

CCASE:
ISLAND CREEK COAL v. SOL (MSHA) AND (UMWA)
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Federal Mine Safety and Health Review Commission
Office of Administrative Law Judges
2 Skyline, 10th Floor
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Falls Church, Virginia 22041

ISLAND CREEK COAL COMPANY,
CONTESTANT

v.
SECRETARY OF LABOR,
MINE SAFETY AND HEALTH
ADMINISTRATION (MSHA),
RESPONDENT

AND

UNITED MINE WORKERS OF AMERICA
(UMWA), DISTRICT 28,
LOCAL 1640,
INTERVENOR

CONTEST PROCEEDINGS

Docket No. VA 91-47-R
Order No. 3354742; 12/05/90

Docket No. VA 91-48-R
Citation No. 3354743; 12/05/90

Docket No. VA 91-49-R
Order No. 3508496; 12/13/90

VP-3 Mine
Mine ID 44-01520

DECISIONS

Appearances: Timothy C. Biddle, Robert Davis, Esqs., Crowell & Moring, Washington, D.C., for the Contestant; Charles Jackson, Esq., Office of the Solicitor, U.S. Department of Labor, Arlington, Virginia, for the Respondent;

Scott Mullins, Esq., Coeburn, Virginia, for the Intervenor.

Mary Lu Jordan, Esq., United Mine Workers of America, (UMWA), Washington, D.C., for the Intervenor.

Before: Judge Koutras

Statement of the Proceedings

These consolidated proceedings concern Notice of Contests filed by the contestant (Island Creek) pursuant to section 105(d) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. 815(d), challenging the legality of two section 107(a) imminent danger orders, and one section 104(a) significant and substantial (S&S) citation issued by MSHA mine inspectors. Pursuant to the contestant's request, an expedited hearing was held in Abingdon, Virginia, on December 19 and 20, 1990, and the UMWA's request to intervene, made on the record at the hearing, was granted without

~593

objection. The parties filed posthearing briefs, and I have considered the arguments made therein in the course of my adjudication of these matters.

Issues

The issues presented in these proceedings include the following: (1) whether the conditions cited in the contested imminent danger orders were in fact imminent dangers warranting the mine closure and withdrawal of miners; and (2) whether Island Creek violated the cited mandatory safety standard in issue in Docket No. VA 91-48-R, and if so, whether the violation was significant and substantial.

Applicable Statutory and Regulatory Provisions

1. The Federal Mine Safety and Health Act of 1977, 30 U.S.C. 301 et seq
2. Sections 104(a), 105(d), 107(a) of the Act.
3. Mandatory safety standard 30 C.F.R. 75.316.
4. Commission Rules, 29 C.F.R. 2700.1, et seq.

Stipulations

The parties stipulated to the following:

1. The subject Virginia-Pocahontas No. 3 Mine is subject to the 1977 Mine Safety and Health Act.
2. The subject proceedings are subject to the jurisdiction of the Commission and the presiding judge.
3. MSHA Inspector Arnold D. Carico was acting in his capacity as a designated representative of the Secretary of Labor when he issued the contested section 107(a) Order No. 3354742, and contested section 104(a) Citation No. 3354743.
4. MSHA Inspector Claudy J. Scammell was acting in his capacity as a designated representative of the Secretary of Labor when he issued contested section 107(a) Order No. 3508496.
5. True copies of the subject orders and citation were served on the contestant or its agent as required by the Act.

6. On December 5, 1990, Mr. C. W. Settle, Island Creek's de-gas foreman, was with MSHA Inspector Arnold D. Carico at the No. 4 entry of the No. 9 development and took a methane reading at a location 1-foot outby the stopping and 1-foot down from the top of the roof, and he recorded 3.5 percent methane at that location (Tr. 188).

Discussion

The orders and citation issued in these proceedings are as follows:

Docket No. VA 91-47-R

Section 107(a) Imminent Danger Order No. 3354742, issued at 11:25 a.m., on December 5, 1990, by MSHA Inspector Arnold D. Carico, states as follows:

Methane concentrations were detected coming through permanent stoppings erected across the bleeder entry connectors between the gob and the South Main bleeders at the following locations and in the following concentrations (as indicted by a Riken methane indicator): No. 2 entry of No. 10 development South (sic); No. 4 entry of No. 9 development South - 8.3%; No. 4 entry of No. 8 development south - 7.6%; Citation No. 3354743 is being issued with and as contributing to this order.

The inspector ordered the withdrawal of all underground areas of the mine. The order was terminated on December 6, 1990, by MSHA Inspector Claudy Scammell, and the termination notice states as follows:

The methane concentrations coming through the permanent stoppings erected across the bleeder entry connectors between the gob and the south main bleeders have been reduced to 3.6% of methane or less in all entries from 11 development south to 8 development south.

Docket No. VA 91-48-R

Section 104(a) "S&S" Citation No. 3354743, issued at 11:25 a.m., on December 5, 1990, by MSHA Inspector Arnold D. Carico, cites an alleged violation of mandatory safety standard 30 C.F.R.

75.316, and the cited condition or practice is described as follows:

The ventilation, methane, and dust-control plan approved for this mine was not being complied with.

~595

Item 10 of the plan requires that "Bleeder entries shall be connected to those areas from which pillars have been wholly or partially extracted at strategic locations in such a way as to control air flow through such gob areas," Permanent stoppings were erected across all connectors between the gob and the south main bleeders at Nos. 8, 9, and 10 development, and had been plastered to minimize leakage from the gob to the bleeders. Methane was detected at the following locations and concentrations leaking through these stoppings: No. 2 entry of 10 development - 6/2%; No. 4 entry of 9 development - 8/3%; No. 4 entry of No. 8 Dev. - 7.6%.

According to mine management, the only locations where air is being intentionally regulated from the gob area are at No. 11 development (tailgate) connectors and No. 1 development connectors to the main bleeders and main returns.

The inspector did not include an abatement time as part of the citation. However, Inspector Scammell modified the citation on December 6, 1990, and fixed the abatement time as 9:00 a.m., December 20, 1990.

Docket No. VA 91-49-R

Section 107(a) Imminent Danger Order No. 3508496, issued at 11:45 a.m., on December 13, 1990, by MSHA Inspector Claudy J. Scammell, states as follows:

Methane concentrations were detected coming through permanent stoppings erected across the bleeder entry connectors between the gob and the south mains bleeders at the following locations and in the following concentrations (as indicated by a Riken methane indicator): No. 2 entry of No. 10 development south, 6.2%; No. 4 entry of 9 development south, 6.3%; No. 3 entry of 9 development south, 6.2%; No. 2 entry of 9 development south, 6.0%; No. 1 entry of 9 development south - 5.5%; No. 4 entry of 9 development south, 6.7%; No. 3 entry of 8 development south, 5.4%; No. 2 entry of 8 development south, 6.2%; No. 1 entry of 8 development south, 7.6%; Bottle samples were collected to substantiate this order.

The inspector order the withdrawal of all underground areas of the mine.

MSHA Inspector Arnold D. Carico, testified that he is a mining engineer and is familiar with the subject mine and has visited it approximately 15 times since 1978. He confirmed that he visited the mine on December 5, 1990, with three other inspectors, after his supervisor James Bowman instructed him to conduct "a quantity/quality survey" of the active south gob area. He identified exhibit G-1 as a mine map containing the partial findings made by the inspectors on December 5. He confirmed that his duties include the review of mine and ventilation maps, participating in underground inspections relating to ventilation, and reviewing and recommending approval or disapproval of ventilation plans (Tr. 13-16).

Mr. Carico stated that he used an anemometer, a Riken methane detector, and measuring tapes during his inspection, that the equipment was properly calibrated, and that the Riken detector is generally accepted as an accurate tool for testing methane (Tr. 17).

Mr. Carico stated that he began his inspection along the No. 12 development and proceeded in by the longwall face along the development entries. He found no ventilation problems or any significant degree of methane anywhere in the mine up to that point. His initial examination took place at the longwall setup entries where he determined that the air was flowing from the No. 12 development toward the No. 11 development, and that this air flow was normal and expected. He found .2 to .3% methane, which he characterized as "very small amounts of methane." He then proceeded to the No. 3 and 4 entries, where he took air measurements which he found were acceptable. He then examined the "butt-offs," or "dead-end" entries which will eventually be connected in future development, and found that they were properly ventilated. He then proceeded to the No. 11 development bleeder connectors and found no ventilation problems (Tr. 17-19).

Mr. Carico stated that he next proceeded to the No. 10 development connectors where he found four permanent brattices installed across each of the four entries. He found that air was leaking through one of the brattices, and he tested the air to determine "what was located behind that stopping or brattice." He tested the air with a Riken methane indicator, and the test reflected 6.2% methane coming through the brattice in the No. 2 heading. Based on this test, he assumed that there was "a body of methane" behind that stopping. He confirmed that methane ranging from 5 to 15% is explosive, and that "with an ignition source and a sufficient amount of methane you could have a mine explosion" (Tr. 21).

Mr. Carico stated that when he initially found the 6.2 percent methane, he was concerned, but made no firm hazard

conclusions because of the possibility that it was "a localized problem and not an indicator of a larger problem and not an indicator of a problem or even a large body of methane." He believed that the methane may have been "a small body of methane trapped behind a single brattice" (Tr. 21).

Mr. Carico confirmed that when he found the methane in question he was aware of four prior mine fires, and at least one prior methane eruption from the mine floor at the longwall face. He believed that two of the fires had possibly occurred in 1973, prior to his MSHA employment, and he learned about them from discussions with his co-workers. A third fire occurred in 1976 or 1977, and others occurred in 1983, and they could have been the same fire which was never extinguished. He confirmed that MSHA's investigations of the prior fires did not determine the source of the ignitions for these fires. He believed that two of the fires occurred in the north gob area, and two occurred in the south gob area (Tr. 23).

Mr. Carico confirmed that he had previously issued an imminent danger order in April, 1990, for explosive mixtures of methane emanating through the brattices along the south bleeders adjacent to the No. 2 and No. 3 developments. These brattices were installed because roof falls which have occurred in the connectors made it impossible to regulate overflow from the gob to the bleeders at that location (Tr. 24). Mr. Carico was also aware of two prior imminent danger orders issued by Inspector Kenneth Owens in 1987 for explosive mixtures of methane through the brattices separating the gob from the bleeder entries at the top end of the south bleeders in the No. 4 development. He believed that these conditions were identical to the conditions which prompted him to issue his order (Tr. 26). He confirmed that the south gob area is approximately 8,000 feet by 5,000 or 6,000 feet.

Mr. Carico stated that the No. 10 development brattices were plastered "to almost an air tight condition" and that a minute amount of air was passing through the brattice hole where he found 6.2 percent methane. He confirmed that larger quantities of air was escaping around the brattice perimeter, but since he is not permitted to examine an area within 1 foot of the rib, roof, or face, he did not bother to make those examinations because he realized they would be invalid. He explained that tests near the roof and rib may result in erroneously high methane readings due to liberation from the surrounding coal strata and they would not be indicative of the air stream or the body of methane (Tr. 28).

Mr. Carico stated that he attempted to take methane readings at the other three brattice locations at the No. 10 development, but he could not do so because he could find no air leaking

through the brattices. He then proceeded to the No. 9 development where he began making similar examinations, and at the No. 4 heading, which he examined first, he found 8.3 percent methane coming through the brattice. At this point in time, he was becoming more concerned because it appeared that a fairly substantial body of methane was lying against the brattices in the bleeder connectors, and although he believed that a imminent danger was "probable," he reached no conclusion at that time, and believed that he needed to go further (Tr. 29).

Mr. Carico stated that he then proceeded to the No. 8 development where he examined the air coming through the brattice in the No. 4 entry, and he found 7.5 percent methane coming through the brattice. He then concluded that there was a substantial body of methane lying up against the brattices and that there was an "associated problem" with the ventilation system because the methane was not being diluted. He then decided to issue an imminent danger order, and verbally informed foreman Settle, who was accompanying him, of his decision to issue an order, and also informed him that he was issuing a section 104(a) citation for a violation of the approved ventilation plan (Tr. 30).

Mr. Carico stated that when he issued the order and citation, he believed that a methane hazard existed, and that "when you have an explosive mixture of methane the only thing lacking for an explosion is the ignition source" (Tr. 30). He further stated that "understanding the history of this mine--knowing the history of this mine I knew that there were possibly ignition sources associated with the gob" (Tr. 31). In the event of an ignition, an explosion would result. He concluded that there was a substantial body of methane in the gob area encompassing "probably twelve entries in the form of the bleeder connectors back to the gob and most probably be associated to set-up entries" (Tr. 31).

Mr. Carico stated that one of the possible ignition sources for the prior mine fires were roof falls in the caving areas of the longwall units. He indicated that the roof contains massive sand stone with layers of quartzite, and that quartzite is "highly sparked and has been known to ignite bodies of methane" (Tr. 32). He also believed that a face ignition could possibly propagate into the gob area and ignite the methane in the gob adjacent to the longwall face.

Mr. Carico identified other possible sources of ignition as welding or cutting along the face, open flames, bolting metals which could ignite methane emanating from the mine floor, and possibly spreading to the gob. He also believed that any work connected with ventilation repairs and adjustments in the bleeder entries, and sparks created by the use of hammers on the metal brattices, would be potential sources of ignition. A mine

explosion of any proportion would involve fatalities, and he believed that the entire mine and the 85 employees who were underground would be exposed to this hazard (Tr. 34). In view of the history of unexplained mine fires, and the possible ignition sources, he concluded that it was "fairly likely" that death or serious injury would have resulted if mine operations were to continue (Tr. 35).

Mr. Carico stated that he issued the citation because he believed that the ventilation system was inadequate because of insufficient air regulation between the bleeder entries and the gob to maintain methane levels at or below the explosive limit at safely accessible areas used for examinations (Tr. 40).

Mr. Carico identified exhibit G-4, as the approved ventilation plan, and he believed that the respondent violated section 10(a) which appears on page 4 of the plan, because the brattices erected across the entries were air tight and did not induce the drainage of gob gas from all portions of the gob (Tr. 42-43). Mr. Carico stated that longwall coordinator and acting mine superintendent Bill Meade confirmed that the only other place where air was being regulated was at the No. 1 development, and he (Carico) concluded that brattices were also constructed at the remaining No. 1 through No. 7 developments. Mr. Carico confirmed that the air intake for the gob area was in the No. 12 development, and he explained how the air was coursed through the area. He confirmed that he did not measure the airflow entering the gob (Tr. 43-44).

Mr. Carico stated that the citation "helped to define the cause of the imminent danger," which in this case was a body of explosive methane lying against the cited brattices, and that the issuance of the citation would provide a means for abating the violation (Tr. 46). He confirmed that the citation has not been abated, and that a termination date of December 20, 1990, was subsequently established. He confirmed that when he visited the mine the evening before the hearing, he found no significant changes which would cause him to terminate the citation. He further confirmed that he found that additional metal brattices had been installed between the cited brattices and the bleeder entrances at all locations from the No. 10 development to the No. 6 development, but he did not believe that these additional brattices would induce the drainage of gob gas from all of the gob areas, and would only result in less leakage or less exchange from the gob to the bleeder entrance (Tr. 48).

