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Federal Mine Safety and Health Review Commission
Office of Administrative Law Judges

ASARCO MINING COMPANY, CONTESTANT	CONTEST PROCEEDING
	Docket No. WEST 92-624-RM
v.	Citation No. 4124076; 8/6/92
SECRETARY OF LABOR, MINE SAFETY AND HEALTH ADMINISTRATION (MSHA), RESPONDENT	Troy Unit Mine ID 24-01467

DECISION

Appearances: Henry Chajet, Esq., Washington, DC,
for Contestant;
Robert J. Murphy, Esq., Office of the Solicitor,
U.S. Department of Labor, Denver, Colorado,
for Respondent.

Before: Judge Morris

This is a contest proceeding initiated by contestant pursuant to the Federal Mine Safety and Health Act of 1977, 30 U.S.C. 801 et seq., (the "Act"). Contestant seeks to invalidate Citation No. 4124076 issued on August 6, 1992, by the Secretary of Labor for the alleged violation of 30 C.F.R. 57.3360.

An expedited hearing was requested and was held in Spokane, Washington, on August 13, 1992. The parties waived post-trial briefs, submitted the case on oral arguments and requested an expedited decision.

Citation No. 4124076 issued herein provides as follows:

> Ground support was not provided and installed on the ribs of the U.Q.1 haulage drift to prevent ground fall in this area. A ground support system shall be installed and maintained throughout the U.Q. 1 haulage drift to control the ground in this area where persons are require[d] to work or travel in performing their assigned task. The ground support shall be installed approximately (5) feet from the floor of the drift, and up into the back area. The miners are require[d] to use this drift on a regular routine each day.

The regulation, 30 C.F.R. 57.3360 provides as follows:

> $57.3360 Ground support use.
>
> Ground support shall be used where ground conditions, or mining experience in similar ground conditions in the mine, indicate that it is necessary. When ground support is necessary, the support system shall be designed, installed, and maintained to control the ground in places where persons work or travel in performing their assigned tasks. Damaged, loosened, or dislodged timber use for ground support which creates a hazard to persons shall be repaired or replaced prior to any work or travel in the affected area.

Summary of the Evidence

SIEBERT L. SMITH has been an MSHA inspector for 14 years of his 26 years in mining. He is experienced in safety in connection with metal/nonmetal mines. He has inspected the Asarco Troy unit 100 or more days.

On July 13, 1992, Mr. Smith arrived at the mine to investigate a fatal accident. He was met by Bruce Clark, safety director, Doug Miller, unit manager, and miner representative, Dave Young. Accompanied by the management representatives, the party went to the accident scene, UE 158, about 150 feet from the UQ 1 haulway. (Exhibit G-2 is a drawing illustrating UQ 1 and UE 158).

Mr. Smith noticed loose ground by UE 158; further, there had been a large ground fall in the area.

Asarco's preliminary report of the accident stated in part as follows:

> Two miners heard a fall of ground at the UE 158 South Heading. The miners went to the heading to check and found the victim laying on the right side of the Atlas Copco Room Jumbo Drill and about 3 feet from the face. There were no signs of falling material on the victim. Investigation revealed the victim was hit on the head (crushing his skull) by falling material. (Ex. G-2).

Mr. Smith investigated the ground support system and the roof support in the area. At the intersection of UQ 1 and UE 158 he required that some of the roof be scaled down. Exhibit G-3 is a photograph of the roof before the loose was removed; Exhibit G-4 shows the debris after it was barred down. Several tons were barred down with a Jumbo drill.

After the investigation, Mr. Smith returned up the drift and he saw that roof bolts were sticking out two or three feet in the UQ 1 drift.

Mr. Smith had not previously seen fractured ribs of the type he observed in UQ 1. Because of these conditions, he asked that engineers and geologists from MSHA Denver Tech Center inspect the drift.

