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SOL (MSHA) V. TENNESSEE CHEMICAL  
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TTEXT:

Federal Mine Safety and Health Review Commission (F.M.S.H.R.C.)  
Office of Administrative Law Judges

SECRETARY OF LABOR,  
MINE SAFETY AND HEALTH  
ADMINISTRATION (MSHA),  
PETITIONER

CIVIL PENALTY PROCEEDING

Docket No. SE 85-63-M  
A.C. No. 44-00704-5513

v.

Cherokee Mine

TENNESSEE CHEMICAL, INC.,  
RESPONDENT

DECISION

Appearances: Thomas A. Grooms, Esq., Office of the Solicitor,  
U.S. Department of Labor, Nashville, TN, for Petitioner;  
Ronald G. Ingham, Esq., Clements, Ingham & Trumpeter,  
Chattanooga, TN, for Respondent.

Before: Judge Fauver

This civil penalty petition by the Secretary of Labor charges a violation of a safety standard under the Federal Mine Safety and Health Act of 1977, 30 U.S.C. 801 et seq.

On September 14, 1984, a roof fall at Respondent's copper mine killed one miner and severely injured another. The men were at the controls of a drilling machine under unsupported roof, drilling blasting holes into the face, when a large rock fell upon them. The Secretary's citation, as amended, charges a violation of 30 C.F.R. 57.3020 (now 57.3020), which provides:

Mandatory. Ground support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required. If it is required, support, including timbering, rock bolting, or other methods shall be consistent with the nature of the ground and the mining method used.

Having considered the hearing evidence and the record as a whole, I find that a preponderance of the substantial, reliable, and probative evidence establishes the following:

FINDINGS OF FACT

1. At all pertinent times, Respondent operated an underground copper mine near Copperhill, Tennessee, where it employed about 200 miners working three 8-hour shifts per day, seven days a week. Copper and iron sulfide ore was mined using the sublevel stoping method. The ore was drilled, blasted, loaded and transported to a skip pocket raise where it was crushed, loaded into skips and hoisted up a shaft to storage bins on the mine surface.

2. For development work, that is, excavating tunnels for haulageways and travelways, Respondent grouped miners in six-man development crews, who drilled blast holes into the tunnel face and roof, set charges, blasted the rock, scaled the roof, removed the rock ("mucking" out the blast area), and repeated this cycle. They were paid a crew incentive rate based on the number of feet they advanced the tunnel.

3. The development crews used a Jumbo-type, three-boom, pneumatic drill. The drilling pattern was a standard burn cut, drilling 36 2 1/4-inch diameter holes to a depth of 12 feet. Holes were also drilled and blasted on close centers in the roof to provide a smooth wall extending about 20 feet from the face. Split set and hydraulic cement cartridge rock bolts were installed in the roof on an "as needed" basis. Under the supervision of a development foreman, each development crew was to examine and scale the roof in its own work places, and to do roof bolting depending on the amount of bolting involved. If a large area were to be bolted, a separate roof bolting crew would be brought in.

4. On the day of the accident, September 14, 1984, Steve Dillard and Joshua Waters, development drillers, and Frank Wright, development loader, made up one-half of a six-man development crew (on the evening shift) that was tunneling in the 14 North 33 drift, to develop a large truck haulage road 16 x 18 feet. The development foreman for their shift was Cleaston Morrow. The other half of the crew worked the previous shift (day shift) on September 14.

5. Dillard, Waters and Wright reported to work at 3:00 p.m., and received their work assignments from the development foreman, Cleaston Morrow. Their assignment was to continue development in the 14 N 33 drift.

6. Dillard, Waters, and Wright, all members of the development crew, and Hayden Stiles, equipment operator, arrived at the 14 N 33 drift and found that the heading had to be mucked

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out (removing blasted rock). The heading had been blasted by the other half of the development crew at the end of the prior shift.

7. Dillard, Waters, and Stiles started to scale the roof in the blast area while Wright went to the 18 level to get a loader to muck out the blasted rock. The regular practice was to have the development drillers examine and scale the roof after each blast. When they finished this task, they would tell the loader the area was ready to be mucked and the loader would move in a loading machine and remove the blasted rock. After the area was mucked, the drillers would move in the Jumbo drill, drill the face and roof, set the charges, set off the blast and the crew would repeat the above cycle.