Mr. Carico confirmed that he took methane readings at the newly constructed stoppings, and although the results were significantly less, he was unable to physically examine the original brattices behind these newly erected stoppings to determine whether the previously found explosive mixtures of methane were still present (Tr. 48-50). He did not believe that

~600

the new stoppings reduced the danger of the methane accumulations which prompted him to issue the order, but that they may have precluded an ignition source from the bleeder side of the stopping. He also believed that the work performed to construct the new metal stoppings introduced another potential ignition source (Tr. 51).

Mr. Carico stated that the stoppings and regulators were used to ventilate the gob area and to regulate the airflow through that area. Although the stoppings are part of the approved ventilation plan, a lack of sufficient regulators causing accumulations of methane would be a violation of the plan (Tr. 54). He confirmed that the ventilation schematic which appears on page 16 of the plan reflects two stoppings and two regulators in each set of entries, and that these are typical examples of the stoppings and regulators which he found in the No. 3 and No. 4 headings (Tr. 56).

Mr. Carico confirmed that he took some air bottle samples on December 5, 1990, but that they were lost in the mail. He stated that this did not affect the issuance of his citation, and he confirmed that bottle samples taken by Inspector Scammell a week later were received and analyzed (Tr. 65).

On cross-examination, Mr. Carico stated that he reviewed the ventilation plan in August, 1987, and that subsequent reviews are required every 6 months. He confirmed that as of December 5, 1990, the mine was in compliance with the plan requirements for the bleeders and the gob. He stated that since mining is dynamic, changed conditions might require re-regulation of the air, and if this is not done, a plan violation may occur. He confirmed that the inspections conducted by the other inspectors in the south gob return and other mine areas on December 5, 1990, did not result in any violations in those areas. He also confirmed that the area between the No. 10 development and the back of the active longwall reflected no problems with the ventilation in that area (Tr. 65-69).

Mr. Carico stated that the brattice which he initially tested was constructed of concrete block and a plastered over surface. He was not surprised to find the brattice and confirmed that it was used to control the airflow in the bleeder system to the bleeder entries. He was standing in the bleeder entry, and the gob was on the other side of the stopping. He explained that he tested the stopping by running his hand across the stopping face in order to feel any escaping air. After finding areas where air was coming through small "pinhole-type areas," he placed the small tube attached to the inlet end of the Riken methane detector in the crack and took a methane reading. He agreed that this test would not indicate what was going on in the bleeder. He confirmed that if he wanted to take a methane reading in accordance with the regulations he would have tested

~601

12 inches from the roof, face, and ribs. However, since the brattice is only a ventilation appliance, and not a roof, face, or rib, there was no restriction as to where he could take his sample (Tr. 71-72).

Mr. Carico confirmed that he did not determine the quantity of air in the bleeder at the stopping area where he found 6.2 percent methane, and that he would expect the methane bleeding through the stopping to mix with the air in the bleeder and be carried through the bleeder entries and eventually out through the exhausting fan shafts. He stated that he was measuring gob gas at the brattices, and was not concerned about the gob gas at that particular location. His concern was that his test indicated the possibility of a larger body of methane than what was indicated by his test (Tr. 74).

Mr. Carico stated that methane gas coming out of a borehole can be measured, but that he took no such measurements. He agreed that boreholes which bleed off methane out of the mine enhance the available underground ventilation. He also agreed that the gob area of the mine in question is expected to have explosive concentrations of methane in some locations, and that it is impossible to get it all out of the mine (Tr. 75-76). He explained that the methane is in an area which liberates large quantities of methane and that vertical boreholes are drilled from the surface to intercept the gob fall areas where coal has been extracted to draw out the methane with vacuum pumps or fans (Tr. 77).

Mr. Carico believed that one would not expect to find gas behind the stopping if the bleeder system is functioning properly. He confirmed that he was familiar with the functioning of the mine bleeder system, and using the mine map as a reference, he explained how and where the air is coursed through the gob. He confirmed that one cannot safely walk through the gob area because of the hazardous roof conditions. He also confirmed that while some of the air may find its way into the actual gob area, it essentially ventilates the periphery of the gob, and the methane is supposed to come out of the gob area through the edges into the bleeder system and out of the mine (Tr. 79-83). He assumed that the stoppings were constructed to regulate the gob so that it would function in a manner that would keep explosive methane levels from exiting the gob at the bleeder connectors (Tr. 83-84).

Mr. Carico confirmed that his 6.2 percent reading was made at the stopping in the No. 2 entry of the No. 10 development, but that he could not take readings at the other stoppings in that development location because the leakage around the stopping perimeter was within a foot of the mine roof or rib and no readings could be taken there because they may be artificially high and not representative (Tr. 84-86).

Mr. Carico stated that he did not test the amount of oxygen going through the pinholes in the stoppings which he tested and that he does not usually make such oxygen tests unless he has reason to believe that there might be a problem with the flow of oxygen. He agreed that oxygen is definitely a factor in determining whether there is an explosive concentration of methane, and in the absence of any measurements of the oxygen coming through a pinhole, one cannot tell if there is an explosive mixture of methane behind the stopping "with a sole finding of my methane level" (Tr. 87).

Mr. Carico confirmed that unless certain precautions are taken, welding and cutting is not permitted in the bleeders which are return air courses. He agreed that welding is not a normal daily operation which is done in a return air course, and that it is even less likely that such work would be done in a bleeder (Tr. 89).

Mr. Carico confirmed that although he believed that the stoppings prevented the drainage of gob gas, the ventilation plan does not state where such drainage has to occur. However, he indicated that the plan states that drainage has to occur at "strategic locations," but that these words are not further defined in the plan. He confirmed that Island Creek may determine the strategic locations as long as it meets the requirement for controlling the airflow through the gob. However, the ventilation has to insure that explosive gas mixtures do not reach safely accessible areas where people are normally required to work or travel (Tr. 91).

Mr. Carico conceded that although he only referred to the second sentence of the applicable ventilation plan provision in his citation, he believed that all of the language was applicable. He agreed that the first part of the second sentence was complied with and that "the bleeder entries were connected to those areas in which pillars have been wholly or partially extracted" and that the bleeders are connected at sufficient intervals to control the gob gas as it comes out. He stated the basis for his citation as follows at (Tr. 94):

Q. And so your basis for the citation was that you found some methane in explosive concentrations coming through a pinhole, you drew the conclusion that there was some amount of methane on the other side, is that correct, of the stopping on the gob side?

A. That's correct.

Q. And from that you concluded that the company's bleeder system was not working properly?

A. Yes.

Q. Or was not constructed properly?

A. Yes, sir.

Mr. Carico agreed that except for the gob dome and fall area, the high place in the gob area, according to the map contour lines, is in the area where he took his measurements and issued the citation and order. He also agreed that methane is lighter than air and will leak out at the highest place it can even though it is enroute out of the mine (Tr. 97).

In response to further questions, Mr. Carico confirmed that in testing the face of the brattices, he placed his Riken methane monitor in the cracks because any sampling outby the face of the brattice would not have given him "a true representation of what was actually behind the brattice" and any methane would have been diluted outby the brattice (Tr. 98). He believed any explosive methane leakage from a roof or face where coal is being cut would constitute a controlled, small body of methane, or "face ignitions or pops," as distinguished from a "substantial body of methane and apparently not controlled" behind the brattices in question (Tr. 99). He confirmed that face ignitions have occurred at the mine, but he could not state how many may have occurred or when they occurred (Tr. 99).

Although Mr. Carico stated that there was a potential for a face ignition at the longwall face, he stated that "I'm not prepared to, you know, evaluate as to what the potential is" (Tr. 100). He confirmed that the longwall working faces were "several thousand feet" from the stoppings where he found leakage, and while there are some established bleeder points for the abandoned north gob area, there are none for the cited south gob area. He further confirmed that the mine operator is required to examine the gob area and stoppings weekly by traveling the bleeder entries and examining the brattices "to see that they're still serving the purpose for which they were erected" (Tr. 103).

Mr. Carico stated that methane "face inundations" have occurred at the mine in 1985, and he explained that this occurs "where a quantity of methane is released at a rate which the available ventilation is not able to dilute it" (Tr. 104). He stated that this occurred in a new longwall panel where coal was being extracted, and the floor cracked and released several hundred thousand cubic feet of methane in a matter of minutes and "over-rode" the intake air being delivered on the longwall face and "backed the ventilation up for at least a hundred feet outby the longwall face" (Tr. 104). If there had been an ignition, he "supposed" that it could have traveled 2,000 feet (Tr. 105). He confirmed that this incident, as well as the prior mine fires, were within his "collective knowledge" when he issued the imminent danger order on December 5, 1990, and that those factors "definitely contributed to me having more concern possibly for

~604

this mine or, in fact, for this mine that I might have for some of the other mines, you know, where no findings like that had been made, where those occurrences hadn't taken place" (Tr. 106).

Mr. Carico stated that if methane exploded next to a stopping, it would blow out the stopping and leave an open area for methane to flow out of the gob. Any resulting negative ventilation pressure would then draw uncontrolled bodies of methane out through the open bleeder entries and "involve the entire mine" (Tr. 114). Mr. Carico believed that the method he used for testing for methane in the gob on December 5, was sufficiently accurate to indicate that the condition existed. He further stated that he would have liked to have had better access to the gob area to make a better determination as to how the gob was being ventilated, and would have liked to have been able to determine exactly how large the body of methane was in order to know "the entire facts concerning it." However, he could not do this in this case because the gob area was physically blocked by cribs which were installed from rib to rib, and he would only be able to go inby for 10 or 15 feet. If he were able to travel behind the gob area, and assuming it were safe to travel there, he may have been able to determine the airflow along the set-up entries, or whether it was completely stagnant (Tr. 115). He confirmed that in all of the places where he tested the stoppings, they were all physically obstructed and he could not enter the gob areas (Tr. 116). He was aware of no other method in the ventilation plan for checking in behind the stoppings, and he did not know how Island Creek checked these areas (Tr. 117).

Mr. Carico confirmed that he did not review the preshift reports for the periods prior to December 5, to determine whether the areas had been inspected and whether any methane readings were previously taken, and he stated that this "was an omission on my part" (Tr. 117). In response to further questions, Mr. Carico explained how long it took him to perform his tests with the Riken methane detector, and he confirmed that it was his judgment that there was an approximate volume of "tens of thousands of cubic feet of methane behind the stoppings," and that his conclusion in this regard was "based on my findings of what was passing through that stopping and knowing that these areas were interconnected inby those stoppings" (Tr. 122).

MSHA Inspector Claudy J. Scammell, stated that he was familiar with the subject mine and that he conducted regular inspections there for approximately 6 months in 1987 and for approximately 9 months in 1990. He confirmed that he was with Inspector Carico on December 5, 1990, but that he went to the intake side of the longwall tail at the No. 12 development to conduct his inspection, and upon inspecting that area he found nothing out of the ordinary. He confirmed that he learned that Mr. Carico had issued his order and citation for methane accumulations at the bleeders on his way out of the mine and that he

~605

discussed them with Mr. Carico after he had ordered the withdrawal of miners.

Mr. Scammell stated that he returned to the mine the next day on December 6, with his supervisor and went to the area where Mr. Carico had issued his December 5, order. He started his inspection at the No. 11 development, and proceeded to the No. 8 development. He detected no changes in the stoppings or the conditions previously cited by Mr. Carico, and he took methane readings with a Riken and a CD210 methane detector. The Riken detector had been calibrated that same morning, and the readings which he took included the "highest" reading of 7.6 percent methane. He did not know what the lowest reading was, but stated that "there were some below 5%." The only changes which he observed with respect to the stoppings cited by Mr. Carico "was that the stoppings had some plaster added to them, trying to seal the cracks, I presume." He confirmed that he took his methane measurements approximately an inch to a half-inch "right near the cracks where air was coming through," and that he measured the methane at each of the entries in the east development, and the highest reading he measured was 3.6 percent methane. Under the circumstances, he terminated the order previously issued by Mr. Carico on December 5 (exhibit G-2, Tr. 126-132).

Mr. Scammell stated that he next visited the mine on December 13, 1990, with his supervisor to determine whether any stopping changes had been made and to follow up on the December 5, citation issued by Mr. Carico. He confirmed that he checked the bleeder entries at the No. 11 development, and found "nothing out of the ordinary," and found no excessive or explosive levels of methane (Tr. 133). He then proceeded to the No. 10 development, where he tested the No. 4 and No. 3 entries and found methane below 5 percent. He could not recall the exact readings, but confirmed that they were below 5 percent. He then tested the No. 2 entry and found 6.2 percent methane. Although he believed that this reading warranted an imminent danger order, he decided not to issue it at that time because he wanted to make sure that this was not a pocket of methane in an isolated area, and wanted to check further.

Mr. Scammell confirmed that he was aware of the prior mine fires of unknown origin. Two of the fires occurred prior to the time he became an inspector, and at least three of them were gob fires. However, he had no idea on which development or which end of the gob the fires occurred. He believed that roof falls had occurred in the gob area, and stated that "the gob wall always has falls on it. That's the purpose of it" (Tr. 135).

Mr. Scammell stated that he then proceeded to the No. 9 development and found methane in excess of 5 percent at all four of the bleeder entries where he took methane readings at the stoppings where he detected air coming through the cracks. He

~606

confirmed that he took his readings a half inch or an inch close to the cracks, and found 6.3 percent methane at the No. 4 entry. Although he believed at that time "that there was a methane problem again," he wanted to check across to at least the No. 8 development before making any final imminent danger decision. He then proceeded to take additional readings, and the last reading he took was in the No. 1 entry of the No. 8 development where he measured 7.6 percent methane. He confirmed that all of his readings for a row of eight entries were above 5 percent methane, and he then advised company representative Workey that there was an imminent danger and that he was to withdraw all miners (exhibit G-5, Tr. 135-138).

Mr. Scammell stated that at the time he issued the order he believed that the methane concentrations in excess of 5.0 percent leaking through the stoppings in question presented a hazard, and that the presence of an ignition source "would be all that it would take to blow up the entire mine" (Tr. 139). He believed that any sparks from a roof fall, which was possible in the gob area, would constitute an ignition source. He confirmed that one cannot really determine the kinds of falls in the gob area, but that "constant" falls are occurring where the coal is being mined. When asked about the frequency of any falls, he stated "it's quite often. I ready don't know" (Tr. 140).

Mr. Scammell stated that any methane ignition occurring at the longwall face could possibly propagate from the face line of the longwall, but that his "major concern" was a gob roof fall. He confirmed that there were no other ignition sources that posed a risk of igniting the methane which he found. He believed that any methane explosion resulting from a gob roof fall would result in fatal injuries to the 85 miners on the day shift, and that such an event was highly likely if normal mining operations were continued (Tr. 141).

