] Methane, on the other hand, if present in the explosive 5% to 15% range can be ignited by a roof fall. Roof falls in a gob are not the most common ignition sources for a methane explosion. Roof falls have been known to ignite methane at some mines as evidenced by the methane ignition in the D-1 panel at Willow Creek on November 25, 1998. I find that it is unlikely that the ignition of hydrocarbons was the initial event at the mine.

Finally, the Secretary relies on the testimony of Dr. Peter Swanson, a research geophysicist with the National Institute of Occupational Safety and Health (NIOSH). Dr. Swanson had set up a seismic array at the mine, at the invitation of Plateau, to help understand the roof pressures on the longwall system at the mine. NIOSH was interested in trying to understand the fracture and deformation processes that are associated with longwall deformation in longwall sequences "with an eye toward reducing the hazards associated with coal bumps." (Tr. 257-58). The geophones used by NIOSH are similar to those used to monitor seismic activity. They were connected to a computer network. Mr. Swanson tried to analyze the waves received by the NIOSH array to determine the nature of the first event. (Tr.385; Ex. G-16). His analysis was not part of MSHA's investigation and MSHA did not rely on his analysis in issuing the citations.

Plateau strenuously objected to his testimony and to the introduction of his research paper.[10] Specifically, Plateau objected to his conclusion that a tracing from the geophones indicated that an explosion occurred at the mine at 11:46:39 p.m. on July 31, 2000. Plateau maintains that Swanson's testimony and evidence "lacked scientific basis and should be stricken because it lacks sufficient reliability and is not probative." (P. Br. 48). Prior to the hearing, Plateau sought to have Dr. Swanson's testimony excluded on the basis of the principles established in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993); and *General Electric Co. v Joiner,* 522 U.S. 136 (1997). In those cases, the Supreme Court held that, under

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[9] In arguing that a roof fall started a hydrocarbon fire, Plateau relies on two MSHA incident reports involving the Kaiser Sunnyside Mine. (Tr. 1154-57, 1174-79; Exs. P-34 & 35). I do not give much weight to these reports because it is clear that these incidents were not thoroughly investigated by MSHA. I also find that it is unlikely that spontaneous combustion initiated the first event.

[10] His paper, entitled "Analysis of Seismicity Recorded at an Underground Coal Mine During a Fire and Explosion Sequence," was presented at the December 2002 meeting of the American Geophysical Union. (Tr. 280-83; Ex. G-16). Each page of the report contains the following at the top: "Draft Document under construction – Not for General Distribution."

the Federal Rules of Evidence, a judge has a duty to act as a gatekeeper to ensure that proffered expert scientific or engineering testimony rests on a reliable foundation. Although I permitted Dr. Swanson to testify, I have not based my decision on his testimony because it does not offer reliable evidence upon which I can make findings of fact.

Dr. Swanson testified that he believes that the tracing from the underground geophones indicate that an explosion took place at 11:46:39 p.m. on July 31, 2000. He bases his opinion on his own conclusion that the tracing is not typical for a "conventional seismic event." (Tr. 285, 299-300, 328). His seismic equipment did not record any of the three explosions that were known to have occurred, including the largest explosion. (Tr. 341-42, 361, 390). Dr. Swanson could not identify the location of the event that created the disputed tracing. (Tr. 390). His surface array of geophones was not functioning on July 31, due to an electrical storm, so he could not locate the event vertically. (Tr. 272-73). The methodology Dr. Swanson used to reach his opinion has not been tested and it has not been reviewed through NIOSH's peer review process. It is also important to take into consideration what Dr. Swanson did not say. He did not testify that he had seen a seismic tracing from an explosion in an underground mine to compare to the tracing he believes represents an underground explosion in this case. In addition, he did not testify that there is existing research to establish what seismic tracings of an underground explosion should look like. He opined that the disputed tracing looked different from the tracings of conventional seismic events and that he believes it represents an explosion. (Tr. 285, 325; Ex. G-16). As a consequence, although I do not grant Plateau's motion to strike Dr. Swanson's testimony and his research paper from the record, I have not relied upon his testimony or his paper in rendering my decision in this case because it is too speculative for use in a court of law. By not considering Dr. Swanson's testimony and opinion evidence I do not mean to suggest that he should not have undertaken his study or that his study represents "junk science." His research appears to be a professional attempt to analyze the available data produced by the geophones. Nevertheless, I conclude that his study is too tentative and unproven to be considered by a court of law. Because I have not relied upon Dr. Swanson's testimony or exhibits, I have also not considered the testimony and exhibits of Dr. John Blott, the witness Plateau called in opposition.