Denver Tech representatives arrived July 29 about 7:30 a.m. The group met with Mr. Bruce Clark and they went underground to the UQ 1 drift. After leaving the pickup the group started to walk the 800-900 feet of UQ 1. The drift was 17 to 19 feet wide and 22 feet high. The rock conditions were the same as previously stated. Larger pieces had broken up. The bottom of UQ 1 lacked a support system.

UQ 1 is a haulage drift used to haul ore or waste rock from the area.

After observing the rock, Mr. Smith considered the roof of UQ 1 to be dangerous. Small pieces of loose rock could fall. As a result he felt that ground support was necessary on the ribs.

On August 6, 1992, Mr. Siebert wrote Citation No. 4124076. He designated the citation as significant and substantial. The evaluation was made because the regulation was violated and a possible ground fall could occur. Further, the hazard would reasonably cause injury.

Mr. Siebert agreed that he did not hear any popping sounds in UQ 1. He issued his initial citation on July 13 for the loose roof at the intersection of UQ 1 and UE 158. The fatal accident had occurred 100 to 150 feet away. The two areas appeared to be the same color. The fatality was caused by a back or roof fall.

By way of abatement Mr. Smith wants ground support to hold the small rock and materials. He also suggested timber support.

On July 29th Mr. Smith and Mr. Hansen spent an hour looking at UQ 1 with miner lights and a high density light. There were places where the roof was stable but there were no support for the ribs.

The size of the material barred down was a couple of feet long, about two feet. It broke after it fell. The area started at the corner and went 25 feet in the drift and 12 feet up on the ribs.

SID HANSEN, a mining engineer experienced in mining, graduated from the Colorado School of Mines in 1972. He now works for the MSHA's Denver Tech support group which offers technical support to MSHA's enforcement group.

Mr. Hansen has been with MSHA since 1986 evaluating mines. He has done 6 rock surveys in various mines.

Mr. Hansen is not a geologist. In evaluating rock stability in a mine he doesn't think the geological formations are relevent.

Before beginning his survey, Mr. Hansen reviewed various reports including a report of the fatality, a computer printout of the mine, mine maps and a ventilation map. He also reviewed a report from MSHA's Jerry Davidson involving a pillar fall. The fatality at UE 158 was caused by a small roof fall.

Mr. Hansen arrived on July 29th after the start of the shift. Bruce Clark, safety director, Doug Miller, unit manager and a Montana state mine inspector accompanied them.

Initially the group went to an older section where Asarco was bringing down a section of roof. They then went to UQ 1 to evaluate the area around the accident scene. After being dropped off at the top of the drift they walked to the bottom. Messrs. Smith and Donaldson accompanied Mr. Hansen. The 800-900 foot walk took about an hour. They carried a 300,000 foot candle power light in the 18 foot entry.

In looking at the roof and ribs it was obvious the operator was having roof control problems. Many roof falls had occurred in the ceiling leaving cathedral formations. Some roof bolts were hanging down three feet. The roof looked bad the entire way down. The ribs showed evidence of alteration. White clay was present and he was able to dig out the clay with his fingers.

Mr. Hansen also pulled down a good chunk of roof. The condition he found was from the bottom up to the roof. Exhibit G-5 was marked to show the location of UQ 1. The ground conditions Mr. Hansen found were "pretty much" from start to finish.

UQ 1 had been driven through a shear zone, i.e., an ore body on two different horizons. Driving a drift through a shear zone presents problems as it fractures the rock. Mr. Hansen's testimony was illustrated on Exhibit G-6.

The entry had been driven through bad ground. The rock mass was faulted, weakened and intensely jointed. A cave-in had also occurred off UQ 1.

Mr. Hansen did not go to the area where the fatality occured but the ground conditions at that location were different. The roof at the accident site was a rock of better quality.

Primary ground support is the ability of rock to hold itself up without outside support. Secondary ground support is wire mesh, cribbing and roof bolts.