8. When Wright returned, Dillard told him they had finished scaling and the area was ready to be mucked. Dillard and Waters left, and Wright and Stiles started mucking. They had most of the blasted rock removed when a rock fell from the roof in front of Wright's loader, in by the last row of roof bolts. The rock fall was very near the place where a rock later fell upon Dillard and Waters. (See Exh. PÅ22 and Tr. 212.) The rock was about two feet wide and three to four feet long. The rock fall frightened Wright because he had been driving back and forth under that spot and the rock could have fallen on him and killed him. Also, he was startled and angered by the fall because Dillard had said the roof had been scaled.

9. After the rock fell, Wright backed his loader into the N 28 crosscut and waited for Stiles to return in the loader Stiles was operating. When Stiles returned, Wright told him about the rock fall and stood in the dipper of Stiles' loader so he could reach the roof with a scaling bar. He and Stiles then scaled down "quite a bit" of loose roof. When Wright and Stiles were through scaling, they finished mucking out the blasted rock and Wright went to the office/lunchroom. There he saw Dillard, Waters, and the foreman, Cleaston Morrow. Wright confronted and criticized Dillard because Dillard had said the roof had been scaled but a rock had fallen near his loader and Wright found a lot of loose roof. He warned Dillard that some roof had "blowed up" (Footnote 1) (Exh. PÅ21, p. 10) and that the roof still needed to be checked (Id.; Tr. 172, 174).

10. Cleaston Morrow, the development foreman, was the supervisor of Dillard, Waters, Wright, and Stiles and was responsible for examining the roof conditions in the 14 N 33 drift to ensure that proper roof testing and roof control practices were being followed. Morrow did not go to the 14 N 33 drift after hearing Wright's warning about the roof and had not examined the face area before then on September 14. He did not instruct Dillard and Waters to check the roof, to install roof support, or to delay drilling in order to have additional bolting done by the pinning crew. Morrow knew that when Dillard and Waters left the lunchroom they were going to the face area where they would be drilling the face and roof while working under unsupported roof.

11. Dillard and Waters returned to the drift, did some scaling of the tunnel floor, but not the roof, moved in the Jumbo drill, and started drilling holes into the tunnel face. While they were at the operating controls, under unsupported roof, and drilling the face, a rock fell on them, killing Dillard and permanently disabling Waters. The rock was about six feet eight inches long, four feet ten inches wide and four to five inches thick.

12. The rock that killed Dillard and injured Waters fell from unsupported roof seven and one-half feet in by the last row of roof bolts. The heading where they were working had just been blasted near the end of the prior shift on September 14.

13. Shortly before the fatality on September 14, the 14 N 33 drift had been down for eight shifts because of adverse roof conditions. In that period, 198 roof bolts were installed up to the edge of a "smooth wall." A "smooth wall" is a lip or brow that is intentionally left in the roof after an explosion. This is illustrated in Exh. RÄ2. The roof bolting work was completed on September 13. The roof bolter, Mark Richards, testified that when he was installing the roof bolts he backed up and installed an extra row of roof bolts at one place because he heard popping noises in the roof and saw small bits of rock, which he called "fines," falling from the roof. His supervisor, Laddie Hicks, later criticized him for using an extra row of roof bolts. Richards told Hicks about the dangerous roof conditions he had encountered.

14. On September 13, Mark Richards completed the roof bolting referred to above. He roof bolted around a small bore hole 14 N 33 drift and bolted the drift roof in by from there up to the smooth wall lip or brow left by the last blast of the face. That smooth wall was later shot down in the blast on September 14. Gary Williams, general mine foreman, had ordered the area around the small bore hole roof bolted because of dangerous roof

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conditions he observed in the area. This was within 15 feet of the place where Dillard was killed.

15. Wright, Richards and Thomas Mason, the development driller on the day shift who had "taken the heading" on the afternoon of the 14th, all testified at the hearing about bad roof conditions they had experienced in the 14 N 33 drift before the roof fall that killed Dillard.

16. Dr. Ross Hammett, a mining engineer consultant to Respondent, had advised the Respondent in a written report in July, 1984, that the requirement for roof support should be determined by continuing to observe "local geological conditions."

17. Anthony Edey, Respondent's manager of mining and milling at the time, and Dr. Hammett both testified that noise in the roof, fretting or the falling of small rocks from the roof, larger rocks falling from the roof, and the necessity for installing roof bolts in a particular area all make up a part of a mine's operating experience.