g. <u>Summary of Findings and Conclusions Regarding Violation</u>

Based on the above, I conclude that the Secretary established by a preponderance of the evidence that the first event was an explosion. I also conclude that the Secretary established that, on the day of the accident, Plateau was not controlling the air passing through the gob to continuously dilute and move methane-air mixtures and other gases liberated on the panel away from active workings and into a return air course. Unlike her case in *Consolidation Coal*, the evidence presented was not based on speculative "post-ignition investigative assumptions, theories, and conclusions." 20 FMSHRC at 241. As the methane levels increased, the amount of intake air coursing through the gob decreased as a result of higher resistance. The ventilation system became overwhelmed by the increasing amount of methane being liberated with the result that explosive levels of methane accumulated in the gob. Plateau was confident that once the

longwall reached the first gob vent borehole its ventilation system would be better able to control methane. The weakness in its ventilation system was the fact that until it reached that gob vent borehole, it could not handle the high volume of methane being produced. In order to comply with the standard, Plateau should have reacted to the increased methane levels and reduced ventilation through the gob by making changes to its ventilation system before the first gob vent borehole was reached. These changes would have ensured that the high levels of methane would be controlled, diluted and moved away from active workings. It is possible that Plateau could have also achieved compliance by decreasing the rate of production, thereby lowering methane liberation, until it reached the first gob vent borehole.

h. Penalty Criteria

I find that the violation was of a significant and substantial nature because, given the facts surrounding this violation, there was a reasonable likelihood that hazard contributed to by the violation would result in a fatality or an injury of a reasonably serious nature. (Tr. 95). I find that the violation was serious. Plateau's negligence was moderate for the reasons given by the Secretary. (Tr. 96).

B. Citation No. 7143396, Section 75.370(a)(1)

Citation No. 7143396, issued on July 16, 2001, by Chad A. Weaver and Gary J. Wirth under section 104(a) of the Mine Act, alleges a violation of the 30 C.F.R. § 75.370(a)(1) as follows:

> The approved mine ventilation plan was not being complied with, in that the ventilation devices used to control air movement through the D-3 worked-out area were left intact after retreat mining commenced at locations not shown on the supplement to the mine ventilation plan titled, "D-3 Longwall Start-Up Head to Tail and Bleeder Ventilation with Tailgate Intake," approved July 7, 2000. Information obtained during the investigation of a fatal mine fire and explosion accident which occurred on July 31, 2000, established that the mine operator installed framed curtains across four of the six bleeder connectors at the inby end of the D-3 Longwall pillared area. Also, an overcast and check curtain were installed in the bleeder connector nearest the headgate side of the worked-out area, leaving one unobstructed bleeder connector which was located on the tailgate side of the worked-out area. However, the approved plan supplement did not show controls at these locations. These controls inhibited airflow on the headgate side of the worked-out area where the initial explosion and subsequent fire occurred on July 31, 2000.

The inspectors determined that the violation was serious, of a significant and substantial nature, and was the result of Plateau's moderate negligence. The Secretary proposes a penalty of $20,000 for the violation. The cited safety standard provides, in part: "The operator shall develop and follow a ventilation plan approved by the [MSHA] district manager."

1. Arguments of the Parties

The Secretary contends that Plateau failed to comply with this safety standard by failing to remove the three temporary ventilation devices discussed above: curtains in the setup rooms, curtain in the dogleg, and undercast in No. 1 headgate entry. She maintains that these temporary ventilation devices are not shown on the plan for the D-3 panel that was approved on July 7, 2000, at page A-18. As a consequence, Plateau violated the ventilation plan when it did not remove these devices or seek to have them included in the plan when the plan was approved by MSHA. The Secretary contends that this violation contributed to the accident. Plateau argues that none of the three ventilation controls existed at the time of the accident and that they did not violate the ventilation plan in any event.

2. Analysis of the Issues

I entered findings of fact about the condition of the cited temporary ventilation devices when discussing the previous citation, which I do not repeat in detail here. With respect to the curtains in the setup rooms, I found that it was unlikely that these devices existed on July 31, 2000. They would have been knocked down or severely compromised by the forces generated by roof falls in the rubble zone. The corners of the setup curtains were torn down by the mine manager and Inspector Ray prohibited anyone from entering the setup rooms for any purpose. When Mr. Burggraf looked into the headgate side of the gob from the No. 1 shield of the longwall on July 21, he could not see any curtains in the setup room on the headgate side. MSHA knew that these curtains would be present during startup of the longwall as evidenced by page A-1E of the ventilation plan approved on May 31, 2000. (Ex. J-3). Although Plateau did not physically remove the curtains, they would not have existed by the time longwall mining progressed to the point shown on page A-18 of the July 7, 2000, plan. That page of the plan, which the Secretary relied upon in issuing this citation, shows the longwall after it had retreated about 500 feet. For the forgoing reasons, I find that the conditions in the setup rooms did not violate section 75.370(a)(1).