At the close-out conference on July 30th, the MSHA representative told the operator that the situation was a concern to MSHA. Roof bolting was discussed in UQ 1. They also discussed primary ground control. Mr. Miller, Asarco's representative, did not agree any support was needed in the area. He also explained what he thought about the conditions.

Exhibit G-7 is MSHA's written memorandum of the ground stability evaluation at Asarco's Troy unit.

The ribs were not supported by an interlocking system. Mr. Hansen pulled rock off the ribs from the weakened bedding plane. Blocks do not support themselves and wet clay can help keep the blocks in place.

In cross examination, Mr. Hansen admitted he was not knowledgeable in many geological areas. He did not know the composition of rock in the drift nor did he analyze it. However, the rock composition is an important feature.

The individual blocks from UQ 1 to the accident site did not vary that much. The blocks he pulled off indicated the bedding was weak.

Mr. Hansen removed two or three pieces of rock along the 800-900 foot drift. They were representative of the rock.

Exhibit 3, a photograph shows rock that Mr. Hansen could pluck off the bottom. The ribs along the entry could have been barred down as they were falling out on their own. MSHA was concerned about the danger of smaller rock falling out.

The pickup diesels passing through the UQ 1 drift had not left any soot residual in the drift.

Mr. Hansen's brief notes of the UQ 1 drift inspection (Ex. G-9) indicated the drift was 17 feet wide; severely sheared; rabbly; clays exposed; recommend mesh; and ribs not bolted.

Mr. Hansen marked on Exhibit G-2 places where he removed mud from two locations.

In his inspection, Mr. Hansen concentrated on the left rib and checked from top to bottom. Near the bottom of the drift conditions improved. The place where the clay was located is marked "MUD" on Exhibit G-2. Mr. Hansen did not examine the right rib but he assumed it looked like the left rib.

Mr. Hansen saw water seeping in from the side. He did not hear any ground working. However, the ribs would not be working because there was nothing to induce stress on the pillars.

The rock in UQ 1 is waste rock.

Mr. Hansen agreed that roof bolt locations should be determined on the basis including the height of the seam and nature of the rock. As a rule roof bolts should be no further apart than their length.

The minimum size pins to be used in UQ 1 would be whatever ties the mesh to the sides. Mr. Hansen believed bolts could be put into the ribs and he further described the installation of split sets.

MSHA was trying to stop smaller rocks from striking the miners.

Mr. Hansen did not notice one of the crosscuts on the right side of UQ 1.

Bruce Clark told the group there was a roof fall on UQ 2 directly across the drift from another intersection. The roof fall is shown on Exhibit G-2.

ASARCO'S EVIDENCE

DAVE YOUNG, mine superintendent at the Troy unit, is a person experienced in mining. He graduated from the University of Colorado School of Mines in 1983 and he is a registered professional engineer.

The Troy unit produces silver and copper; the concentrate is shipped elsewhere. Asarco uses jumbo drills, electric bolters and diesel 88's. The equipment has protective canopies. Asarco moves about three million tons of material per year. There has been no prior fatalities at the mine.

Mr. Young described the UQ 1 and UQ 2 haulways (see Ex. A-1). These two haulage ways are approximately 18 to 20 feet wide. A normal haulaway is 40 to 50 feet wide.

Asarco handles the drift by barring down whatever is loose. In addition, they install roof bolts where they are necessary. Workers are instructed in the ground control procedures.

Mr. Young indicated rib bolting on previous occasions was a disaster since the bolting created a further lack of stability.

Mr. Young identified the mine map as shown in Exhibit A-1. The intersection shown between 5 and 6 has been in existence since May/June 1992.

The mine is 1.5 miles by .33 miles. The UQ 1 and UQ 2 drifts were started the first of January (1992). UQ 1 is designed to the mine plan but is not a production heading.

A difference exists between UQ 1 and the site of the fatality. The difference is caused by the drift crossing through the bedding plane. Also the rock composition changes.