#### Prior Fatality

18. On January 27, 1984, Ted B. Ledford, a development driller, had been doing the same kind of work as that done by Dillard and Waters on September 14, 1984. When he was operating a Jumbo drill in a different drift, also under an unsupported roof and also drilling blasting holes into the face, a large rock fell from the roof and killed him.

19. Following an investigation of the Ledford fatality, MSHA made the following recommendations to Respondent:

1. Supervisors should review with each miner the proper ground control procedures.
2. Overhead protection should be provided on all mobile equipment where feasible.
3. A continued surveillance of day-to-day ground conditions is required by both supervisors and miners to avoid ground fall injuries. Scaling of the back [roof] and ribs must be a continual process in order to prevent rock fall accidents.

20. The MSHA accident investigation team in the Ledford case found the following "Cause of Accident":

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The cause of the accident was the failure of management and employees to detect loose ground. Contributing causes may have been that vibrations from the drilling operation may have affected the ground conditions above the area by loosening unstable ground.

21. After the Ledford fatality, Respondent continued its practice of not installing canopies on the Jumbo drills. If Respondent had installed a canopy over the operating controls compartment of the Jumbo drill operated by Dillard and Waters, in all reasonable probability the canopy would have protected them from injury from the rock fall on September 14.

22. If Respondent had extended its rows of roof bolts to support the roof above the Jumbo drill, in all reasonable probability the rock would not have fallen upon Dillard and Waters on September 14, 1984.

#### The MSHA Investigation of the Dillard/Waters Accident

23. When the MSHA accident investigators and their supervisor inspected the Dillard/Waters accident scene, they observed unbolted loose rocks in the roof near the area where the rock had fallen on Dillard and Waters and elsewhere in the roof. They determined from their investigation and observation that the loose rocks were probably there and visible before the rock fall. In their accident investigation report, they found the following "Cause of Accident":

The cause of the accident was the failure of management and employees to scale down and/or adequately support loose ground. Contributing causes may have been the failure of management and employees to detect loose ground and that vibrations from the drilling operation may have affected the ground conditions above the drill area by loosening unstable ground.

25. The MSHA investigation report made the following recommendations to Respondent:

1. Supervisors should review with each miner the proper ground control procedures and practices.
2. Overhead protection (canopies) should be provided on all mobile equipment, where feasible.
3. A continued surveillance of day-to-day ground conditions is required by both supervisors and

miners to avoid ground fall fatalities and injuries. Scaling of the back and ribs must be a continual process throughout the mining cycle in order to prevent rock fall accidents.

4. Where it is necessary for ground support, the bolting plan should include rock bolting up to and as near the face as possible to keep the drill crew at a minimum of exposure.

#### DISCUSSION WITH FURTHER FINDINGS

Title 30 C.F.R. 57.320 states:

Mandatory. Ground support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required. If it is required, support, including timbering, rock bolting, or other methods shall be consistent with the nature of the ground and the mining methods used.

This regulation has not been frequently interpreted by the Commission or its judges. In White Pine Copper Division, Copper Range Company, 5 FMSHRC 825 (1983), the Commission expressed the following guidelines:

. . . [I]n view of the fact that section 57.320 is intended to protect miners against roof falls, we conclude that a mine's "operating experience" broadly encompasses all relevant facts tending to show the condition of the mine roof in question and whether, in light of the roof condition, roof support is necessary.

\* \* \*

While we do not in this case define the term "operating experience," we conclude that the operating experience of a mine requires the use of roof support if, in a given situation, the mining conditions are such that roof support is necessary. This determination takes into account the operating history of the mine (i.e., its past mining practice), geological conditions, scientific test or monitoring data and any other relevant facts tending to show the condition of the mine roof in question and whether in light of those factors roof support is required in order to protect the miners from a potential roof fall. [5 FMSHRC 836,838.]



The Commission also considered the common usage of the term "experience" in interpreting the standard (at Fn. 23):

. . . [W]e turn to the dictionary for the common usage of that term. There, the key word "experience" is defined:

2: direct observation of or participation in events: an encountering, undergoing, or living through things in general as they take place in the course of time  
. . . 4: knowledge, skill, or practice derived from direct observation or participation in events: practical wisdom resulting from what one has encountered, undergone, or lived through . . . 5a: the sum total of the conscious events that make up an individual life . . . 6: something personally encountered, undergone, or lived through. . . .