Based on statements made to Mr. Wirth, MSHA concluded that there was a check curtain across the dogleg. (Tr. 112). Mine Manager Hales testified that when he was in the area of the dogleg on July 17, 2000, there was no check curtain present, but there was a line curtain to ventilate the area adjacent to the seal. (Tr. 738-39; Ex. G-3). This curtain was loosely hung, it was not attached to the floor, and it did not prevent air from coursing through the dogleg. *Id.* It is not clear that this curtain was present on July 31, 2000. It is also not clear how long the curtain remained in place after the start of retreat mining. I find that the Secretary did not establish that

this temporary curtain violated the ventilation plan. If it had been present, it would not have significantly inhibited the flow of air through the dogleg.

There is no question that there was an undercast at the intersection of the No. 1 headgate entry and the No. 1 setup room. The undercast was breached because Plateau knocked a hole in the bottom to allow water and air to travel through. Plateau contends that the Secretary failed to establish that the undercast violated the ventilation plan because it no longer functioned to separate the air. Plateau points to the fact that MSHA Inspector Ray directly observed the structure on July 26, 2000. Inspector Ray stood at the hole and did not comment that the structure violated the mine's ventilation plan or that the quality or quantity of air was unacceptable. The Secretary contends that "the three-by-four foot hole in the [undercast] would not have significantly affected the overcast's function to inhibit airflow on the headgate side of the worked out area." (S. Br. 30; Tr. 112-13).

To be an effective ventilation control, an undercast must be intact to separate two different streams of air. (Tr. 1142). Mr. Burggraf testified that if this undercast had been depicted on the ventilation plan, it would have constituted a violation of the plan because it no longer separated the two air courses. (Tr. 1142-43). Inspector Ray testified that the structure was no longer functioning as an undercast because of the hole in it. (Tr. 496). Plateau kept the undercast in place so that it could install a regulator that was included in the ventilation plan under the structure. As stated above, the hole punched into the undercast joined the two air streams, but it regulated the flow of air. As a consequence, this hole functioned as a three-by-four foot regulator. This regulator was not shown on the ventilation plan and Plateau did not attempt to notify MSHA that it was altering the plan to keep the undercast in place. Consequently, although I agree with Plateau that the undercast was no longer separating the air, it was inhibiting the flow of air up the No. 1 headgate entry into the No. 1 setup room. MSHA's ventilation staff believed that this area would be completely open, so it was incumbent on Plateau to seek to change the plan accordingly. I find that the undercast violated the ventilation plan because Plateau failed to seek modification of the plan to keep the undercast in place with the hole in it. As a consequence, the Secretary established a violation of section 75.370(a)(1).[11] I find that Plateau's negligence was low because it was reasonable for it to rely on Inspector Ray's tacit approval of the structure.

As I discussed above, I find that the Secretary failed to establish that the presence of the undercast contributed to the violation of section 75.334(b)(1). As a consequence, I find that the Secretary did not establish that the violation of section 75.370(a)(1) was of a significant and substantial nature ("S&S"). An S&S violation is described in section 104(d)(1) of the Mine Act as a violation "of such nature as could significantly and substantially contribute to the cause and effect of a . . . mine safety or health hazard." A violation is properly designated S&S "if based upon the particular facts surrounding that violation, there exists a reasonable likelihood that the

[11] For the reasons discussed in this decision, I reject Plateau's argument that Citation Nos. 7143395 and 7143396 duplicate one another.

hazard contributed to will result in an injury or illness of a reasonably serious nature." *National Gypsum Co.*, 3 FMSHRC 822, 825 (April 1981). In *Mathies Coal Co.*, 6 FMSHRC 1, 3-4 (January 1984), the Commission set out a four-part test for analyzing S&S issues. Evaluation of the criteria is made assuming "continued normal mining operations." *U.S. Steel Mining Co.*, 6 FMSHRC 1573, 1574 (July 1984). The question of whether a particular violation is S&S must be based on the particular facts surrounding the violation. *Texasgulf, Inc.*, 10 FMSHRC 498 (April 1988). The Secretary must establish: (1) the underlying violation of the safety standard; (2) a discrete safety hazard, a measure of danger to safety, contributed to by the violation; (3) a reasonable likelihood that the hazard contributed to will result in an injury; and (4) a reasonable likelihood that the injury in question will be of a reasonably serious nature. The Secretary is not required to show that it is more probable than not that an injury will result from the violation. *U.S. Steel Mining Co.*, 18 FMSHRC 862, 865 (June 1996).