On cross-examination, Mr. Scammell stated that he was concerned about "a combination" of roof falls in the bleeder and the gob on either side of the stopping, "just in that general area" (Tr. 143). He confirmed that he did not know what was behind the stoppings when he made his methane readings, and that it was possible that the roof on the gob side of the stoppings was "cave tight." He then conceded that he was not concerned about any roof falls other than behind the stoppings, and that a roof fall 100 feet away from any methane would not make any difference (Tr. 142-145). Mr. Scammell confirmed that he made no methane readings out in the bleeder entries and that any methane bleeding through the stoppings into the bleeders would be diluted (Tr. 146). He also confirmed that he took no air measurements to determine how much air was going into the gob area from the No. 12 development area, and he had no knowledge as to how much air was coming "out the other end" (Tr. 148). He conceded that he did not know what was going on in terms of ventilation in the

~607

gob, and that he was just concerned about what he thought was on the other side of the stoppings (Tr. 148).

Mr. Scammell confirmed that he took three bottle samples "as close to where I got the original methane readings" to substantiate his order, and he identified exhibit C-1 as a phone message received from Inspector Carico communicating the result of the bottle samples (Tr. 158). Mr. Scammell confirmed that he made nine Riken methane readings to support his order, but only took three bottle samples. He confirmed that he took no bottle sample at the stopping where he found 7.6 percent methane because he had no more bottles. He confirmed that the bottle samples showed 5.4 percent, 5.09 percent, and 5.75 percent methane, but he was not sure of the locations where these samples were taken (Tr. 160-163).

Roy D. Farmer, testified that he has worked at the mine since October 1975, and that he serves as chairman of the safety committee and president of the UMWA Local 1640, which represents the miners. He stated that in his capacity as the miner's safety representative he began inspecting the bleeders in 1976, and has continued to do so to the present. He has made various methane tests in the areas in question with a Riken gas detector and confirmed that this instrument is generally accepted by the mining industry for testing methane and that the detectors are calibrated by the company's safety department. He stated that he has in the past found methane in excess of 5 percent, and if methane at that level is found at the stopping line all miners are immediately withdrawn from the mine (Tr. 166-169).

Mr. Farmer stated that beginning in 1976, each of the developments had a regulator in the No. 1 and No. 4 entry of each development. One could travel through the regulators into the set-up entries to check for methane and withdraw miners if the methane exceeded 5 percent. As the mine developed and the gob area increased there were problems with controlling the methane and the company erected permanent stoppings where the regulators used to be. Since this was done, the only method for checking the methane is to feel along the stoppings for any leakage and insert the Riken detector into the crack to check for methane. If one finds a reading above 5 percent, it was his opinion that it would be indicative of a buildup of methane behind the stopping in the set-up entry (Tr. 170).

Mr. Farmer stated that prior to the sealing of the regulators, any increased levels of methane could be dealt with by opening or closing the appropriate regulator to allow air to flow to the set-up entries to sweep out the gas. In his opinion, the sealing of the regulators has resulted in the "bottle necking" of the methane and "there's no where for it to go." Any detection of methane coming through the stopping would, in his opinion, indicate that the air is not sweeping through and is not being

properly regulated to move out the methane. Mr. Farmer did not know why the stoppings have been erected, and in his opinion, a door could be installed in a stopping to allow one to go through and check the other side with a Riken detector rather than putting it against any "pinhole" crack in the stopping itself. He believed that such a door in the stopping would solve the problem, and that the problems which have been created have resulted from the removal of the regulators and the erection of solid stopping lines over all four connecting entries in each of the developments. This prevents anyone from physically going into those areas to check them and prevents any adjustments to the air sweeping those areas (Tr. 171).

On cross-examination by Mr. Biddle, Mr. Farmer confirmed that he knew of no reason why the company would want to keep methane in the gob area behind the stoppings. He stated that the decision by mine management to eliminate the regulators began "in the eighties" when a "new management team came on board" and someone made the decision to erect the stoppings. He agreed that the decision was made for some reason, but he did not know the reason. He confirmed that prior to the erection of the stoppings, if 5 percent methane was found anywhere in the mine, including the stopping line, the set-up entries, and the bleeder connectors, the men were withdrawn from the mine. He confirmed that no one was withdrawn if 2 percent methane were found in the bleeders (Tr. 173). Mr. Farmer agreed that the purpose of bleeders is to take the methane out of the mine, and he agreed that in a "windy bleeder" with a "lot of volume of air going through," any methane which may be 80 percent will decrease in volume as it courses through the bleeder (Tr. 174).

In response to questions by Mr. Jackson, Mr. Farmer stated that the bleeder system is designed to sweep the periphery of the set-up entries. The gob "dome area," or "big fall area" however, is sealed off and supported by barrier block so that air can sweep through that area. He confirmed that high levels of methane may go through a bleeder at times due to the release of pockets of methane, and if they are in the explosive range, it would not be safe for anyone to be in the bleeder (Tr. 175-176).

Mr. Farmer stated that he is familiar with the mine ventilation plan, and that he or a member of the safety committee has reviewed the plan and expressed the union's concerns about the stoppings, but have received no response. He distinguished the gob area from the set-up entries which he believed was the periphery area where the sweeping of methane was needed. He believed that regulators at different locations in the set-up entries could be opened and closed as needed to redistribute and redirect the air, and without these devices, there is essentially no control of the air. He further believed that more regulators are required in the south bleeders to keep the methane below 5 percent (Tr. 183).

Mr. Farmer confirmed that during his inspections, both he and the company have found methane in excess of 5 percent "numerous times" in the same manner found by the inspectors, and men were withdrawn by management. Corrective action was taken by removing a stopping "sometimes," opening or closing a regulator when it was there, plastering the stopping to seal it tighter, or erecting another stopping to prevent anyone from going where the methane is. It was his understanding that the company in this case erected metal stoppings in the No. 6 through No. 10 developments and left a panel out of each side of the stopping so that air from the bleeders could course around the stopping (Tr. 185). However, the inspector cannot travel to the original stopping areas to determine whether any methane is still there because of the new metal stoppings which are barriers.

Contestant's Testimony and Evidence

Eddie G. Ball, mine manager, testified as to his duties and responsibilities and his mining experience. He stated that the mine is located in Vansant, Virginia, and that it is a shaft mine approximately 1,400 feet underground. The annual coal production for 1990 is 1.7 million tons, continuous miners are used for mine development, and the primary source of mining is the longwall system. The mine employs approximately 330 miners, including 276 hourly miners, working three shifts a day (Tr. 189-192).

Mr. Ball identified exhibit C-2 as a mine map, and he confirmed that the green markings show the intakes, and that the returns are marked in red. The red arrows at the areas across the map show the gob areas which are previously developed and mined-out longwall panels where the roof has caved in after the coal was extracted. The gob areas are ventilated by intake air which is coursed through the gob from the head and tail of the longwall and splits off the longwall, and he explained how the air travels into the bleeder system to ventilate those areas. Mr. Ball confirmed that the longwall panels from the No. 1 through No. 10 developments were 5,620 feet long, and that the last two panels have been shortened (Tr. 192-199).

Mr. Ball stated that a sealant material is used to seal the stoppings, and he confirmed that the stoppings were originally installed as the developments progressed in order to control the air. The regulators are still in place, but they are closed and sealed so that the pressure can be controlled "to make the gas flow in the way we want it to and get it to mix to come out in an acceptable manner." If the stoppings were removed, he would lose control of the air and there would be no way to direct it. This will result in a high concentration of methane coming out early into the bleeder system and he would be unable to control and push the air across the old set-up entries. The loss of pressure would result in a concentration of methane into the bleeder system and "the rest of the gob area will go dead" with no air

~610

going through. The stagnate air will result in high concentrations of standing methane in each bleeder connector (Tr. 201).

Mr. Ball confirmed that he was familiar with the mine ventilation plan and its bleeder system provisions, and he believed that he was in compliance with the plan. He stated that the bleeder system has been previously inspected by MSHA, that three ventilation surveys were conducted by MSHA prior to Inspector Carico's inspection, and that he was informed that the ventilation system was in excellent condition. He confirmed that Mr. Carico first informed him in April, 1990, that the ventilation system was out of compliance (Tr. 202).

Referring to the applicable ventilation plan provision, Mr. Ball stated that each of the numbered developments shown on the mine map are connectors to the bleeders and that they are mined into the bleeder from each development as it is driven, and that each of the four entries in the developments are connected at strategic locations. Although stoppings have been erected across the entries, he still believed that there is a connection between the gob and the bleeder even though the stoppings are there. He is satisfied that these connections are at strategic locations and that the stoppings control the air flow through the gob area in such a way as to minimize the hazard from expansion of gob gases due to atmospheric change. If the stoppings were removed, he would be out of compliance with the ventilation plan provision in question because he would be unable to control or direct the air or methane to any given location (Tr. 204-205).

Mr. Ball stated that he was familiar with the December 5, order issued by Mr. Carico, but was on vacation when it was issued. However, he returned to the mine to investigate the matter, and learned that the methane readings taken to support the order were being made in the stopping pinhole cracks and not from a distance of 1-foot where mine management makes its readings. Mr. Ball disagreed with the inspector's belief that methane readings 1-foot outby any area being tested are limited to face areas, and he believed that the 1-foot distance for taking such readings apply to all mine areas that may be tested, including stoppings (Tr. 206).

Mr. Ball disagreed with Inspector Carico's December 5, imminent danger finding because he believed that any explosive mixtures of methane are migrating out of the gob area and are mixed and diluted with the air to bring them to an acceptable level where people are expected to travel. He confirmed the existence of bore holes which are drilled into the gob to liberate the methane from the top of the gob area to the surface so that it does not get into the mine ventilation system. He was not concerned about any explosive concentrations of methane on the gob side migrating to the stoppings because he believed that the stoppings and bleeder system were intended to allow the

~611

methane to migrate into the bleeder system at the stopping locations (Tr. 209).

Mr. Ball confirmed that he also investigated the December 13, order issued by Inspector Scammell and discussed it with the inspectors. He learned that the inspectors were "getting the methane through the cracks, the same as on December 5th. They really didn't know what to do about it." He confirmed that the inspectors had some recommendations, which he followed, but this did not cure the problem because the removal of the stoppings would have resulted in the loss of control of the air (Tr. 210). Mr. Ball confirmed that the mine liberates approximately 20 million cubic feet of methane a day from all sources, and that it is released from the mine strata as it falls behind the advancing longwall. In addition to the boreholes, the mine has an underground degasification program for removing methane before coal is mined by means of a pipeline which removes methane through negative pressure and pipes it to the surface (Tr. 211-212).

On cross-examination by Mr. Jackson, Mr. Ball stated that notwithstanding the erection of the stoppings, the bleeder entries are nonetheless still connected to the gob. He explained the air flow through the developments and gob, and confirmed that Island Creek's ventilation department has advised him of the direction and amount of air flow through the gob areas, and that he has made these determinations by observing the direction of air by throwing a hand full of rock dust in the air. He also confirmed that he can measure the air, and has done so, but that he did not know the percentage of air splitting at the face on December 5 or 13 (Tr. 213-218).

Mr. Ball did not believe that the methane tests by the inspectors in the stopping cracks were representative of the air behind the stopping or what was in the bleeder system. He did not believe that there were big pockets of methane behind the stoppings, and he suggested that methane rises to the top of the stopping because it is lighter and this would explain why some of the methane readings at the top of the stopping were higher than those made down against the floor. He believed that the air in the stopping cracks was mixing with the methane, and he pointed out that if the air were not mixing with the methane, there would be 100 percent methane behind the stoppings and not the smaller amounts found by the inspectors. He believed that the air coming through the stopping cracks where the inspectors made their tests was air coming off the longwall through the gob and bleeder system and mixing with methane behind the stoppings trying to course it into the bleeder system as it is supposed to (Tr. 226).

Mr. Ball confirmed that the regulators which have been sealed were adjustable, and that attempts were made in the past to remove some stoppings and open up some regulators to deal with

~612

the methane problem, but that the stoppings were replaced because pressure was being lost and the air could not be controlled. This was also done in April, 1990, when the mine was down for 5 days while certain stoppings were opened up and others erected in an attempt to address the problem. He confirmed that the April order was issued "in a complete different area from where we are now," and that stoppings were erected in the area where the present orders were issued (Tr. 227-231).

On cross-examination by Mr. Mullins, Mr. Ball confirmed that some of the locations along the longwall gob areas in question have been partially blocked by the erection of stoppings, and some have not, and that the purpose of partially blocking some of the areas is to restrict airflow. He reiterated his view that opening too many entries will result in a loss of pressure and control of the air flow. He further believed that the ventilation plan "works fine for me," and that the use of the bleeder entries comply with the plan (Tr. 232-237).

Mr. Ball confirmed that metal "Kennedy" MSHA approved stoppings were recently installed in front of the cited stoppings in an attempt to address the order of December 13, and he was informed that MSHA was concerned about the migration of methane from the gob into the bleeder system and that by checking the pinholes in the stoppings they could tell there was a buildup behind the stoppings. The Kennedy stoppings were installed to prevent any buildup behind them and he was not prohibited from doing this. However, MSHA would not abate the order and took the position that the inspectors had to return to the original areas where they tested but they could not do so because of the erection of the new stoppings. He confirmed that no methane levels or any imminent dangers were found at these new areas, and Mr. Ball suggested that if he had installed the Kennedy stoppings earlier, there would have been no orders because there is no methane at those locations at the present time (Tr. 247).

In response to further questions, Mr. Ball confirmed that strategic locations of the bleeder connectors are determined by management with the assistance of professional ventilation staff people who analyze the air flow needs for the mine. He stated that he was initially informed that the inspectors were concerned about methane leaking into the bleeder entries, but that their position has changed into a concern for methane build-ups behind the stoppings (Tr. 251-252). Mr. Ball stated that while he did not doubt the methane readings taken by the inspectors, he questioned the consistency of the readings taken at the higher and lower pin hole locations where air is leaking through a stopping, and pointed out that since methane is lighter than air it will rise to the top of the stopping. He also pointed out that company mine examiners have regularly tested for methane 1-foot outby the stopping and have always used this as a reference point, and they have never been told to use the methodology

~613

used by the inspectors in these cases. He saw no distinctions between a stopping surface and the face, rib, roof, and floor of a mine where MSHA requires methane tests 1-foot from those locations.

Mr. Ball believed that any methane tested against the stopping must have a chance to dilute, and that it was incorrect to place the methane detector tube in the pinhole itself because it does not result in a true reference of what is behind the stopping. Since gas is lighter than air, by checking higher up on the stopping there could be a small pocket of methane in one corner of the stopping which is still trying to come through the stopping by pressure which is taking it out (Tr. 254-255). Mr. Ball stated that the consistent high methane test results by the inspectors is based on the highest readings at the different developments which they tested, and that if they made five tests and received five different readings, they will record and use only the highest reading (Tr. 255).