Webster's Third New International Dictionary  
(Unabridged 1971) (Emphasis the Commission's).

In Amax Chemical Company, 8 FMSHRC 1146 (1986), the Commission interpreted 57.3Ä20's companion section, 57.3Ä22. (Footnote2) The Commission stated:

Unlike the regulatory scheme that obtains with respect to underground coal mines, approved roof control plans are not required in underground metal-nonmetal mining operations. Rather, "[g]round support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required.'

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Webster's Third New International Dictionary  
(Unabridged 1971) (Emphasis the Commission's).

In *Amax Chemical Company*, 8 FMSHRC ¶¶ (Slip. Op., August 27, 1986), the Commission interpreted 57.320's companion section, 57.322. (Footnote 2) The Commission stated:

Unlike the regulatory scheme that obtains with respect to underground coal mines, approved roof control plans are not required in underground metal-nonmetal mining operations. Rather, "[g]round support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required."

(30 C.F.R. 57.3020 (1985) (formerly numbered as 30 C.F.R. 57.320 (1984)). See generally, White Pine Copper Range Co., 5 FMSHRC 825, 83537 (May, 1983). (Of course, the standard involved in the present case also imposes the continuing duty to examine ground conditions in such mines and to take down or adequately support any loose ground.)

\* \* \*

We hold that in evaluating ground conditions and the adequacy of support under this standard [ 57.322], all relevant factors and circumstances must be taken into account.

\* \* \*

Visible fractures, sloughed material, "popping" and "snapping" sounds in the ground, the presence, if any, of roof support, and the operating experience of the mine or any of its particular areas, are also relevant factors to be considered. Cf. White Pine, supra, 5 FMSHRC at 83337.

Use of the term "indicates" in 57.320 denotes something less than a requirement of certainty before roof support is required to protect miners against roof falls. This interpretation is consistent with the Commission's interpretation of 57.322 in the Amax case, where it stated (in Fn. 5):

We reject any suggestion that the ground control measures required by the standard apply only when ground is in immediate danger of falling.

It is also consistent with the Commission's statement in White Pine that the purpose of 57.320 is "to protect the miners from a potential roof fall" (5 FMSHRC 838, emphasis added).

I construe 57.320 as meaning that "operating experience" sufficient to indicate the need for roof support does not have to be at the point of an immediate danger of a roof falling, but includes danger of a potential roof fall.

The "operating experience" of Respondent's mine included, besides those conditions described in the Findings of Fact, above, the conditions and incidents described by personnel who worked in the 14 N 33 drift on a daily basis. The import of the testimony of the miners and MSHA witnesses, which I credit, is

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that the 14 N 33 drift had a bad roof, it was dangerous, and it needed roof support where Dillard and Waters were working.

Frank Clay Wright

As stated above, Wright was the development loader on the same shift with Dillard and Waters. His testimony about roof problems in the 14 N 33 drift on the night Dillard was killed has been partially recounted above.

Wright testified that the roof in the 14 N 33 drift was bad and that, after the drift was driven through the N 28 crosscut the roof conditions became worse (Tr. 185-186) and loose ground conditions were "all over. On the ribs, back [roof] everything" (Tr. 203-204).

Mark Richards

A portion of Richards' testimony has also been recounted above. As noted, on September 13 he installed an extra row of roof bolts because of popping noises in the roof and because the roof was dropping "fines."

He corroborated Gary Williams' statements about the bad roof around the bore hole, within 15 feet of the place where Dillard and Waters were struck by the roof fall.

Richards testified that he bolted the roof up to the smooth wall on September 13. The smooth wall was shot down on the afternoon of the 14th of September, exposing the area from which the rock fell that killed Dillard.

Richards, like Wright, described the roof conditions in the 14 N 33 drift as being "bad":

Q. Had you observed the roof conditions along the 33 drift?

A. It's bad. It's bad from day one.

Q. When you say day one what?

A. Well, I'm talking about from where they broke it off all the way up.

(Tr. p. 319).

Richards testified that he believed the whole drift needed pinning (Tr. 7324), that he told his supervisor, Laddie Hicks, that there was a roof area in the 14 N 33 drift that still needed

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pinning and thereafter, to his knowledge, that roof area was not pinned (Tr. 324-326).