I find that the Secretary established the first and second elements. The Secretary did not prove the third element, however. The evidence establishes that air was moving through the hole and that the quality of this air was acceptable to Inspector Ray on July 26. It has not been shown that it is reasonably likely that the hazard contributed to by the violation would have resulted in an injury. Although there was a fatal methane explosion in this case, the Secretary did not establish that Plateau's failure to completely remove the undercast contributed to that explosion. The amount of air that was traveling through the hole into setup room No. 1 at the time of the accident is unknown. In addition, the air that did not travel through this hole, traveled over the undercast, through the dogleg and into the same setup room. Thus, the presence of the undercast may not have had any significant effect on the ventilation of the gob in this instance. Consequently, I find that the violation was not S&S. I find that the violation was moderately serious because unauthorized changes in a ventilation plan can have unintended effects on ventilation.

C. Citation No. 7143400, Section 75.364(a)(2)

Citation No. 7143400, issued on July 16, 2001, by Chad A. Weaver and Gary J. Wirth under section 104(a) of the Mine Act, alleges a violation of the 30 C.F.R. § 75.364(a)(2) as follows:

> Evaluations were not completed to determine the effectiveness of the bleeder system used to control air flow through the D-3 worked-out area during the weekly examination period ending July 26, 2000. Records of examination for this period indicated that the quantity of air flow was not determined at the approved location for MPL 2 and that the incorrect methane concentrations were recorded for MPLs 7 and 8. In addition, inconsistent readings were obtained for MPLs 3, 4, 5, and 6. The officials responsible for countersigning and reviewing records did not adequately review for completion the weekly records of examination nor did they

> adequately use the results of the examinations to identify changes developing within the D-3 worked-out area. Proper evaluation of the bleeder system requires a thorough review of the obtained measurements to assess the effectiveness and performance of the system.

The inspectors determined that the violation was serious, of a significant and substantial nature, and was the result of Plateau's moderate negligence. The Secretary proposes a penalty of $340 for the violation. That portion of the safety standard relied upon by the Secretary provides: "At least every 7 days, a certified person shall evaluate the effectiveness of the bleeder systems required by section 75.334 as follows: (iii) At least one entry of each set of bleeder entries used as part of a bleeder system . . . shall be traveled in its entirety. Measurements of methane and oxygen concentrations and air quantities . . . shall be made at the measuring point locations specified in the mine ventilation plan to determine the effectiveness of the bleeder systems."

1. Arguments of the Parties

The Secretary contends that Plateau violated the safety standard in three different ways. Plateau (1) failed to determine and record the air quantity reading at MPL 2 on two separate occasions; (2) recorded incorrect methane concentrations for MPLs 7 and 8; (3) and obtained inconsistent readings for MPLs 3, 4, 5, and 6. Wirth discovered these violations upon reviewing Plateau's weekly examination book.

Plateau argues that, at best, the Secretary "demonstrated that there are questions about the record keeping concerning the weekly examinations because she relies entirely on the records." (P. Br. 63). Plateau observes that the Secretary did not offer any testimony from miners who performed these examinations. Plateau maintains that without more evidence of what the examiners did, the Secretary did not meet her burden of proof.

2. Analysis of the Issues

This safety standard is designed to make sure that a mine operator takes certain key air measurements on at least a weekly basis and uses that information to monitor the bleeder system to "assure that no hazardous conditions are developing within the bleeder system." (Tr. 122). The first allegation is that an air quantity measurement was not taken at the approved location for MPL 2. (Tr. 124-26; Ex. G-8). The weekly examination book for July 19, 2000, has no entry under "CFM" for MPL 2. (Ex. G-8). The examination page is countersigned by Kerry Hales and John Pesarsick, the foreman. Wirth testified that he was told during the accident investigation that an air quantity reading was not taken at that location. (Tr. 126-28). Another page of the weekly examination book shows that no air quantity reading was taken at that same location on July 26, 2000. (Ex. G-7). Kerry Hales admitted that no air quantity measurement was recorded for those two dates. (Tr. 757-58). I find that the Secretary established this part of the violation.