Inspector Scammell was recalled by the court, and he confirmed that when he conducted his methane tests at the face of the stoppings and found high readings, he made several checks to make sure that they were "constant and holding." He further confirmed that he would have made three or four readings at each of the stopping pinhole locations where he could feel the air, at the top, bottom, or middle of the stopping, but would only record his highest reading as the basis for the order. He followed this same procedure at each of the bleeder entries where he tested. When asked to account for the lower readings, he responded "that could vary on the half where the crack is. I don't really know. It may be the size of the crack. I have no idea" (Tr. 258).

Mr. Scammell stated that if three or four methane readings showed less than an explosive mixture of methane behind the stopping, and one measurement indicates an explosive mixture, he would conclude that "it is all bad," and he would also conclude that the methane was being diluted at the locations where the first three samples showed less than an explosive mixture (Tr. 259). Mr. Scammell had no knowledge of the range of all of the readings which he took, but stated that "it wasn't one or six percent. It was more like maybe four to six percent" (Tr. 259).

Mr. Scammell confirmed that when he returned to the mine on December 6, to check on the December 5, order issued by Inspector Carico, he terminated the order after taking additional methane readings. When asked why he did not also terminate the December 5, citation issued by Mr. Carico, which was based on the same methane readings which served as the basis for the order, Mr. Scammell explained that while the methane readings were down and would support the termination of the order, he could not terminate the citation because he could find no changes which were made in the ventilation system, other than the replastering

~614

of the stoppings, and he felt that Island Creek was still out of compliance with the ventilation plan because no ventilation system changes were made (Tr. 3). He believed that the reduced methane readings were the result of the mine being idled by the order and not in production, and while the imminent danger no longer existed, "the citation wasn't cleared up as far as making changes in their bleeder system for this to happen again" (Tr. 4). The miners went back to work after the order of December 5, was terminated, and he extended the abatement time for the citation to December 20, and he would normally follow up on the citation to determine whether any ventilation changes or adjustments have been made (Tr. 5). Mr. Scammell confirmed that the methane readings which he took on December 6, confirmed that the methane through the pin holes was reduced, and that the ventilation moved the methane away (Tr. 6).

Richard E. Ray, Ventilation Manager, testified that he holds a B.S. degree in mining engineering, has 11 years of experience in mine ventilation, including 7 years as a ventilation engineer with Jim Walter Resources. He explained his duties and confirmed that they include the design of ventilation systems for Island Creek's Virginia Mine Division, and directly working with the operational people at the mine in question. He confirmed that he is familiar with the mine ventilation system, the gob area, and the No. 1 through No. 12 development areas. He identified exhibit C-2, as a reproduction of a mine map which he recently prepared, and he explained the ventilation in the south gob (Tr. 7-12). He confirmed that he and a team of engineers conducted a survey of the ventilation system on December 12, 1990, and that they measured 225,962 CFM of air being directed toward the longwall face in the No. 12 development intake, 54,960 CFM of air across the longwall face, and the 170,000 CFM balance was directed toward the top end of the bleeders. He described the air (CFM) coursing through the other relevant development locations (Tr. 13-18).

Mr. Ray stated that the stoppings are installed to ensure proper airflow through the entire gob and to insure that the north end of the gob "does not go dead." He stated that positive ventilation pressure must be maintained to insure that the air is ventilating the gob, and he explained the airflows and direction of air flow at the headgate of the longwall at the No. 12 development face to the top of the No. 1 development and through the gob and set-up entries. He confirmed that the amount of air going into the bleeder system is for the purpose of diluting the methane which is being drained from the gob area. In his professional opinion, and based on his air measurements and knowledge of the system, he is satisfied that the gob is being ventilated (Tr. 18-24).

Mr. Ray believed that the stoppings in question were installed before he was employed by Island Creek in 1986. He

~615

confirmed that several efforts were made to remove some of the stoppings when the orders of December 5 and 13, were issued and he explained what was done. He confirmed that the removal of the stoppings resulted in worse problems from the No. 9 development to the No. 1 development in terms of gas coming through the cracks in the stoppings and out of the top of the No. 1 development regulator. He also explained that holes or "windows" were knocked out in a number of stoppings to allow air flow to travel from the gob into the bleeder system, and that this resulted in higher concentrations of methane at those locations and at the outby locations at the top of the No. 1 development. After a day or so, the stoppings were resealed. Additional efforts were made to redirect the air to the south bleeders, and Kennedy stoppings were also recently installed and the methane through the stoppings has been reduced, but as of the hearing date, the December 13, order had not been terminated by MSHA (Tr. 25-36).

Mr. Ray confirmed that bore holes and vacuum pumps are used to draw methane from the mine, and he explained where the holes are located and the measured methane flows from the holes (Tr. 36-41). He did not believe that the methane readings taken by the inspectors would be an accurate indication of what was behind the stoppings at the locations where the readings were taken. As an example, he cited one bore hole location within a couple of hundred feet of where "those tens of thousands of hypothetical cubic feet of methane" were located and he confirmed that only 167 CFM of 30 percent methane was being exhausted from that hole. This reading was taken during the ventilation survey on December 12, the day before Mr. Scammell's order was issued. Readings taken on December 5, were very similar to the one taken on December 12 "within a few CFM's and within a percentage point or two of the thirty percent" methane (Tr. 42). Since methane is lighter than air and seeks the higher spots, he would expect the higher gob elevation areas to have higher concentrations of methane (Tr. 43).

Mr. Ray confirmed that he was familiar with the ventilation plan provision cited by Mr. Carico, and he was of the opinion that it was not violated because his survey pressure differentials reflect the noted airflow volumes coming out of the top and bottom of the No. 1 development, and one can deduce from these air flows that they are going through the active gob current. He further confirmed that Mr. Carico did not discuss the citation with him, and although the survey was done after the violation was issued, prior data was available, but Mr. Carico did not consult it and did not speak to anyone in the engineering or ventilation department (Tr. 46). Mr. Ray did not believe that one can tell whether a gob is being ventilated adequately by taking measurements with a Riken detector at a pinhole at a stopping or several stoppings at the top end of the gob, and that a survey similar to the one made on December 12, would be necessary to make such a determination (Tr. 50).

On cross-examination by Mr. Jackson, Mr. Ray confirmed that he did not know the methane concentrations in the set-up entries of the No. 8 development because that area is inaccessible. He did know the methane concentrations of the bore hole a few hundred feet from that location, and it was below 40 percent. Since gas flows from high pressure to low pressure, he also knew that the bore hole gas was being pulled from the south, but he could not prove the range of influence of that bore hole (Tr. 50-52).

Mr. Ray stated that it was his understanding through conversations with mine management that the inspectors wanted to open up all of the connectors, and that Mr. Carico indicated that air should be brought out of some of the connectors to the regulators rather than stopping them off (Tr. 53). Mr. Ray confirmed that work on the No. 12 development panel began in July, 1990, and that additional bore holes were established in that panel and the No. 11 panel to deal with increased methane liberation resulting from higher coal production in those areas (Tr. 54-55).

On cross-examination by Mr. Mullins, Mr. Ray stated that equal emphasis is being placed on ventilating the entire gob area, as well as the periphery of the gob. Referring to the mine map, he described the flow of air through the development panels, and he indicated that somewhere near the top of the No. 1 development panel, air comes out at a volume of 22,351 CFM. He pointed out that the first bore hole ever drilled in the gob was No. 42, and that it has "been making methane since the April ventilation change," and since it was not "making methane" for 5-prior years, he believed that this was evidence of the fact that methane is being moved across the gob, and that air is coursing down the bleeder entries (Tr. 58). Mr. Ray further reiterated that the use of regulators has not proven successful at removing methane out of the stopping pinholes, and he explained his reasons for this conclusion. He believed that there is enough air to push all the methane through the gob with the current ventilation system, and if the stoppings were opened up, the back end of the gob at the No. 1 development would be unventilated due to high resistance (Tr. 61).

Mr. Ray explained the reasons for the recent installation of the second Kennedy stoppings, and he stated that MSHA's Arlington, Virginia office was concerned that the problems with the pinholes would lead to excess concentrations and volumes of methane leaking into the bleeders. Mr. Ray stated that he wanted to insure that if there was a possibility of this happening, that the methane was being diluted before it got into the bleeder system. The second stopping will encourage the mixing of air and any methane coming out of the cracks through the connector crosscut into the bleeders (Tr. 61-62).

Donald W. Mitchell, self employed mining engineer, was accepted as an expert in mine ventilation and mine fires and explosions, and his resume reflecting his educational background, experience, and published works in those fields were made a part of the record (exhibit C-5, Tr. 71-72). Mr. Mitchell stated that he has been familiar with the subject mine "since the early '70's," has been involved in a number of ventilation studies in the mine, and was actively involved in 1984 and 1985 when he made a study of the mine gobs, including the south gob, following a mine fire. He confirmed that the study was made in his capacity as a consultant for Island Creek. He further confirmed that he has within the past week, studied the ventilation of the south gob, including an analysis of the pressure differentials and the air flows, and comparing them with the "early '80's and '70's," using a map similar to exhibit C-2, which was given to him by Mr. Ray (Tr. 73). Based on this information, and map exhibits C-2 and C-3, and since air always flows from high to low pressure, he has concluded that any air movement within the gob will be away from the face and towards the south bleeder and towards the bleeders to the far left of the areas marked on map exhibit C-3 (Tr. 76).

Mr. Mitchell stated that one would expect to find methane in the south gob, and since methane is lighter than air, it will rise towards the highest point in the gob. Depending on the air quantity and velocity, the airflow will pick up from a little to a lot of methane and dilute it and move it away to someplace where it can escape from the gob. He confirmed that methane concentrations between 5 percent and 15 percent can be expected in the gob because at the point where the methane is being liberated it is close to 100 percent, and if it is zero at the pinhole locations in the stoppings then "by definition somewhere between zero and close to a hundred it is going to be 5 to 15 percent. That's just basic logic" (Tr. 78).

Mr. Mitchell stated that the purpose of a bleeder system is to dilute and sweep away, and thus render harmless, methane that is put into the bleeder system or escapes into the bleeder system. He explained that when there is a drop in the barometric pressure there is an increase in the volume of methane, and by having a bleeder and a pressure differential the increased volume of methane will, instead of flowing into the working face in the active workings, be forced away into an area in which there are no igniting sources. Mr. Mitchell was aware of no MSHA standards that require gobs to be examined for methane. However, bleeders must be traveled at least once a week where they are safe to travel, and they are examined for methane concentrations, roof and water conditions, and to insure a flow of air through the bleeder. Methane examination in a bleeder are made where the split of air from the gob enters the bleeder, and where these two splits join, methane must not be in excess of 2 percent. Various methane detectors or bottle samples are used to test the methane

~618

in the bleeder split, and a detector is "typically used" (Tr. 81).

Mr. Mitchell stated that if the methane readings taken by the inspectors at the stoppings in the No. 8, 9, and 10 developments were taken at the higher elevation of the stopping, where leakage through the stopping is typically greatest along the roof line, one would expect to find higher concentrations of methane than any place else. This would be true in the No. 8, 9, and 10 developments because they are at the highest elevations in the gob, which is obvious from the contour lines shown on map exhibit C-3, and there is an abnormal release of methane in the gob due to severe barometric low pressures exhibited during the month of December. Under these circumstances, abnormal releases of methane would not be unusual or uncommon, and along the roof line behind the stopping there is probably a higher layer of methane that has not been diluted and swept away. This is to be expected because it is almost impossible to dilute and remove these layers of methane (Tr. 83-84).

Mr. Mitchell stated that if the methane readings were made at mid-height in the stopping, he would be concerned that there might be more methane behind the stopping than would be normal with a thin layer. If methane was found at the bottom of the stopping "this would tell us that indeed there's a potential for a larger volume of methane. * * * as you go from top to bottom the quantity of methane likely to be found behind the stopping increases." If eight sample readings are below the explosive range, and one was above, "that would tell us that there is a potential that we might have a layer of methane, and typically these layers are relatively thin. * * * in this specific area they might be thicker than one or two inches but such layers are not uncommon in the Pocahontas seam" (Tr. 84).

Mr. Mitchell was of the opinion that the use of the Riken detector to measure the methane at the stoppings by sticking the tube in the pinhole cracks would not result in an accurate reading because the Riken is a form of methanometer which he described as an "interferometer type" which is sensitive and calibrated for specific gases. Assuming the inspectors calibrated the detector for methane, it would be influenced by other gases which are normal to gobs, and particular the south gob. If there were an oxygen deficiency, the detector would read higher than true methane, and for each percent of oxygen deficiency one can anticipate at least .2 percent methane, and if there was 4 percent methane and a 1 percent oxygen deficiency, the Riken detector would read 4.2 to 4.3 percent methane. There would also be a .2 percent difference for each excess of 1 percent nitrogen, and with the presence of ethane, which is always present with methane in the Pocahontas coal seam, there would be a difference. As an example, he stated that 1 percent ethane is equivalent to a 3 percent reading of methane, and a one-tenth percent ethane

~619

reading would be equivalent of another .3 percent methane (Tr. 85-86).

Mr. Mitchell stated that the Bureau of Mines published a paper in 1960, advising that the Riken detector not be used where the atmosphere being tested is not a normal air with methane mixture, and that "if you don't know the atmosphere then there's no way that you can understand what the reading is." He believed that the only way to make a proper determination is with a bottle sample, and he stated that if there is a major deficiency of oxygen, which is not uncommon in gobs, a 10 percent deficiency would be the equivalent of 2 percent methane (Tr. 86).

After reviewing a copy of the December 13, order, and the Riken methane detector test results recorded by Inspector Scammell (exhibit G-5), Mr. Mitchell compared those results with the three bottle sample results taken at the No. 8, 9 and 10 developments and analyzed by MSHA's laboratory (exhibit C-1). He confirmed that the Riken reading recorded on the order for the No. 2 entry in the No. 10 development shows 6.2 percent methane, and that the bottle sample taken at that same location shows approximately 5.5 percent (5.47) methane, or a difference of .7 percent. He explained that the difference was in the oxygen deficiency and methane concentrations, and that the Riken reading would be representative if one considered the oxygen and methane concentrations. He arrived at similar conclusions with respect to the Riken reading of 6.3 percent methane for the No. 4 entry in the No. 9 development, and a bottle sample result of 5.09 percent methane at that location, and the Riken reading of 6.7 percent methane for the No. 4 entry in the No. 8 development, and a bottle sample result of 5.8 percent (5.75) methane at that location (Tr. 87-89).

Mr. Mitchell was of the opinion that methane detected coming through a pinhole in a stopping is not a reasonably accurate indication of what is on the other side of the stopping and it would not be an indication that the gob was not being ventilated. He believed that the gob is being ventilated in accordance with established ventilation guidelines, and that with the numerous bore holes in the south gob, "the evidence leaves no question that there is a flow of air from the headgate entry of Number 12 development through and across the gob to the far reaches of the gob which is the intent of proper bleeder ventilation -- of gob ventilation" (Tr. 91-92).