Richards regarded the 14 N 33 roof as dangerous and testified that he would not have wanted to work anywhere in the 14 N 33 drift unless it was pinned (Tr. 344).

Thomas J. Mason

Mason was the day shift development driller who shot the heading in the 14 N 33 drift shortly before Dillard, Waters, and Wright began their shift on September 14. He had worked in that drift from the time it was begun. Referring to the roof, he testified that in his 16 years in development work:

A. I've never seen one no worser. I've never seen one that bad. I mean as far as the roof and top and all.

Q. Okay. You're referring then to 14 N 33?

A. If we're talking about going in -- the drift where Mr. Dillard got killed at. It was rough on us all the way. I'm saying it was ground we had -- we had ground all the way there.

(Tr. 281).

Mason described a number of adverse ground conditions he experienced in the 14 N 33 drift before the Dillard fatality: The roof was bad "all the way" (Tr. 273, 277); about 30 feet from the N 28 crosscut in the 14 N 33 drift, a rib caved in, "just gave way" (Tr. 275), and almost struck his drill buddy (Tr. 274); later, between N 28 and the face where Dillard and Waters were struck by a roof fall, a rib "jumped out" on Mason and his drill buddy (Tr. 277); after the tunnel advanced beyond the bore hole, a large rock fell from the roof and hit his Jumbo drill and broke a jack (Tr. 278-279); after that roof fall, his foreman, Glenn Morrow, helped the miners move the rock from his drill (another incident of a foreman's knowledge of adverse roof conditions in the 14 N 33 drift) (Tr. 299-300).

Mason worked in the 14 N 33 drift from the time it was opened until after the Dillard fatality. He saw many falls of roof or rib and in each case the fallen rocks had been unsupported. He never saw a roof fall where the roof was supported by roof bolts.

MSHA'S Accident Investigation

Frank Holiday and Eugene Mouser, MSHA inspectors, inspected the accident scene on the morning following the fatality. They interviewed mine officials and employees and inspected the 14 N 33 drift. On the 15th they decided to issue a citation, which was put into written form on Monday, September 17, 1984. On that date, the inspectors' supervisor, M.P. Turner, visited the mine and the 14 N 33 drift. Turner was accompanied by his supervisor, Fred Juopperi. (Footnote 3)

MSHA's findings are, in part, set out in its investigation report dated October 12, 1984, and entitled "Report of Fatal Fall Of Ground Accident," which was admitted into evidence as Exh. P4. The report concluded that:

The cause of the accident was the failure of management and employees to scale down and/or adequately support loose ground. Contributing causes may have been the failure of management and employees to detect loose ground and that vibrations from the drilling operation may have affected the ground conditions above the drill area by loosening unstable ground.

(Exh. P4, p. 4).

Inspector Mouser issued Citation 2247782 charging a violation of 57.322 (quoted in Fn. 2, supra). The citation was modified by Turner on August 18, 1986, to cite 57.320 instead of 57.322 (Exh. P3). In the body of the citation (which was not modified) Inspector Mouser identified the condition or practice as follows:

One miner was fatally injured and one seriously injured as a result of a rock fall. The men were operating a drill Jumbo under unsupported back in the 14 N 33 drift. The men were approximately 7 1/2 feet beyond the last supported roof.

At the hearing Turner and Holiway were called by the Secretary to testify. Respondent called Mouser.

Turner, who has a mining engineer's degree and 30 years experience in the mining field, testified that he believed the areas of loose roof he observed on the 17th of September (loose rocks in the roof near the accident site and in other areas of the roof (Tr. 118)) were not caused by the fall of the rock that struck Dillard and Waters but existed before the fall (Tr. 94-96, 118, and 142). I credit his testimony on this point.

Holiway testified that he decided to issue the citation (in consultation with Mouser) because of loose rocks which he observed in the roof on September 15 (Tr. pp. 362-363)--"a man . . . was killed and a man seriously injured, and there were still loose rocks hanging in the drift . . . (Tr. 362)."

Mouser fundamentally agreed with Turner and Holiway. At one point in the questioning by counsel for the Respondent, he testified as follows:

Q. You couldn't say that the ground fall was a surprise?

A. Because they knew there was some loose rock there.

Q. You're, again, referring to the Frank Wright comment?

A. Right.

\* \* \*

Q. If I were to tell you, Mr. Mouser, that Frank Wright was talking about a piece of rock that was pinned, rock bolted, would that changed entirely your opinion of whether or not a citation should have issued?