Steel set supports were put in UQ 2 but they were not related to the ground fault.

Mr. Young has walked UQ 1 at least 100 times. He goes into the drift to see that the miners are working safely.

Soot buildup on the ribs and back help the operator to monitor the rock situation as white spots will show where any rocks are dislodged.

In the 100 times he has been in UQ 1, Mr. Young has not heard any snapping or popping sounds of the ground working.

Mr. Young was last in UQ 1 on Sunday. The ribs were normal and stable. He did not see any hazardous loose ground. The conditions appeared the same as on other occasions.

There was no water in UQ 1 but water can collect from some drilling; also muck piles are watered down to control dust.

Asarco uses a No. 7 rebar ceiling bolt 8 feet long. The company's experience shows that replacing bolts in the ribs is a disaster. The best control is the continued monitoring of the ribs and barring down as required. Based on the history of the mine, the installation of wire mesh with bolts would reduce safety. Further, such installation has not worked previously.

Mr. Young agreed Mr. Smith issued a citation for the three tons of ore that were barred down. However, a bar was not used; rather, a jumbo drill was used.

Exhibit G-9 indicates the Asarco's Troy Mine had three rock falls in 1984; two rock falls in 1985; three rock falls in 1987; four in 1989 and the same number in 1990.

A canopy does not offer exclusive protection.

DR. WILLIAM HUSTRULID, a professional engineer, serves as a Professor of Mining Engineering at the University of Colorado School of Mines. He is an expert in the field of rock mechanics and safety. His resume lists his many publications. (Ex. A-4).

He has visited hundreds of mines working for mining companies as well as unions.

Dr. Hustrulid has been at the Troy Mine on two other occasions. His most recent visit on August 11, 1992, was to evaluate the UQ 1 drift. On his visit he examined and reviewed the geology and the rock structure. In addition, he measured the strike and dip, an important facet when considering the stability of the ground.

In examining UQ 1, Dr. Hustrulid looked at the ground conditions on both sides of the drift. (Mr. Hansen had only looked at one side).

He found the overburden at the upper end of the drift was about 800 feet; the overburden at the lower end was 900 feet. The thrust of the drift went from top to bottom and up again.

In Dr. Hustrulid's opinion a person cannot observe the condition of any ground from 100 feet away.

At the intersection of UQ 1 and UE 158 there were several changes in the rock formations.

In UQ 1 Dr. Hustrulid observed no hazardous or loose ground. In addition, there was no popping sounds nor any water, cracks or fissures. The roof was reinforced with No. 7 resin bolts, 9 foot long pins; there were about 700 bolts. The other ground control is from the inherent strength of the rock material.

Asarco uses the appropriate technique of scaling down any loose material with a mechanical pick and scaling bar. Asarco, which is required to make the ground safe, drills, blasts and reinforces the ground. Asarco's practices are consistent with standard mining practices.

The UQ 1 ground conditions are safe and stable.

Dr. Hustrulid discussed how a roof bolts pattern should be established. It is normal for some roof bolts to become dislodged; when this occurs Asarco rebolts the area. This is a positive type of reinforcement since the remaining non-loose bolts also provide support.

The clay in UQ 1 was of a grayish color but only located near a fault. Dr. Hustrulid estimated that 5 percent of the drift was clay.

The faults cross the drift at high angles. Such faults vary from 30 degrees to vertical. When he observed these areas there was no disturbance of the rock.

The walls of the ribs are nearly vertical. It is important that such vertical lines be maintained.

Dr. Hustrulid disagrees with MSHA's recommendation to place bolts in the ribs of the drift. Exhibit G-6 shows rock blocks.

They tend to stay together. It is one to several feet between bedding planes. Rock bolt hammers in use today have 10 to 20 horsepower. Pounding on pieces of rock will help tear the ribs apart. In this jointed rock area if you start pounding a wall you are asking for trouble.