In response to a hypothetical question based on the testing procedures followed by the inspectors with the use of the Riken detector, intermittent detections of explosive and non-explosive mixtures of methane, and knowledge of prior mine fires, Mr. Mitchell was of the opinion that it would not be reasonable to conclude that an imminent danger existed because "for an imminent danger to exist one must put it in context -- one must

~620

put in an igniting source in conjunction with the methane" (Tr. 94). Mr. Mitchell stated that the sole source of any ignition in the area would be at the face area and that the face area has historically been associated with the past mine fires. He would also be mainly concerned about the pressure differential between the face and the stopping points because in prior years there was a problem with methane backing out on the face because the pressure differentials were half of what they are today (Tr. 95).

Mr. Mitchell believed that it was essential that the gob stoppings in the development areas in question remain intact and that to remove them "would be terrible" because it would result in "dead space" due to lower resistance. As an example, if this were to occur at the No. 9 development, the great majority of the air now flowing through and across the gob would go out the entry, leaving the gob to the left relatively unventilated. A barometric pressure drop could result in a flow of methane into the No. 12 development panel which is an active working area and where there are sources of ignition (Tr. 97). Mr. Mitchell did not believe that it was a bad practice to install regulators, provided they do not prohibit air flow through and across the entire gob, and he explained the various regulator problems which he believed were the reasons for sealing them. Mr. Mitchell agreed that "any time you have an uncontrolled gob you've lost your control over it and you have created an unacceptable hazard" (Tr. 97-99).

On cross-examination by Mr. Jackson, Mr. Mitchell was of the opinion that since a stopping concrete block is permeable, it could, over time, accumulate methane within the block, and if a pressure differential were introduced in the atmosphere, the block would liberate methane (Tr. 100). He stated that methane would gravitate to the No. 8, 9, and 10 developments because those areas are at the highest elevation. The elevation has nothing to do with the ignition characteristics of methane which do not change because of any higher elevation, and that "methane ignition characteristics are specific characteristics no matter where it be" (Tr. 104). He confirmed that methane layers are not uncommon in the mine coal seam, and that the critical factor in discharging or mixing any layers of methane would be the velocity of the air flow (Tr. 105). He explained that the method for determining the amount of air flow velocity necessary to discharge a layer of methane involves "a rather complex formula" which he worked out in 1983. Based on the air flowing through the area in question, he believed that "in the south bleeder there is a low probability for a layer to form. I would say that the south bleeders are well ventilated within the state of the art" (Tr. 106).

Mr. Mitchell stated that assuming the inspectors had "soda lime and dry-right" in their Riken detector scrubbers, the difference in their Riken methane readings and the laboratory

~621

bottle sample results would be the presence of methane and oxygen, and excess nitrogen in the three samples. He confirmed that ethane gas is flammable, and while the presence of ethane does not make the gas any safer "it does raise questions as to the proper use of a Riken for circumstances that would lead to a closure of the mine" (Tr. 107). He conceded that although these differences do not detract from the fact that the methane mixtures were explosive, and makes no difference in this case, he nonetheless believed that it is improper to base an imminent danger determination solely on the use of a Riken detector unless you know what the atmosphere is where you are testing. He stated that "had these samples come back, and they could have, with much lower percent oxygen then you might have had a closure order issued without any reasonable basis" (Tr. 109).

Mr. Mitchell believed that any indication of explosive levels of methane found by an inspector with a Riken detector should trigger further inquiries on his part to determine whether or not ignition sources are readily available, and that any determination in this regard would require him to go to the working face to determine whether there are any ignition sources which would create an imminent danger. Mr. Mitchell stated that "we could fill this room with methane and there is no hazard as long as we don't flip a switch" (Tr. 110).

Mr. Mitchell confirmed that major roof falls have occurred in the south gob area from the stoppings in the set-up entries into the gob (Tr. 111-112). He also agreed that there could be falls within the gob, but he did not believe that it was reasonable to believe that such falls could by themselves be an ignition source for methane in the gob. He confirmed that the basis for this conclusion is his extensive study and expertise in frictional ignitions. He pointed out that the only experience relied on by the inspectors for any potential frictional ignitions is limited to the mine in question. Since he (Mitchell) was aware of the conditions leading to the mine ignitions in the past, he assumed that the inspectors had that same knowledge (Tr. 114).

Mr. Mitchell confirmed that he was familiar with the MSHA reports concerning the four prior mine fires, and he pointed out that with respect to two of those fires, MSHA did not "conclude" that they were caused by roof falls, and only found that roof falls were among the potential sources. He further stated that although "at one time I did not argue against that," detailed studies of the mine which he and MSHA have conducted show that the probability of a roof fall being an ignition source is so small and of relative insignificance, and that "it's not something an engineer would consider reasonable and proper today" (Tr. 115-116).

Mr. Mitchell did not believe that an inspector can make any judgment about the ventilation or methane behind the stopping based solely on methane readings, and that "a combustible atmosphere at a stopping by itself needs (sic) nothing" and indicates nothing relative to a hazard. He pointed out that there are no laws precluding concentrations of methane in a gob, and if there were, "you would shut down almost every mine in these United States." He further pointed out that the laws are specific as to the amount of methane permitted in active workings where men are working, and that in this case, there are no required methane percentages for the areas which were tested because "it is unreasonable to set a percentage there because that percentage could be anything you want it to be depending on where you are when you take the reading" (Tr. 129).

On cross-examination by Mr. Mullins, Mr. Mitchell stated that the conditions which were present on December 5 and 13, when the orders were issued complied with the ventilation plan as he interprets it, and he explained the effect of the stoppings which are in place as follows at (Tr. 142):

What we have done is prevented the air from escaping into the south bleeder. Much of it. We have some leakage into the south bleeder and the purpose of those stoppings is to make sure that the air to control airflow through such gob area and through such gob area means (sic) from number 12 Development panel to the bleeder to the far left. That is what this says and that is what is being done. That is what I testified to. I hope.

Jack E. Tisdale, Senior Mining Engineer, MSHA Division of Safety, Arlington, Virginia, was called in rebuttal by MSHA and was accepted as an expert in mine ventilation and safety. He confirmed that he has been present during the course of the hearing, viewed the witnesses, and has reviewed the exhibits. It was his opinion that the adequacy of the ventilation of the mine gob area is "borderline to inadequate" (Tr. 152). Using the mine map of the area in question, exhibit C-2, with the ventilation readings taken by Island Creek as noted on the map during a ventilation survey made on December 12, 1990, he explained his analysis of the ventilation and methane, including the quantity and velocity of the air flow in the gob, longwall, and bleeder entries of the developments in question. He confirmed that the gob area was approximately 6,000 feet long, and that 226,000 cubic feet of air per minute was entering the longwall and gob area at the intake of the No. 12 development (Tr. 153).

Mr. Tisdale calculated that 80 percent of the air at the No. 12 intake is coursed to the bleeder entries and is separated from the gob "and does no work there," and that an additional

~623

22,000 cubic feet a minute is isolated from the gob. He calculated that 27,000 cubic feet a minute is left to ventilate the gob area, that the air velocity would be 4-1/12 feet a minute, and that it would take 20 hours for the air to travel a mile at that velocity. He concluded that 27,000 cubic feet a minute of air for 6,000 feet of gob "is stretching it" (Tr. 154). Mr. Tisdale pointed out that the map shows 22,351 cubic feet of air per minute and 3.78 percent methane coming out at the top of the No. 1 development, and after making further calculations, he concluded that 8.9 percent methane is being delivered to the bleeder entries "which supports the inspectors efforts to probe in there through the cracks behind the samples (sic)" (Tr. 157).

Mr. Tisdale stated that the stoppings "are extremely well constructed," even though they have "hairline cracks," and he calculated that the average quantity of air pushed through the plastered stoppings by the ventilation pressure would result in an air velocity of 30 cubic feet a minute for stoppings. He would expect to find such more than 30 cubic feet a minute, and that a "rule of thumb would be one inch of pressure in a stopping would give you 100 cubic feet a minute" (Tr. 155). He believed that the system can function properly as long as the seventh entry accepts air flow. However, as the set-up entries deteriorate to the point where they become resistant, they will not accept more air flow with the available pressures, and the system becomes ineffective. He had no idea when this may have occurred, and stated that "at one time this could have been a satisfactory system" (Tr. 159).

Mr. Tisdale made further calculations with respect to the airflow through the south bleeders, and confirmed that the 2 percent methane level requirement found in the ventilation plan would apply at the junction of the south and east bleeders. He calculated that there would be 1.9 percent and 2.2 percent methane at two locations, and concluded that "this ventilation is extremely borderline with respect to meeting the 2 percent limit at this junction." He agreed that any "tinkering" which flushes out more methane, or any air regulation that reduces the quantity of air available for the total split "will take them above the 2 percent limit at this point and make the whole system no go." He believed that this was the crux of the problem, and that due to the extensive gob, the solution will be difficult (Tr. 159).

Mr. Tisdale confirmed that he was not aware of anything in these proceedings that would indicate that the mine ventilation was significantly different on December 5, and 13, 1990. Based on his analysis, and the testimony he has heard in these proceedings, it was his opinion that the longwall set-up entries contain an excessive 9 percent methane "in the major part of their length," and an accumulation of explosive methane behind the setup entries in the south gob (Tr. 162).

In response to questions concerning the adequacy of the testing procedures used by Inspectors Carico and Scammell to determine whether methane had accumulated in the gob, Mr. Tisdale stated as follows at (Tr. 163):

A. Well, their methods I consider a bit crude, but it was the tool that they had to use to try to deduce what was behind the stoppings in the set-up entries and, if anything, their samples would have shown less methane than was on the other side of the stopping because of the difficulty to keep the sample from being contaminated by air on the bleeder side of the stopping.

Q. All right. Now, you've heard that they took more than one reading at many of the locations in the entries to the south bleeders, but that they only used the higher measurement. Which measurement, of that number they took in one area -- which measurement would most accurately reflect or accurately measure the methane levels in the air behind the stopping? The highest reading or the lowest reading?

A. Well, because of the potential for contamination, I would say the highest reading.

Mr. Tisdale stated that a concrete block, as manufactured, does not contain or generate any methane. He was of the opinion that methane would flow through the block, which is only a conduit, and that any methane in the block would have no effect whatsoever on the accuracy of the readings taken with a Riken detector (Tr. 164). He confirmed that since methane is lighter than air it will lay against the roof in an atmosphere of low velocity. There is broken roof where caving has taken place in the vicinity of the set-up entries, and if the methane laying against the roof is not pushed down by other methane or mixed with the air, it will seek its highest level and there could be a layer of methane. If the ventilation velocity in the set-up entries is sufficient to cause mixing of the air and methane, no further layering will take place because once mixed, methane is always mixed and will not separate. He believed as a "rule of thumb" 100 feet of air per minute was sufficient for mixing and preventing any layering of methane, and that based on his calculations, he did not believe that such velocity was present in the set-up entries (Tr. 165).

Mr. Tisdale was of the opinion that there is an ignition risk in the south gob through a roof fall that can create enough arcs and sparks to ignite any flammable mixture of methane in the air. He stated that roof falls have caused methane ignitions in the mine gob and that there have been two mine fires in the south gob. He identified copies of MSHA's reports regarding these

~625

fires, and also identified a copy of an MSHA memorandum concerning an examination of rock specimens from the mine (exhibit G-10, Tr. 166-167). Mr. Tisdale believed that the inspectors "were justified in their actions," and based on the evidence and testimony in these proceedings, he was of the opinion that there was a reasonable likelihood of an ignition of the explosive accumulations of methane in the south gob on December 5, and 13, 1990, if mining operations were to continue with no changes in the conditions which were present (Tr. 170).

On cross-examination by Mr. Biddle, Mr. Tisdale confirmed that the stoppings between the No. 7 and No. 11 developments have effectively closed off the bleeders from the gob. In his opinion, considering the fact that not much air flow can go through the set-up entries, the ventilation plan was not being followed in ventilating the gob. He agreed that the "active words" of the ventilation plan are "connected at strategic locations," and he confirmed that there were connections between the bleeders and the gob (Tr. 171-172). He confirmed that there is a difference of opinion as to whether the connections are at "strategic locations," that the ventilation plan does not define what this means, and that neither MSHA or the company have told each other what they consider to be "strategic locations" (Tr. 172).

Mr. Tisdale confirmed his belief that the longwall set-up entries in the No. 8, 9, and 10 development area behind the stoppings probably had 9 percent or more methane from "somewhere around 8 or 9 Development, I think that's a good assumption" (Tr. 173). He agreed that there was a pressure differential between the gob side and bleeder side and that the air coming out "had to have some push." In response to a question whether one can assume that since Inspector Carico found methane coming through one stopping at the No. 8 development, but found no methane coming through the other three stoppings in that development, that 9 percent methane in the set-up rooms would only come through sometimes but not all of the time, Mr. Tisdale responded "I assume there were no cracks in the other stoppings" (Tr. 174) He denied that he ever heard the inspector testify that he took several methane readings at any given stopping hole and found only one reading over 5 percent (Tr. 174). He also confirmed that there is no standard prohibiting 9 percent methane in a gob (Tr. 175).

On cross-examination by Mr. Mullins, Mr. Tisdale stated that his estimate of 9 percent methane concentrations pertains to methane in the set-up entries adjacent to the gob and adjacent to the bleeder entries, and not in the "gob" (Tr. 176). He confirmed that the concept of "strategic locations" for stoppings will change depending on the need to induce airflow in the set-up entries. The determination of whether any stopping is at a strategic location under the ventilation plan would depend on "whether it would work or not," and one has to plan the number

and locations of openings and the amount of air regulation on those openings so that the whole system is effective (Tr. 177).

In response to further questions, Mr. Tisdale confirmed that he was not aware of any mine citations for exceeding the 2 percent methane requirements for certain mine locations. He agreed that any "tinkering" with the ventilation system may solve one problem but will create another one. He explained that reducing the amount of air by increasing the regulation to try and stimulate more air flow to the set-up entries, will jeopardize the 2 percent maximum allowable methane at other places (Tr. 179-181).

Mr. Tisdale stated that the inspectors were trying to determine what was behind the stopping by using the test procedures with the Riken detector, and he stated that "I think I've shown them, through this analysis, that there are other ways to determine what's behind." He believed that the inspectors conclusions as to what was behind the stoppings was at least what they measured on the outby side. He also believed that a bottle sample is more difficult to take properly than a Riken reading because of the increased chance of contamination. He would expect a bottle sample to show a lesser percentage of methane, but that both methods are subject to marginal errors due to certain factors. Mr. Tisdale was of the view that the ultimate solution for determining what is in the gob is to incorporate a method for evaluating the gob as part of the ventilation plan. He confirmed that this is not in the present plan (Tr. 187). He also confirmed that none of the prior mine fires involved any injuries or fatalities, and he believed that one of them occurred in the set-up entry, and that they all occurred behind an active longwall (Tr. 188).