A. I don't think so, from the evidence I saw when we went in the drift, because there was loose ground, and a rock fell and killed a miner.

Q. Yeah. But that loose ground could have occurred as a result of stress that occurred after Mr. Wright left the area; could it not?

A. That's a possibility; but I don't believe it did.

Q. On what basis do you draw the conclusion that it did not?

A. Well, from the condition the ground was in when we saw it, when we went in there.

(Tr. 4141-415.)

Respondent contends that, at the time of the fatality, roof control at the Cherokee Mine was founded upon a "layered system" of three levels of responsibility to monitor and control the roof: the miners, the front line supervisors, and upper management.

I find that a preponderance of the credible evidence shows that the system failed at all three levels and, as a consequence, roof that should have been supported was not. The result was an accident that killed one miner and permanently disabled another.

#### Miners' Level

Respondent contends that the roof in the 14 N 33 drift was adequately examined and scaled by the miners who began work there at 3:00 p.m. on September 14, 1984, and that the roof fall was a "surprise" for which Respondent is not accountable under the Act.

The development crew on that shift consisted of Steve Dillard and Joshua Waters, development drillers, and Frank Wright, development loader. It was assisted on that particular evening by Hayden Stiles, who was normally a truck driver. They were all under the supervision of the development foreman, Cleaston Morrow.

Respondent contends that Dillard and Waters scaled the drift before and after Wright and Stiles mucked it out. I find, however, as Waters testified, that he and Dillard had scaled only about 30 feet back from the face (Tr. 563, 568) and they did not scale the roof further after Wright and Stiles were through mucking (Tr. 566). Based upon the measurements made by Respondent after the fatality, and adopted by the MSHA investigation team, the distance of scaling stated by Waters may have missed the area where the rock fell that killed Dillard and injured Waters. Inspector Mouser testified that it was 37 feet from the last row of bolts to the face and that Dillard and Waters were struck approximately seven and one-half feet in by the last row of roof bolts (Tr. 439). The rock that fell was six feet and eight inches long, four feet and ten inches wide (Exh.



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PÄ4). Given the measured distances involved and the fact that Waters could only estimate the distance he and Dillard scaled, I find that Waters and Dillard may well have missed loose roof in the part of the roof that fell. I credit the testimony of the MSHA witnesses who observed loose, unbolted rocks in the roof near the area where the rock had fallen and elsewhere and their opinions as experts that the loose rocks were probably there and visible before the rock fall.

The roof area that the third member of the crew, Frank Wright, expected to have been scaled by Dillard and Waters was very different from the area they actually covered. Wright testified about his anger when he was nearly struck by a rock fall after Dillard told him the area was ready to be mucked. After being assured by Dillard--whom he met on the way into the drift--that they (Dillard and Waters) had finished scaling, a rock approximately 2 x 3 feet fell in front of Wright's loader (Tr. 167). When this happened Wright stopped mucking and, with the assistance of Hayden Stiles, pulled down what Wright described as "quite a bit" of loose rock from the roof (Tr. 170).

After Wright completed this additional scaling and finished mucking out the area, he confronted Dillard in the lunchroom and complained to him about his (Dillard's) failure to scale the area where he (Wright) had been mucking (Tr. 171Ä172).

The testimony of Waters and of Wright shows that there was a breakdown in communication among the development crew about what areas of the roof were to be scaled. When Wright asked Dillard whether the area was ready to be mucked, he (Wright) assumed that the scaling had included--at a minimum--the area back to N 28 in the 14 N 33 drift but Dillard and Waters apparently viewed the area necessary to be scaled as only from the face extending back as far as their estimate of where the Jumbo drill would be when it was moved in for drilling. This represents a substantial disparity as to the roof areas to be scaled.

Further evidence of a communication breakdown at the miner level is the fact that, after Wright told Dillard about adverse roof conditions in the drift and warned him that the roof still needed to be checked, Dillard did not pass this information on to Waters (Tr. 571) and Dillard and Waters did not enlarge the area where they scaled the roof (Tr. 563, 566).