Bolts with mesh presents problems. Wire mesh would fix an area but it is not a good solution.

The drift should be inspected regularly to observe changes in ground conditions. Miners can see when things are changing. If such a change occurs, you can come up with an operating plan.

Gunite shot into the ribs can tie adjacent blocks together but it does not affect any blocks behind those in the front. In addition, gunite might mask problems by covering them. However, if gunite is installed you can see a piece of loose rock develop.

In Dr. Hustrulid's opinion the best course of action to maintain stability in UQ 1 is to observe, monitor and evaluate changes that occur. He encourages miners to make thorough examinations.

It is much safer and easier to maintain UQ 1 due to its 18 foot width as compared to a normal 45 foot wide entry. The ribs in UQ 1 are safe today.

Dr. Hustrulid does not use the terms "primary and secondary ground support systems." He spent three hours in UQ 1 and did not hear any snapping or popping.

The roof bolts that were hanging down were no problem because they had been replaced with other bolts.

The term "bedding" means a process by which material is laid down in a ground formation.

Installing roof bolts to the ribs is a bad idea. If you drill into the ribs you compromise the ground support. However, wooden lagging shouldn't disturb the ribs.

Asarco could use a loader to rock the ribs. That is, the loader could go down the drift and knock down any that are loose.

OWEN ERICKSON is Asarco's underground mine foreman. Mr. Erickson's job involves ground control.

Mr. Erickson scaled down the ground pointed out by Inspector Smith. He considered the ground stable and he used the full force of the Jumbo drill to knock it down.

On July 13th the various crosscuts shown on Asarco's mine map were in existence.

In Mr. Erickson's opinion UE 158 was stable.

WILLARD R. COOPER, is a grade 10 miner, roof bolter and Jumbo operator.

Mr. Cooper has worked on a daily basis in UQ 1. He was there last Saturday. The ribs and ground in UQ 1 are different from the ribs and ground at the accident site.

He has never heard any popping sounds nor has he heard ground working. There was no water in UQ 1.

Soot from the diesel covers the ribs. If the ribs were working you would see evidence of spalding.

Based on his experience Mr. Cooper thought the best solution was to monitor the area on a daily basis.

If bolts were used, the UQ 1 ribs would be more unstable.

Mr. Cooper agrees he sounds the roof when using a scaling bar. It is a general policy to scale but it depends on the machine and its operator. A miner should make his own work area safe.

JOSEPH A. OLSEN, JR., a miner first class has been 11.5 years at the Troy unit. He does Jumbo drilling.

He was worked UQ 1 and was elected by miners for 2.5 years as a miner's representative.

Mr. Olsen has attempted rib bolting in the mine, in the 10 West area. The efforts were not successful. They did not make the conditions safe.

In UQ 1 the ground is different from where the fatality occurred.

Mr. Olsen started in January in UQ 1. He has never seen anyone put mesh in the ribs.

MSHA REBUTTAL

JERRY DAVIDSON, is employed as a geologist for Denver Tech Support. Mr. Davidson graduated from the University of North Dakota and he is experienced in mining.

Mr. Davidson has investigated about 200-300 ground stability problems and he has been to the Troy Mine on three occasions.

He provides geology support for MSHA mining engineers. He furnished the geology to Mr. Hansen.

On July 29th, Mr. Davidson visited Asarco's mine with Messrs. Hansen and Clark. They visted the UQ 1 drift. Initially they got out at the top of the decline. They used a Q beam, over 100,000 candle power and looked for clay seams and mineral alterations.

The rock near the top was fractured from perpendicular to a high angle. The stability was marginal.

Walking down the drift Mr. Davidson noted the fractures were not consistent. There were clay seams along the bedding planes. Such seams decrease the stability of the ground mass.

Mr Davidson discussed faults in detail. It appeared to him that there were chemical alterations in the drift, a condition he found not particularly unique. It was fractured rock.