Findings and Conclusions

Imminent Danger

Section 107(a) of the Mine Act, 30 U.S.C. 817, provides as follows:

If, upon any inspection or investigation of a coal or other mine which is subject to this Act, an authorized representative of the Secretary finds that an imminent danger exists, such representative shall determine the extent of the area of such mine throughout which the danger exists, and issue an order requiring the operator of such mine to cause all persons, except those referred to in section 104(c), to be withdrawn from, and to be prohibited from entering, such area until an authorized representative of the Secretary determines that such imminent danger and the conditions or practices which caused such imminent

danger no longer exists. The issuance of an order under this subsection shall not preclude the issuance of a citation under section 104 or the proposing of a penalty under section 110.

Section 3(j) of the Mine Act, 30 U.S.C. 802(j), defines an "imminent danger" as "the existence of any condition or practice in a coal or other mine which could reasonable be expected to cause death or serious physical harm before such condition or practice can be abated."

In *Old Ben Coal Corp. v. Interior Board of Mine Operations Appeals*, 523 F.2d 25, 32 (7th Cir. 1975) (quoting *Freeman Coal Mining Corp.*, 2 IBMA 197, 212 (1973), *aff'd sub nom. Freeman Coal Mining Co. v. Interior Board of Mine Operations Appeals*, 504 F.2d, 741, 743 (7th Cir. 1974), the determining test of whether an imminent danger exists was stated as follows:

[E]ach case must be decided on its own peculiar facts. The question in every case is essentially the proximity of the peril to life and limb. Put another way: Would a reasonable man, given a qualified inspector's education and experience, conclude that the facts indicate an impending accident or disaster, threatening to kill or to cause serious physical harm, likely to occur at any moment, but not necessarily immediately? The uncertainty must be of a nature that would induce a reasonable man to estimate that, if normal operations designed to extract coal in the disputed area proceeded, it is at least just as probable as not that the feared accident or disaster would occur before elimination of the danger.

In *Rochester & Pittsburgh Coal Company v. Secretary of Labor*, 11 FMSHRC 2159, 2163 (November 1989), the Commission adopted the position of the Fourth and Seventh Circuits in *Eastern Associated Coal Corporation v. Interior Board of Mine Operations Appeals*, 491 F.2d 277, 278 (4th Cir. 1974), and *Old Ben Coal Corp. v. Interior Board of Mine Operations Appeals*, 523 F.2d 25, 33 (7th Cir. 1975), holding that "an imminent danger exists when the condition or practice observed could reasonably be expected to cause death or serious physical harm if normal mining operations were permitted to proceed in the area before the dangerous condition is eliminated." *Canterbury Coal Co.*, 6 IBMA 175, 178 (1976) (quoting *Rochester & Pittsburgh Coal Co.*, 5 IBMA 51 (1975), held that "speculative potential for a remote possibility does not warrant the issuance of an imminent danger withdrawal order."

In affirming the imminent danger order issued in the 1989 *Rochester & Pittsburgh Company* case, *supra*, at 11 FMSHRC 2164, the Commission rejected an argument based on the "relative

likelihood" of injury resulting from the cited conditions, and stated as follows at 11 FMSHRC 2164:

R&P's argument also fails to recognize the role played by MSHA inspectors in eliminating dangerous conditions. Since he must act immediately, an inspector must have considerable discretion in determining whether an imminent danger exists. The Seventh Circuit recognized the importance of the inspector's judgment:

Clearly, the inspector is in a precarious position. He is entrusted with the safety of miners' lives, and he must ensure that the statute is enforced for the protection of these lives. His total concern is the safety of life and limb. . . . We must support the findings and the decisions of the inspector unless there is evidence that he has abused his discretion or authority. (Emphasis added).

Old Ben, *supra*, 523 F.2d at 31.

Docket No. VA 91-47-R. Section 107(a) Imminent Danger Order No. 3354742, December 5, 1990.

The evidence establishes that Inspector Carico began his inspection on December 5, 1990, at the No. 12 Development and proceeded in by the longwall face along the development entries where he found no ventilation problems and no significant methane. He determined that the air ventilation was flowing normally and as expected from the No. 12 Development toward the No. 11 Development where he checked two entries and took air readings. He found that the ventilation was acceptable, and he continued to examine the "dead-end entries" and bleeder connectors in the No. 11 Development and found that these areas were being properly ventilated. He confirmed that two other MSHA inspectors checked the ventilation in the headgate entries adjacent to the No. 12 development panel gob and the tailgate entries from the face to the mouth of the panel where it intersected the main returns, and that no violations were found by these inspectors.

Mr. Carico confirmed that after leaving the No. 11 Development he proceeded to the No. 10 Development where he found four stoppings across the four entries. Three of the stoppings were "air tight" and he found no leakage. However, he found air leaking through pinhole cracks at the stoppings in the No. 2 entry, and when he placed the tube of his methane detector in the crack where a "minute amount of air was leaking," the instrument read 6.2 percent methane. The inspector believed that the methane behind the stopping may have possibly been a "localized" problem, or "a small body of methane trapped behind a single

brattice," and he made no imminent danger decision at that point in time. He did not test the stoppings in the other three entries because the air leakage around the stopping perimeters was within a foot of the roof and ribs and any methane readings would have been "artificially high and not representative" (Tr. 86).

Mr. Carico next proceeded to the No. 9 Development where he took a methane reading at one of the stoppings in the No. 4 entry and found 8.3 percent methane when he took a reading against that stopping. He confirmed that he "did not bother" to test the other three stoppings in the other three entries in this development (Tr. 29). Although he believed that an "imminent danger was probable" at that point in time, he reached no firm conclusion, and proceeded to the No. 8 Development where he tested the stopping in the No. 4 entry and found 7.5 percent methane when he took a reading against the stopping. He did not test the other three stoppings in the other three development entries. Upon completion of the methane reading at the No. 4 entry, Mr. Carico concluded that an imminent danger existed and his conclusion in this regard was based on his belief that "there was a substantial body of methane in the gob area encompassing probably 12 entries in the form of the bleeder connectors back to the gob and most probably be associated to set-up entries" (Tr. 31).

Mr. Carico's conclusion that "there was a substantial body of explosive methane" behind all of the stoppings in the three developments in question was based on the methane readings taken with a Riken methane detector at three of the 12 stoppings located in the 12 entries, an area covering approximately 1,000 feet. The readings he obtained prompted the issuance of the order. Mr. Carico concluded that the high methane readings resulted from an inadequate bleeder ventilation system and insufficient air flow which failed to dilute the methane which he measured at the three stoppings, and this prompted him to also issue a citation at the same time. He characterized the inadequate ventilation as an "associated problem" because it was not diluting the methane, and he stated that the citation "helped to define the cause of the imminent danger."

Mr. Carico confirmed that he took some bottle samples in support of his order and citation, but that they were lost in the mail and were never received by MSHA's testing facility. He further confirmed that he made no tests to determine the oxygen content of the air leaking through the three stopping cracks where he made his methane readings. He conceded that the air oxygen content is "definitely a factor" in determining whether there is an explosive mixture of methane present, and that one cannot determine whether there is an explosive mixture of methane behind a stopping "with a sole finding of my methane level" (Tr. 87).

There is no evidence that any explosive methane was leaking through the stoppings into the bleeder entries. Mr. Carico confirmed that he made no readings outby the stoppings in the bleeder entries, and he conceded that his methane readings against the stoppings "would not indicate what was going on in the bleeder." He further confirmed that he would expect that any methane bleeding through the stoppings would mix and dilute with the ventilation air in the bleeders and be carried through the bleeder entries out of the mine through the exhausting fan shafts.

Mr. Carico confirmed that at the time he made his decision to issue the imminent danger order, he considered the explosive mixture of methane which he believed was behind the stoppings to be a hazard and that "the only thing lacking for an explosion is the ignition source" (Tr. 30). He further confirmed that based on his collective knowledge and understanding of the "history of the mine," he knew that there were possible ignition sources associated with the gob (Tr. 31). The record reflects that the "mine history" relied on by Mr. Carico includes (1) four MSHA reports covering mine fires which occurred in 1972, 1975, 1983, and 1984 (exhibits G-6 through G-9), two of which he believed were located in the south gob area (Tr. 23); (2) an MSHA memorandum report dated June 25, 1973, concerning an examination of rock specimens from the mine; and (3) a prior face "methane inundation" which Mr. Carico believed occurred sometime in 1985 (Tr. 104-106). None of these prior incidents resulted in the issuance of any violations.

Notwithstanding his testimony that the prior mine fires were of unexplained origin, and that there was no conclusive proof to establish what may have caused them (Tr. 35), Mr. Carico believed that one of the recognized possible ignition sources for the fires "was roof falls in the caving areas of the longwall units" (Tr. 32). He explained that the "roof contains massive sandstone with layers of quartzite contained in that sandstone. Quartzite is highly sparked and has been known to ignite bodies of methane" (Tr. 32).

In addition to the prior mine fires, Mr. Carico identified the following possible ignition sources which he believed could have affected the south gob area: (1) an ignition along the face area propagating into the gob and igniting methane in the gob adjacent to the longwall face, and which could have involved the body of methane behind the cited stoppings; (2) welding or cutting along the longwall face, (3) open flames and the bolting of metals which could ignite methane leaking from the mine floor, and (4) work connected with ventilation adjustments and repairs in the bleeder entries, and sparks created by the use of hammers on the metal ventilation brattices (Tr. 34). Mr. Carico confirmed that his knowledge of the prior mine fires, coupled with the possible ignition sources which he identified, led him to

~631

conclude that "it was fairly likely" that death or serious injury would have resulted if normal mining operations were to continue on December 5, 1990 (Tr. 35).

The record reflects that the south gob area is a large inaccessible area left by 10 mined out longwall panels encompassing an area of approximately 5,600 to 6,000 feet. The gob contains roof materials and other debris left when the roof caved in after coal was extracted from the longwall panels. The caved areas may or may not be "caved tight" throughout the entire gob, and since the gob is inaccessible, the actual conditions of any remaining top area in the gob are not known.

The parties presented no evidence or testimony with respect to the actual prevailing roof conditions at the time Mr. Carico issued his order. However, the information contained in the MSHA fire reports, which appears to be consistent in each report, reflects that the immediate mine roof varies from fragile shale, interspersed with coal stringer, to sandstone, and that the main roof is sandstone and the maximum cover is 2,500 feet. The reports also indicate that the Pocahontas No. 3 coalbed is known to liberate methane freely, and that large quantities of methane is liberated when the roof caves in the mined out areas behind the longwalls.

The 1983 and 1984 MSHA reports reflect that the Pocahontas No. 3 coal is not highly susceptible to spontaneous combustion, and that the emulsion used in the hydraulic longwall roof supports is nearly 97 percent water and that its susceptibility to spontaneous combustion is low (exhibits G-9 and G-10, pgs. 9, 12). The 1984 report notes that additional analyses indicated similar results with respect to any coal spontaneous combustion.

The MSHA 1972 and 1975 reports reflect that the factors which probably confined the spread of the ignition and fire which were the subjects of those reports were (1) the mine surfaces in the face and mined out areas were wet to damp because of the large quantity of water used by the longwall spray system; (2) the bleeder entries were rock-dusted; and (3) the relatively low volatile ratio of the Pocahontas No. 3 coal (exhibits G-6 and G-7, pgs. 14, 14).

The June 25, 1973, MSHA memorandum reflecting the results of an examination of rock specimens found in the mine (exhibit G-10), which I assume was prepared in connection with the December 5, 1972, fire, indicates that the rock which fell behind the longwall face was medium grained sandstone containing quartz crystals. The concluding paragraph of the report states as follows:

A methane ignition would be possible with this type of material. Friction occurring due to rocks

rubbing together during a massive roof fall would create sparks and/or pressure and frictional heat capable of igniting an explosive mixture of methane and air.

The Dictionary of Mining, Minerals, and Related Terms, U.S. Department of the Interior, 1986, defines sandstone as "a cemented or otherwise compacted detrital sediment composed predominately of quartz grains" (pg. 961). "Quartzite" is defined as "a quartz rock derived from sandstone, composed dominantly of quartz, . . . a very hard, dense sandstone" (pg. 885). I take note of the fact that the 1983 report, at pg. 12, reflects that the 1972 and 1975 fires were attributable to sparks created by "falls of quartzite roof." However, the 1972 and 1975 reports reflect that based on "information" and a "consensus" during the investigations of those incidents, ignition occurred as the result of "falls of sandstone roofs." Under the circumstances, it would appear that the terms "sandstone" and "quartzite" are used synonymously in these reports.

There is no evidence that Mr. Carico examined the roof conditions in the three development areas where he conducted his inspection, nor is there any evidence that he had any knowledge of any prevailing or recent roof conditions which may have posed a potential for creating a spark or providing an ignition source. There is also no evidence of the existence of any recent roof falls in the bleeder entries which he examined, or whether Island Creek had ever been cited for roof violations in those areas. The only basis for Mr. Carico's conclusion that a roof fall in the gob area could possibly ignite the explosive mixtures of methane, which he speculated were behind the stoppings, was his knowledge and belief, gained from the MSHA reports in question, that a sandstone mine roof containing layers of quartzite was a potential ignition source because quartzite is a highly "sparking" material which has been known to ignite methane.

A close review of the 1983 and 1984 reports relied on by Mr. Carico, reflects that following the 1975 fire, Island Creek instituted a drilling program to locate any quartzite roof formations, and that it was of the opinion that in any roof areas where any quartzite was present 25 feet or more above the immediate roof, there would be less likelihood of an ignition occurring and that any longwall mining could be safely done. I assume that MSHA concurred with Island Creek's position since both reports state that "these guidelines have been followed and no further ignitions have been attributed to this source" (exhibit G-6, pg. 12, paragraph 7; G-9, pg. 9, paragraph 7).

MSHA's reports of the 1983 and 1984 fires concluded that the location of the fires could not be determined, and that there was insufficient evidence to conclusively identify the ignition

~633

sources (exhibit G-8, pg. 14; G-9, pg. 10). Some of the "possible" ignition sources for the 1984 fire were identified as (1) spontaneous combustion, (2) cutting and/or welding, and (3) rekindling and sparks from falling roof that contained quartzite. The report, however, further concluded that the only ignition sources peculiar to the mine were the possibility of rekindling and the quartzite conglomerate found in the main roof (pg. 14). However, rekindling was discounted as "unlikely," and no conclusions were made with respect to any cutting and/or welding or spontaneous combustion, other than to discount these possibilities as not being peculiar to the mine.