Visibility and audibility in the 14 N 33 drift were poor, because of dust and machinery noises. These conditions made it difficult to conduct proper examinations of the roof and to listen for sounds that could help one to keep a careful check on the roof. Also, the roof was 18 feet high. Wright, Waters, Dillard and Stiles could not be reasonably sure that they had not

missed some areas of the roof that were loose or making slight noises that would give signs of danger. Indeed, Dillard and Waters missed "quite a bit" of loose roof and after they said the roof was scaled there was a rock fall that nearly hit Wright. After that, Wright scaled the roof but acknowledged that, "maybe I missed a piece of [loose] ground. I don't know." (Tr. 241.) It is likely that Wright did miss some loose roof because after he scaled the roof there was a fatal roof fall and when the MSHA investigation team examined the scene they observed loose unbolted rocks in the roof near the rock fall and elsewhere. Based upon their years of experience they believed that the loose rocks were probably there and visible before the roof fall. I credit the testimony and expert opinions of the MSHA witnesses on these points.

#### Front Line Supervisor Level

When Wright returned to the lunchroom after he completed scaling and mucking, he complained to Dillard about his (Dillard's) failure to scale the roof adequately and warned Dillard about the roof conditions in the area where Dillard and Waters would be working (Tr. 172). Cleaston Morrow, the development foreman, was responsible for the 14 N 33 drift and the safety of the miners working on his shift. As a supervisor, he had mandatory safety duties under 30 C.F.R. 3Ä22, which provides, inter alia, that "Supervisors shall examine the ground conditions during daily visits to insure that proper testing and ground control practices are being followed. \* \* \* Ground conditions along haulageways and travelways shall be examined periodically and scaled or supported as necessary." Morrow's deposition was admitted into evidence as Exh. PÄ21. He testified that he heard Wright say to Dillard that, "there had been some ground that had blowed up down there on the face . . . to watch the ground, make sure they check it good (Exh. PÄ21, p. 10.)." Morrow defined ground "blowing" to include popping or cracking and little pieces of "scale" falling (Exh. PÄ21, p. 11). Although Morrow heard Wright tell Dillard that there were adverse roof conditions in 14 N 33, he did not go there to examine the unsupported roof and had not gone to the face area on that shift before then. He knew that when Dillard and Waters left the lunchroom they would be drilling into the face and roof while working under unsupported roof.

When Gary Williams, the general mine foreman, was interviewed by Eugene Mouser, an MSHA investigator, on September 15, 1984--the day following the fatality--Williams stated that adverse roof conditions had been reported to Morrow by the development crew (Tr. 420Ä421). Gary Williams' deposition was admitted into evidence as Exh. PÄ20. He testified that it was

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Cleaston Morrow's responsibility as the crew foreman to inspect the face area (Id. p. 75).

Mark Richards, a roof bolter, testified that the last row of roof bolts was at a point which he measured to be seven and one-half feet outby the place where the rock fell upon Dillard and Waters on September 14 (Tr. p. 309). He described adverse roof conditions that had caused him to install an extra row of bolts in the area between the bore hole and the place where the rock fell that killed Dillard (Tr. 315):

I did feel the ground, it popped real loud overhead, you know, and that's what we call in the mines taking weight. I backed the jimbo up from under it and put another row of pins in.

And it was -- I was setting there in the driver's seat when it did pop, and I backed up and I put another row of pins in for my own satisfaction. I didn't want to get hurt and I didn't want nobody else to get hurt.

Richards testified that he was criticized by his supervisor, Laddie Hicks, for installing an extra row of bolts. Richards informed Hicks that he had put the extra bolts in the roof because he had heard the roof pop and because of the fall of some "fines" from the roof (Tr. 318-319, 330-332). Laddie Hicks was the supervisor of stoping and rock bolting. He was made aware of adverse roof conditions by Mark Richards but seemed to be more concerned with the extra cost of the roof bolts than with the conditions that gave rise to their installation. Hicks was not called as a witness to dispute or rebut the testimony of Mark Richards.

Thus, two front line supervisors, Laddie Hicks on September 13, and Cleaston Morrow on September 14, were told of adverse roof conditions near the area where Dillard and Waters would be working. Yet neither of these supervisors took any action to inspect and provide roof support above the place where Dillard and Waters would be operating a drill drilling blasting holes into the face and roof.