In addition, the Secretary established that there were incorrect methane concentrations reported at MPLs 7 and 8. The weekly examination sheet with data for those MPLs dated July 25, 2000, shows concentrations of methane at MPLs 7 and 8 at 0.2%. (Ex. G-7). The methane readings from the AMS for that date ranged between 1.27% and 2.57%. (Tr. 129-30; Ex. G-32 and 33). Hales could not explain the discrepancy between the AMS data and the readings obtained during the weekly examinations. (Tr. 765-66). He stated that he did not put enough emphasis on determining what information was reliable. *Id.*

The final factor that the Secretary relied upon is the inconsistent air quantity readings for MPLs 3, 4, 5, and 6. MPL 3 was in the No. 2 headgate entry near the longwall face. The Secretary asserts that all of the airflow at MPL 3 should be reflected at MPLs 4, 5, and 6. For example, on July 18, the airflow at MPL 3 was 113,950 cfm while the total airflow at MPLs 4, 5, and 6 was recorded as 32,299 cfm. (Ex. G-8; Tr. 132-33). The same inconsistences occurred the week of July 26. (Ex. G-7; Tr. 133). During the accident investigation, Wirth was advised that the readings at MPL 3 were probably not accurate. (Tr. 133). Wirth believes that it is impossible for a mine operator to perform an adequate evaluation of the bleeder system if it obtains inconsistent readings. Although these weekly examinations were countersigned by mine management, it is apparent that nobody was reviewing the data to evaluate the bleeder system. These inconsistencies, as well as the inconsistent methane readings at MPLs 7 and 8, were never discovered by mine management. One can only conclude that Hales and Pesarsick were blindly signing the weekly examination book without looking at the results.

For the reasons discussed above, I find that the Secretary established a violation of the safety standard in all three instances. Accurate measurements of air methane concentrations and air quantities were not made and recorded as alleged in the citation.

Plateau alternatively argues that this violation is not S&S. It argues that the Secretary did not prove that its failure to perform the weekly examinations was reasonably likely to result in an injury. Plateau states that it relied on its AMS to evaluate the effectiveness of the bleeder system. The AMS provided data at virtually the same locations on a far more frequent basis. (Tr. 156, 160, Ex. J-1, Ex. G-31 pp. 20-21). The AMS provided real-time information that was available at the communications center in the mine office and was also available by phone. (Tr. 750-52). This system was much more extensive than is typical at underground mines and management regularly monitored the results obtained. (Tr. 242, 752, 776, 1050, 1096). In addition, a foreman inspected the bleeders everyday and reported the results to Mine Manager Hales. (Tr. 746-47).

I agree that the Secretary did not establish the S&S nature of the violation. Given the extensive computer-based atmospheric monitoring system that was in place in the mine, the results of the weekly examinations were not particularly critical. It was not reasonably likely that the hazard contributed to by the violation would have resulted in an injury. Plateau's failure to make adjustments to its flow-through bleeder ventilation system in the face of increasing liberation of methane was not related to its failure to accurately take and record the results of its weekly examinations. The information that should have alerted Plateau that it needed to make

changes in its ventilation system was the data available through the AMS. I conclude that the violation was not S&S.[12]

III. APPROPRIATE CIVIL PENALTIES

Section 110(i) of the Mine Act sets out six criteria to be considered in determining appropriate civil penalties. The record shows that Plateau had a history of 256 MSHA enforcement actions at Willow Creek during the prior year. (Ex. G-31 p. 6). Plateau is a large coal mine operator; the mine produced 1.3 million tons of bituminous coal between January 1, 2000, and July 31, 2000. RAG American Coal produced 61.6 million tons of coal in the year 2000. All of the violations were abated in good faith. Plateau's negligence and the gravity of the violations are discussed above. The penalties assessed in this decision will not have an adverse effect on Peabody's ability to continue in business. Based on the penalty criteria, I find that the penalties set forth below are appropriate.

IV. ORDER

Based on the criteria in section 110(i) of the Mine Act, 30 U.S.C. § 820(i), I assess the following civil penalties:

Citation No.	30 C.F.R. §	Penalty
7143395	75.334(b)(1)	$25,000.00
7143396	75.370(a)(1)	1,000.00
7143400	75.364(a)(2)	200.00
	TOTAL PENALTY	$26,200.00

For the reasons set forth above, the three citations at issue in these cases are **AFFIRMED**, as set forth above. The significant and substantial designations in Citation Nos. 7143396 and 7143400 are **VACATED**. Plateau Mining Corporation is **ORDERED TO PAY** the Secretary of Labor the sum of $26,200.00 within 40 days of the date of this decision.

Richard W. Manning
Administrative Law Judge

[12] Plateau filed a proposed list of corrections to the hearing transcript. I have reviewed these corrections and grant its request to amend the transcript.

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