With regard to the possibility of quartzite as an ignition source for the 1984 fire, MSHA's report makes reference to Island Creek's drill records which established that the roof containing quartzite was no closer than 50 feet of the coal seam in the vicinity of the No. 4 longwall panel where the fire was discovered. The report also indicates that following the 1983 fire, an MSHA geologist examined the mine roof and found no evidence of any quartzite in the gob area inby the No. 4 longwall (pg. 12). Under the circumstances, I can only conclude that MSHA discounted a roof fall containing quartzite as the source of the ignition. Coupled with MSHA's conclusions that no further ignitions have been attributable to sparks from a fall of quartzite roof since the 1975 fire, which occurred some 15-years prior to the issuance of the order by Mr. Carico in 1990, I cannot conclude that there is any credible evidentiary support for any conclusion that such occurrences are "peculiar" to the mine, or that the mine has a "history" of such incidents. Any such incidents which may have occurred prior to 1975, are in my view, too remote in time to support any reasonable conclusion that they pose a present ignition hazard or "an impending accident or disaster, threatening to kill or to cause serious physical harm, likely to occur at any moment, but not necessarily immediately."

With regard to Mr. Carico's belief that a face ignition at the longwall constituted another possible source of ignition affecting the gob behind the stoppings which he cited, he conceded that the longwall working faces on December 5, were several thousand feet from the stoppings where he made his methane readings, and he candidly admitted that he was not prepared to evaluate the potential for an ignition at the longwall face (Tr. 99-100). With regard to the prior face ignitions which he alluded to, he had no knowledge as to how many may have occurred, or when they occurred, and he agreed that any explosive mixture of methane leaking from the roof or face where coal is being cut would constitute a "controlled, small body of methane" which he characterized as a "face ignition or pop." I take note of MSHA's 1972 report which reflects that there were three reported frictional ignitions in 1972 caused by a methane-air mixture being ignited from sparks from the bite of continuous miners striking a band of shale and bone coal near the mine floor. These incidents

~634

reportedly occurred 18 years ago, and Mr. Carico either did not remember them, or did not read the reports carefully.

The MSHA reports relied on by Mr. Carico clearly reflect that following the 1975 fire, no further ignitions have been attributable to roof falls containing quartzite, and the 1983 and 1984 reports confirm that examinations of the roof area by MSHA's geologist found no evidence of any quartzite in the gob area where those fire were located. It would appear to me from these reports that the presence of quartzite in the mine roof may be a localized condition, particularly in light of the fact that no quartzite was found in the gob area where the most recent fire of 1984, was discovered, and Island Creek's unrebutted drill studies which indicated that the quartzite formation was no closer than 50 feet of the immediate roof. Although MSHA's 1984 report concluded that the quartzite conglomerate found in the main roof is a possible ignition source peculiar to the mine, it was apparently discounted as a potential ignition source on the basis of the finding that any quartzite present was no closer than 50 feet of the immediate roof.

Island Creek's expert witness Mitchell, a recognized expert in mine fires and frictional ignitions, and who has periodically made studies of the mine since the early 1970's, including studies of the gob area following the two most recent reported fires, was of the opinion that it is not now reasonable to believe that gob falls, in and of themselves, can be a source of ignition for methane in the gob. Mr. Mitchell based his opinion on his extensive studies and expertise in frictional ignitions, including the information in MSHA's reports of the prior fires, and he concluded that the probability of a roof fall being a source of ignition "is so small and of relative insignificance" that "its not something that an engineer would consider reasonable and proper today."

MSHA's expert witness Tisdale, whose expertise lies in mine ventilation, testified that potential roof falls in a gob area, with resulting ignitions, are "localized" conditions which vary from mine-to-mine depending on the rock strata, and he believed that such conditions "seems to be peculiar to this mine" (Tr. 182-183). Mr. Tisdale was of the opinion that a roof fall which can create enough sparks and arcs to ignite a flammable mixture of methane in the air in the south gob posed an ignition risk in that area. He based this opinion on the four MSHA fire reports, and also relied on those reports for his opinion that there was a reasonable likelihood of an ignition of explosive mixtures of methane in the south gob area on December 5 and 13, 1990, if normal mining operations were to continue with no changes in the conditions which were present on those days.

As noted by MSHA in its posthearing brief, the south gob area is a rather extensive area covering over a mile square by

December 1990. However, in the absence of any evidence with respect to the existing, or more recent roof conditions in the south gob area, an area which has been mined out and where the immediate roof has already fallen, or the roof conditions in the set-up entries or other mine areas, I have difficulty understanding how one may reasonably conclude that there was a reasonable likelihood of a roof fall in the gob area which would have sparked an ignition. As noted earlier, the MSHA reports relied on by Inspector Carico and Mr. Tisdale in support of their imminent danger opinions do not, in my view, support any reasonable conclusion that the mine has a "peculiar history" of gob ignitions sparked by roof falls.

MSHA's prior reports all reflect that during the time frames when those incidents occurred, Island Creek's certified mine examiners were making the required preshift, onshift, and weekly examinations for methane and other hazardous conditions and that the results of these examinations were recorded in the required mine books. Two of the reports reflect that tests for methane were being made along the longwall faces by section foremen before the longwall was energized, and that frequent tests were made by competent employees, with approved methane detectors, during the time such equipment was operated. One of the reports reflects that methane tests were made by qualified persons before electrical equipment was taken into any working place, and that such tests were made while the equipment was being operated in the working place. The reports also reflect that methane monitors were provided on the electrical equipment as required by MSHA's regulations, and that the longwall plow was equipped with a methane monitor which was set to give a visual warning at 1 percent methane and deenergize the power at 2 percent methane. In the absence of any evidence to the contrary, I have no basis for concluding that in the normal course of continued mining operations, Island Creek's competent and certified mine examiners would not have continued to make the kinds of tests referred to in the reports.

Inspector Carico confirmed that he did not check any mine records for the working shifts immediately prior to December 5, when he issued the order, to determine whether the bleeder entries in question had been inspected or whether any methane was detected and recorded, and he candidly admitted that this was an omission on his part (Tr. 117). There is no evidence that any explosive levels of methane were present in the bleeder entries outby the stoppings tested by Mr. Carico, nor is there any evidence of any explosive levels of methane in any other working places in the mine. Mr. Carico agreed that any explosive methane leaking through the stoppings would have been diluted by the ventilation which he did not find inadequate for this purpose. More importantly, although Mr. Carico believed that there were explosive mixtures of methane behind the stoppings, he conceded that he did not test the oxygen content of the air leaking

through the stopping cracks, that such a test is critical to any determination as to the presence of an explosive mixture of methane, and that he could not make such a determination based solely on his methane readings.

Although Inspector Carico identified several other possible ignition sources which he believed could have propagated an ignition in the gob area, i.e., welding or cutting along the longwall face, open flames and bolting of materials which could ignite methane leaking from the floor, and sparks and other repair work connected with the use of hammers on the metal ventilation brattices, there is absolutely no evidence that any of these conditions were present when the order was issued, nor is there any evidence or testimony that any such work would have occurred in the normal course of mining operations. Further, Mr. Carico conceded that the stoppings where he made his methane tests were some 2,000 feet from the working faces, and he admitted that he was not prepared to evaluate the potential for an ignition at the longwall face. Under the circumstances, I find Mr. Carico's belief that these speculative ignition sources could somehow propagate a spark or ignition which would somehow find its way to the methane in the gob areas behind the stoppings to be less than credible and unsupported by any reasonably credible or probative evidence.

Based on all of the testimony and evidence adduced in this case, I believe that one may reasonably conclude that the potential for a methane explosion is dependent on several essential ingredients; namely, fuel, oxygen, and a ready ignition source. Although Inspector Carico concluded that his methane readings reflected an explosive mixture of methane behind the stoppings which were tested, he did not determine the oxygen and carbon dioxide content of the atmosphere he tested. Mr. Mitchell's un rebutted testimony reflects that any oxygen deficiency would affect the accuracy of the methane detector readings, and Mr. Tisdale considered the testing procedures followed by the inspectors to be "a bit crude," but the only then available means for deducing what was behind the stoppings, other than the analysis which he conducted.

In its posthearing brief, MSHA concedes that Mr. Carico was aware of the fact that the existence of explosive methane in the gob area, standing alone, might not be sufficient to constitute an imminent danger, and that an ignition source was necessary to establish the potential for an explosion and the existence of an imminently dangerous condition or hazard. Thus, I conclude and find that the presence of any explosive methane levels in the gob areas behind the stoppings tested by Mr. Carico, standing alone, did not present an imminently dangerous condition. However, in combination with other conditions or practices, from which one may reasonably conclude or expect an ignition to occur in the

~637

normal course of mining operations, the presence of such explosive levels of methane may present an imminently dangerous situation.

The parties do not dispute the fact that the mine in question is an extremely gassy mine which freely liberates methane. Nor is there any serious dispute that the presence of explosive gas levels in a mine, under certain conditions, is dangerous. However, any determination as to whether an imminent danger existed must be made on the basis of the circumstances as they existed at the time the order is issued, or as they might have existed had normal mining operations continued.

On the facts of this case, and after careful review of Mr. Carico's testimony, I am convinced that after examining the stoppings for methane and finding what he believed to be explosive levels of methane in the gob areas behind the stoppings, Mr. Carico, without any further efforts to ascertain the actual prevailing mining conditions, or the conditions which might have prevailed had normal mining operations continued, simply relied on the four previous MSHA reports to support his "knowledge and understanding" of the "mine history" in support of his belief that there "were possible ignition sources associated with the gob."

In view of my previous findings and conclusions concerning the information found in these reports, I cannot conclude that Mr. Carico's reliance on the MSHA reports in question provides any credible or probative evidentiary support for any conclusion that ready ignition sources capable of propagating an explosion of the methane in the gob area in question were present when he issued the order, or were likely to be present if normal mining operations were to continue. I have no reason to believe that Mr. Carico was less than well intentioned when he issued the order, and I recognize the fact that any judgment call by an inspector with respect to the existence of an imminent danger situation, when balanced against the safety of the miners, must necessarily be made quickly and without delay. However, in any subsequent proceeding challenging the order, any imminently dangerous situation, which the inspector may have believed existed at the time he issued the order, must be proven. On the facts and evidence adduced in this case, I cannot conclude that MSHA has proven or established the existence of any ignition sources to support the inspector's imminent danger finding. I conclude and find that the inspector's speculative anticipation of a possible mine explosion, in the circumstances presented, falls short of the statutory requirement of reasonable expectation. Accordingly, the imminent danger order issued by the inspector IS VACATED.

Inspector Scammell, like Inspector Carico, believed that all that was necessary for an explosion was the presence of an ignition source. Mr. Scammell believed that roof falls and a methane ignition at the face, which could possibly propagate from the longwall face, were the only possible sources of ignition present on December 13, 1990, when he issued his order. However, he conceded that his principal concern was the possibility of a roof fall in the gob area. I find no credible evidence of any face ignition sources which may have been present at the time Mr. Scammell issued his order, nor do I find any evidence that any such ignition sources would have been present if normal mining operations were to continue. Although one may conclude that a face ignition could propagate from the face, the inspector presented no facts or evidence identifying or establishing these sources of ignition.

With regard to any roof falls as a possible source of ignition, Mr. Scammell, like Inspector Carico, relied on the same MSHA reports concerning the prior mine fires to support his conclusion that a roof fall in the gob area would result in sparks and be a source of ignition. Mr. Scammell testified that constant roof falls are occurring where the coal is being mined at the longwall, but he could not determine the kinds of falls in the gob area. Although he indicated that "frequent" roof falls had occurred in the past, aside from his references to the MSHA's reports, no further testimony or evidence was forthcoming from Mr. Scammell with respect to any such roof falls, and although he suggested that they occurred "quite often," he conceded that "I really don't know" (Tr. 140).

Mr. Scammell initially testified that he was concerned about roof falls in the bleeder entries and gob, or a "combination of falls" on either side of a stopping, "just in that general area" (Tr. 143). However, he later conceded that he had no knowledge of what was behind the stoppings, or the roof conditions on the gob side of the stoppings, and that the roof could have been caved tight. He agreed that a caved roof has already fallen, and that he did not know if it could fall any further. There is no evidence of any explosive mixtures of methane in the bleeder entries, nor is there any evidence of any adverse roof conditions in the bleeder entries, or anywhere else. Further, Mr. Scammell conceded that his concern for roof falls was limited to the areas behind the stoppings, and not with other roof falls in outby areas where there was no methane. He confirmed that he took no methane or ventilation readings in the bleeders, made no measurements of the air ventilating the gob area, and did not know what was going on in terms of ventilation of the gob (Tr. 148).

After careful review of Mr. Scammell's testimony, it seems obvious to me that instead of making any real determination as to the existence of any potential ignition sources, he relied on the previous MSHA reports concerning the prior fires which had occurred in the mine. Mr. Carico and Mr. Tisdale also relied on these same reports to support their opinions and conclusions with respect to the existence of ready sources of ignition and an imminent danger. My previous findings and conclusions with respect to these reports are herein incorporated and adopted by reference. In my view, cursory reliance on these reports provides no credible evidentiary support for any conclusion that potential roof falls in the gob area presented a ready source of ignition at the time Mr. Scammell issued his order, or that they presented a ready source of ignition if normal mining operations were to continue. In short, in the absence of any reliable and probative evidence, independent of the MSHA reports in question, I cannot conclude that MSHA has established the existence of any ignition sources to support Mr. Scammell's imminent danger order. Under the circumstances, his imminent danger finding is rejected, and the order IS VACATED.

Docket No. VA 91-48-R. Section 104(a) "S&S" Citation No. 3354743, December 5, 1990, 30 C.F.R. 75.316.

In this case, Island Creek is charged with a failure to follow one of the provisions of its approved ventilation plan. Any violation of an approved plan provision would constitute a violation of mandatory safety standard 30 C.F.R. 75.316, which provides as follows:

A ventilation system and methane and dust control plan and revisions thereof suitable to the conditions and the mining system of the coal mine and approved by the Secretary shall be adopted by the operator and set out in printed form on or before June 28, 1970. The plan shall show the type and location of mechanical ventilation equipment installed and operated in the mine, such additional or improved equipment as the Secretary may require, the quantity and velocity of air reaching each working face, and such other information as the Secretary may require. Such plan shall be reviewed by the operator and the Secretary at least every 6 months.

The applicable ventilation plan provision in question is found in paragraph 10 of Island Creek's August 20, 1987, approved plan, and it states as follows:

Bleeder entries, bleeder systems, or equivalent means shall be used in all active pillaring areas to ventilate the mined areas from which the pillars have been wholly or partially extracted so as to control the

methane content in such areas. Bleeder entries or bleeder systems established after June 28, 1970, shall conform with the requirements of Section 75.316-2, 30 CFR 75.

- (a) Bleeder entries shall be defined as special air courses developed and maintained as part of the mine ventilation system and designed to continuously move air-methane mixtures from the gob, away from active workings, and deliver such mixtures to the mine return air courses. Bleeder entries shall be connected to those areas from which pillars have been wholly or partially extracted at strategic locations in such a way to control air flow through such gob area, to induce drainage of gob gas from all portions of such gob areas, and to minimize the hazard from expansion of gob gases due to atmospheric change. (Exhibit G-4, pgs, 3-4).