#### Upper Management Level

Gary Williams, the general mine foreman, testified that he had ordered roof bolting of an area around the bore hole within 40-45 feet of the face where Dillard and Waters were later struck by a rock fall in the 14 N 33 drift (Exh. P-20 p. 39). He ordered the roof bolting because of adverse roof conditions he personally observed. That means that the bad roof he observed

was within 15 feet of the Dillard/Waters accident site, because the rock fell about 30 feet from the face. He testified that "I didn't like the looks of it. I didn't like what I was afraid it might turn into. . . . (Exh. PÄ20, p. 56)." He also testified that underneath the bore hole he could see "some cracks in the separation of the rock" and that "when you see a bore hole flaking with little small flakes, you know that your're getting-a little something is trying to squeeze there." (Id., pp. 56Ä57.) Despite these conditions, he did not order roof support for the area where Dillard and Waters would be operating the Jumbo drill.

Respondent contracted with Dr. Ross D. Hammett of Golden Associates, a mining consulting firm, for, among other things, advice on "the need for support and the stability of development excavations." (Exh. PÄ26 p. 14.) Dr. Hammett testified that in May, 1984, he visited the mine and in July, 1984, filed a written report with Respondent, the narrative portion of which was admitted as Exh. PÄ27. At page 10 of the report, entitled "Local Stability of Development Openings," he stated:

With the high stress levels evident at deep depths in the mine and the increased stress concentrations from adjacent mining, more detailed consideration will need to be given in the future to the support of development openings in the mine.

\* \* \*

It is difficult to recommend optimum support designs based on observations from one or two underground inspections but the following are general guidelines which will assist in developing a support strategy:

(1) Development openings (including drilling drives and drilling chambers) should be of minimum practical size. (Under some circumstances, narrow openings may attact [sic] higher stresses than wide openings and so minimim [sic] size openings will not prevent stress fracturing. However, stress fracturing is much easier to control and provide adequate support than instabilities associated with wide openings).

(2) It is not felt that routine systematic bolting of openings of 16 ft to 18 ft span or less is presently required, it may ultimately be necessary to adopt this approach. Decisions on the areas to be supported will depend primarily on local geological conditions. It is recommended that spans greater than 16 ft to 18 ft be systematically bolted with bolts at least 6 ft long for

narrower spans, and up to at least 8 ft for wider spans. It is not recommended that spans be designed for more than 25 ft. [Emphasis added.]

The 14 N 33 tunnel did not exceed the dimensions at which Dr. Hammett recommended systematic roof bolting, but it was at this limit and after his report there were numerous incidents of adverse roof conditions in that tunnel before the fatality on September 14. After the fatality, another development miner was injured by a rock fall and management finally acknowledged that "we could not reasonably predict where further rock falls would take place" (Exh. PÄ25, p. 43); it therefore adopted a policy of systematic roof bolting up to the face in development drifts. This policy was implemented by a new safety rule: "No person shall enter an active development heading until ground support has been installed up to the face" (Exh. RÄ4).

I find that, before the September 14 fatality, Respondent's operating experience indicated the need for this kind of safety rule or some other adequate method of roof support above the drillers in the 14 N 33 drift. At least as early as the Ledford fatality in January, 1984, Respondent was put on notice that operation of the Jumbo drill in a development drift, drilling blasting holes into the face or roof while being under unsupported roof, presented a serious hazard of a potential roof fall. MSHA warned Respondent that "the drilling operation may have affected the ground conditions above the [drilling machine] area by loosening unstable ground." (The MSHA investigation team repeated this same warning in its report on the Dillard/Waters roof fall. This expert opinion was corroborated by the firsthand experience of Frank Wright, who worked in the 14 N 33 tunnel from the beginning and testified that the vibrations of the drill would cause "anything loose" in the roof to fall (Tr. 217).) After the warning in the Ledford case, in another development drift (14 N 33) where the same kind of drilling and blasting was being done, there were numerous incidents of adverse roof conditions, including popping noises, cracking, loose rocks, falling rocks and falling "fines" or "scales," before the September 14 fatality, to show a clear danger of a potential roof fall presented by drilling the face or roof while being under unsupported roof. Despite this clear evidence of risk to the development drillers, Respondent assigned Dillard and Waters to drill blasting holes into the face and roof while being under unsupported roof.

I find that Respondent violated 30 C.F.R. 57Ä3Ä20 by failing to provide roof support at the place where the rock fell on Dillard and Waters on September 14, 1984. In light of the abundant operating experience showing the need for roof support in this area before the fatality, I find that Respondent's



3 In the transcript Juopperi's name is misspelled "Dupress."