In Mr. Davidson's opinion the stability was marginal because of the crushed nature of the rock. MSHA's recommendations that the ribs be reinforced were made in a written memorandum.

Mr. Davidson agrees the Troy Mine is a bedded formation. Further, he didn't examine every square inch of the drift. His examination took less than an hour.

He did not hear any popping noise as he walked through the drift.

Discussion

This case does not lack for credibility issues. One such issue deals with whether the ground in UQ 1 was the same type of ground where the roof fall occurred causing the fatality.

The evidence indicates that Mr. Hansen did not closely observe the site of the accident due to a water accumulation. MSHA's evidence shows their representatives were within 100 feet of the site to make their observations. Basically, I agree with Dr. Hustrulid that effective observations of roof conditions cannot be made from 100 feet or more away. In addition, virtually all of Asarco's witnesses testified that the roof conditions where the fatality occurred was different and more stable than the UQ 1.

The principal credibility issue presented in this case is whether the rock in UQ 1 is stable. In this connection I generally credit MSHA's evidence. Messrs. Smith, Hansen, and Davidson testified as to the unstable areas in UQ 1. The MSHA representatives were using a high powered Q beam to inspect the ribs and roof and described their detailed examination of the 800-900 foot drift. I believe they would be in a better position to observe actual conditions as compared to the Asarco employees who worked in UQ 1 and described the conditions as stable. A person working in an area is more likely to be concerned with his work than in observing rib conditions.

Asarco claims that soot deposited on the ribs by diesel equipment would quickly show any instability in the ribs. I am not persuaded by this argument. The UQ 1 haulage way was started January 1, 1992. The citation was issued in August 1992. This appears to be an insufficient amount of time to allow any appreciable amount of soot to accumulate.

A conflict also exists between the testimony of Mr. Hansen and Dr. Hustrulid. Mr. Hansen, a mining engineer, and a ground stability expert believes generally that the geological formations are not relevent. His rock surveys in six mines qualify him to speak on the issue of stability of the ribs in UQ 1 of Asarco's Troy Mine. Mr Hansen described his findings including clay that he scraped out with his fingers. Dr. Hustrulid confirmed the presence of the clay in UQ 1. He indicated it was 5 percent of the drift.

Asarco attacks the credibility of witness Hansen on the basis that Mr. Hansen did not see one of the crosscuts in UQ 1, also he did not examine both sides of UQ 1. I agree with Asarco's assertions but I do not find that the credibility of Mr. Hansen was destroyed by such evidence.

I recognize that the Commission has indicated that evidence such as popping noises or sounds of ground working area are rele

vent in cases of this type. It is true there was no such evidence here. Principally this is because the thrust of MSHA's evidence dealt with the safety of miners who might be struck by relatively small (softball size) pieces of rib. As Mr. Hansen noted, there was no pressure on pillars hence there was no working ground or popping sounds.

Asarco's defense is two-fold. Initially, the operator stated the roof and ribs in UQ 1 were stable at the time of the contested citation. On the other hand, the operator contends that the same ribs are so fragile that it would be a disaster to insert roof bolts to be used as an anchor for wire mesh. It appears to the Judge that such inconsistency only serves to confirm the lack of stability of the ribs.

On the issue of abatement: Asarco's petition herein states it has filed pursuant to Section 101(c) of the Mine Act for a modification of the application of 30 C.F.R. 57.3360.

The parties have agreed to extend abatement to a certain time. Concerning methods of abatement: the record supports the view that possibly roof bolts inserted at an angle could support wire mesh without creating further instability. In addition, wooden lagging might also be considered as a support for the ribs.

In any event, it appears reasonable that miners could be injured by loose ground falling from the ribs. For this reason, the Judge declines to further stay the abatement date.

For the foregoing reasons, Asarco's contest of Citation No. 4124076 is DENIED and the case is DISMISSED.

John J. Morris
Administrative Law Judge