Inspector Carico issued the citation in conjunction with his imminent danger order. In light of his methane readings at the stoppings in Developments No. 8 through No. 10, and his belief that there was a great body of methane trapped behind all of the stoppings in these areas, Mr. Carico concluded that the ventilation was inadequate in that there was an insufficient means of regulating the air flow between the bleeder entries and the gob areas to induce the drainage of methane from the gob area or to maintain the methane levels at or below its explosive limits. He explained that the airtight stoppings or brattices constructed across all of the connecting entries to the gob between the bleeders and the gob prevented the adequate drainage of methane from those areas as evidenced by the lack of dilution of the accumulated methane (Tr. 41-45). Under all of these circumstances, Mr. Carico concluded that there was a violation of plan provision 10(a), which required regulated and controlled air flows adequate to induce drainage and removal of gob gas from all portions of the gob areas.

Arguments Presented by the Parties

In its posthearing brief in support of the citation, MSHA asserts that Inspector Carico issued the citation because the ventilation system on December 5, 1990, did not satisfy the ventilation plan provision requiring that "bleeders entries . . . be connected to those areas from which pillars have been wholly or partially extracted at strategic locations in such a way as . . . to induce drainage of gob gas from all portions of such gob areas" Recognizing the fact that there was conflicting testimony as to whether or not the removal of the stoppings would have induced drainage of gob gas from all portions of the south gob, MSHA nonetheless points out that the citation was issued

~641

because of Island Creek's failure to induce drainage from the set-up entries and adjacent gob in the Nos. 8 through 10 developments. MSHA takes the position that the existence of a substantial body of explosive concentrations of methane behind the cited stoppings in question is sufficient to establish that Island Creek was not complying with the ventilation plan provision in question because such a finding demonstrates that drainage of the gob had not been induced from that area.

MSHA argues that because the ventilation plan permits the bleeder entries to be placed at "strategic locations" to induce the drainage of gob gas, flexibility was provided to Island Creek to determine the placement of the bleeder entries. However, since the placement of the bleeder entries failed to provide an adequate means of inducing the drainage of gob gas from all portions of the south gob, MSHA concludes that Island Creek was in violation of its ventilation plan because it was no longer being met.

MSHA further argues that the violation was significant and substantial (S&S), because an explosion of the body of methane behind the stoppings was reasonably likely to occur and result in an injury. MSHA relies on Mr. Carico's testimony that injuries from the explosion of the accumulation of explosive methane would result in a serious injury or health hazard.

In its posthearing brief, the UMWA asserts that Island Creek's failure to properly place the connections required by the ventilation plan provision in question led to the accumulation of a large body of methane behind the stoppings in the development areas cited by the inspector. In support of this conclusion, the UMWA states that Inspector Carico did not believe that enough connections were located between the bleeders entries and the gob to insure adequate drainage of all gob areas, and that the tightly sealed stoppings across the entries inhibited or almost completely stopped the air flow at those locations. The UMWA concludes that these tightly sealed stoppings were inconsistent with the ventilation plan which indicated the presence of regulators and not merely stoppings at these locations.

The UMWA further argues that in view of the dynamic nature of mining, it would be impractical for a ventilation plan to spell out where the connectors between the bleeders and gob should be placed, and as explained by Mr. Tisdale, the requirement that connections be placed at strategic locations means that they are to be located where they are needed in order to make the whole bleeder ventilation system effective. The UMWA concludes that Island Creek is responsible for placing the connectors at locations that will insure methane drainage from all areas of the gob, and that these locations may have to vary as mining progresses.

The UMWA asserts that by turning its regulators into stoppings, Island Creek limited its ability to make adjustments in the air flow over the set-up entries in the cited development areas. In response to Island Creek's position that the removal of the stoppings would result in the short circuiting of the ventilation in the south gob, the UMWA points out that no one has suggested that all of the stoppings must be completely removed, but that a proper balance, through the use of regulators, would have to be found. The UMWA relies on Mr. Tisdale's opinion that the manner in which the gob was being ventilated did not allow much air flow to go through the set-up entries, and that this was a violation of the ventilation plan. The UMWA concludes that based on the massive accumulations of explosive levels of methane found by Mr. Carico on December 5, a significant portion of the gob was not receiving adequate air as required under the ventilation plan, and that Island Creek's contention that removal of the stoppings will create a serious ventilation problem elsewhere is not an adequate defense.

In its posthearing arguments, Island Creek points out that there is no federal standard prohibiting the existence of explosive concentrations of methane except in active working areas and in return air courses, and that there is no standard prohibiting gob gas. Island Creek asserts that methane is to be expected in gob areas, and it concedes that it was likely present in some quantity behind the stoppings where Inspector Carico took his readings, but it denies the existence of any unusual quantities of methane behind the stoppings.

Island Creek maintains that a gob area always contains quantities of methane pushed there by air from the face area directed for that purpose and generated from the coal and strata in the gob itself, and that the methane in the south gob was pushed through the gob area and into the bleeders. Island Creek believes that it is not surprising that a test taken in the gob at a location where methane was moving toward its exhaust-point destination would reveal methane in some concentrations, and that given Inspector Carico's experience, he surely knew that methane would be present behind the stoppings on its way out of the gob.

Island Creek does not contend that methane is not dangerous. However, it points out that as a natural by-product of the mining process, methane cannot be avoided, but it can be controlled by dilution and movement, and it concludes that the evidence establishes that this was happening in the south gob area on the day the citation was issued. Island Creek asserts that for the methane to be moved, it must pass the Nos. 8 through 10 connector entry stoppings, and probably did pass those stoppings on the gob side in a variety of concentrations. Since the percentages measured were under 100 percent, Island Creek concludes that air had been mixed with the transient methane, and that the gob was being ventilated.

Island Creek argues that the basis for Inspector Carico's belief that it was not complying with its ventilation plan was that because concentrations of methane were measured at certain pinholes (but not all of the pinholes) at some (but not all) of the stoppings in the bleeder connector entries in the Nos. 8 through 10 development areas, the south gob was not being ventilated. Island Creek asserts that it is un rebutted that there was a strong pressure drop between the gob and the bleeder entries because gob air pressure was pushing air through the stoppings into the bleeders, and that the gas coming up through the several boreholes in the south gob could only be made to move to the bottom of the boreholes because of ventilation. Island Creek also points out that there was no evidence that any gas was backing up into the face areas in the No. 12 and 13 development panels, and that MSHA's inspectors found the ventilation in those face areas to be in compliance. It also points out that although a ventilation survey is necessary to determine gob ventilation, Inspector Carico made no survey, but that a survey by Island Creek established that a satisfactory quantity of air was moving through the south gob and its adjacent bleeder entries, and that the gob atmosphere, including methane, was leaving the south gob where intended.

Island Creek recognizes the fact that its ventilation plan requires that the bleeders be connected to the gob at "strategic locations," but it points out that while this term is undefined in the ventilation plan, its ventilation engineers explained that the bleeders were in fact connected to the gob at three locations, each of which is considered "strategic." Island Creek concludes that until Inspector Carico decided otherwise on December 5, it could be inferred that MSHA agreed that its connections were proper since the ventilation plan had been reviewed every 6 months since it was originally approved by MSHA in August, 1987, and no one from MSHA made an issue about the plan language, or alleged that the mine was not complying with it in its south gob and bleeder configuration.

Island Creek argues that MSHA's witnesses presented no evidence that it was not controlling the air flow through the south gob, but that Island Creek's evidence establishes that the south bleeders were bleeder entries which were connected to the gob at strategic locations in such a way to control air flow through the gob area, and that its witnesses confirmed that this was the case. Island Creek argues further that MSHA presented no evidence to indicate that gas was not being drained from the south gob on December 5, but that Island Creek's ventilation survey showed that air was moving in the proper direction through the gob on that day. Island Creek also argues that MSHA presented no evidence that the mine was not minimizing the hazard from expansion of gob gasses due to atmospheric change.

Island Creek concludes that the citation should be vacated because there was no evidence that the cited provision of the ventilation plan was not being complied with, and it suggests that MSHA's only evidence in this case, testing to determine a methane concentration at a location where methane is in the process of being pushed out of the gob, is good evidence that gob gas was moving as intended toward the "strategic location" where the gob was connected to the bleeders for purposes of exhausting methane.

Fact of Violation

The first sentence of the applicable ventilation plan provision 10(a) defines bleeder entries as "special air courses developed and maintained as part of the mine ventilation system and designed to continuously move air-methane mixtures from the gob, away from active workings, and deliver such mixtures to the mine return air courses." After careful review of all of the evidence and testimony adduced in this case, I find no credible or probative evidence to establish any violation of this first sentence of the plan by Island Creek.

Inspector Carico conceded that he only cited the second sentence of plan provision 10(a), and that the second sentence "was the most applicable part of that section" (Tr. 93). He agreed that the first part of the second sentence which required "the bleeder entries shall be connected to those areas from which pillars have been wholly or partially extracted" was complied with by Island Creek and that he was satisfied with this compliance (Tr. 93). With respect to that part of the second sentence requiring the bleeder connections to be made at "strategic locations," Mr. Carico confirmed that the bleeders were connected at sufficient intervals to control the gob gas as it comes out (Tr. 94). Mr. Tisdale confirmed that the question of whether or not connectors are located at "strategic locations" is basically a matter of opinion and that the MSHA approved ventilation plan does not further define the term "strategic locations."

Inspector Carico conceded that as of the evening of December 5, 1990, when he visited the mine, the mine was in compliance with the ventilation plan requirements for ventilating the gob and bleeder areas. However, he indicated that since mining is dynamic, changes are taking place all of the time which may require re-regulation of the air, and if this is not done, the failure to re-regulate the air at any given point in time may result in a violation of the plan. He confirmed that the changes which occurred, and which resulted in a violation of the plan, were those specified in the citation (Tr. 67). He explained that the basis for the citation rested on his conclusion that the mine bleeder system was not working properly, or was not properly constructed, and that this conclusion was based on the methane

~645

which he detected coming through the cracks or pinholes in the stoppings (Tr. 94).

Mr. Mitchell testified that methane detected coming through a pinhole in a stopping is not a reasonably accurate indication of what is on the other side of the stopping and that it would not be any indication that the gob was not being ventilated. Inspector Carico, who conceded that he did not measure the oxygen level coming through the pinholes where he made his tests, also conceded that without such measurements, one cannot determine if there is an explosive mixture of methane behind the stopping based solely on his methane readings. Both Mr. Mitchell and Mr. Tisdale agreed that there are other appropriate methods for making such determinations, namely a ventilation pressure survey and analysis.

Island Creek's ventilation manager Ray and MSHA's witness Tisdale both relied on a December 12, 1990, ventilation survey conducted by Mr. Ray and a team of engineers to support their respective opinions as to the adequacy of the gob ventilation and whether or not it was in compliance with the ventilation plan. Mr. Ray believed that the gob area was being adequately ventilated, and in view of the pressure differentials with respect to the air flow coming out of the bottom of the No. 1 development, he concluded that adequate air was flowing through the gob and that there is enough air to push all of the methane through the gob with the current ventilation system. Mr. Tisdale believed that the ventilation of the gob area ranged from "borderline to inadequate." and that the amount of air available for ventilating the gob area "is stretching it."

Island Creek's expert Mitchell, who conducted studies of the ventilation in the south gob, including an analysis of pressure differentials and air flows, concluded that the ventilation of the gob was in compliance with the ventilation plan provision in question. Mr. Mitchell testified credibly that it is not unusual to find methane in the gob area and that it will gravitate to the highest elevation in the mine, such as the No. 8 through 9 developments. Inspector Carico conceded that explosive concentrations of methane in the gob area in some locations is to be expected and that it is impossible to remove it all from the mine. He confirmed that other than the dome and fall area of the gob, the No. 8 through 9 developments where he tested the stoppings and issued his citation, were the highest elevations in the mine and that the methane will go to that area even though it is enroute out of the mine (Tr. 97).

Mr. Mitchell and Mr. Ray both confirmed that since air flows from a high pressure area to a low pressure area, any air movement within the gob area will be away from the face areas and towards the south bleeders and No. 1 development area. Mr. Tisdale agreed that there was a pressure differential between

~646

the gob and the bleeders and that the air flowing through and coming out of these areas "had to have some push" (Tr. 173-174). Inspector Carico confirmed that when he tested the stoppings there was in fact a pressure differential between the back side of the stoppings and the gob side and that this would indicate that the pressure on the bleeder side of the stopping was less than the pressure on the gob side, and that air would flow from an area of high pressure to one of lower pressure. In describing the method used by Island Creek to ventilate the gob, Mr. Carico confirmed that the stoppings were installed in order to force the air to flow to another location where it would leave the gob, and he agreed that as the air is flowing away from the stopping it would be picking up methane (Tr. 82-83). He also agreed that if the mine fan were working, and there is no evidence that it was not, the ventilation system would also be working (Tr. 123-125).

There is no evidence in this case that any explosive concentrations of methane were coursing into the bleeder entries or into any working areas of the mine where miners were expected to work or travel. The methane which concerned the inspector was behind the stoppings, and he was concerned that it was not being moved out of the gob area by the available ventilation. I take note of the fact that the ventilation plan does not prohibit the existence of methane gas in the gob areas, and the parties agree that there are no standards prohibiting methane in gob areas. Insofar as the alleged violation is concerned, the issue presented is whether or not MSHA has established by a preponderance of the credible evidence that the ventilation provided for the gob area was inadequate to induce the drainage of methane from the gob area.

After careful review of all of the evidence and testimony adduced in this case, including the posthearing arguments presented by the parties, I believe that Island Creek has the better part of the argument, and that its evidence, which I find credible, and supported in part by Inspector Carico, establishes that the gob area in question was being ventilated on December 5, 1990. I further conclude and find that the gob ventilation and air flow through the cited development areas allowed for the mixing of the methane with the air coursing through those areas and that the methane which was mixing, or being diluted by the air, was coursing through the gob areas behind the stoppings in question trying to find its way into the mine bleeder system and out of the mine. Under the circumstances, I find that MSHA has failed to establish a violation of the cited ventilation plan provision, and the citation issued by Inspector Carico is VACATED.

ORDER

On the basis of the foregoing findings and conclusions, IT IS ORDERED AS FOLLOWS:

~647

1. Docket No. VA 91-47-R. Section 107(a) Imminent Danger Order No. 3354742, December 5, 1990, IS VACATED, and Island Creek's contest IS GRANTED.
2. Docket No. VA 91-48-R. Section 104(a) "S&S" Citation No. 3354743, December 5, 1990, citing an alleged violation of 30 C.F.R. 75.316, IS VACATED, and Island Creek's contest IS GRANTED.
3. Docket No. VA 91-49-R. Section 107(a) Imminent Danger Order No. 3509496, December 13, 1990, IS VACATED, and Island Creek's contest IS GRANTED.

George A. Koutras
Administrative Law Judge