

FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION  
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303-844-3993/FAX 303-844-5268

September 9, 1998

<b>NEWMONT GOLD COMPANY,</b>	:	CONTEST PROCEEDING
Contestant	:	
	:	Docket No. WEST 98-58-RM
v.	:	Citation No. 7951941; 12/9/97
	:	
SECRETARY OF LABOR,	:	Mine ID 26-02271
MINE SAFETY AND HEALTH	:	Carlin East
ADMINISTRATION (MSHA),	:	
Respondent	:	

**DECISION**

Appearances: Mark N. Savit, Esq., Rodney A. Grandon, Esq., Patton Boggs, L.L.P.,  
Washington, D.C.,  
for Contestant;  
Robert Cohen, Esq., Office of the Solicitor, U.S. Department of Labor,  
Arlington, Virginia,  
for Respondent.

Before: Judge Cetti

This case is before me upon a petition for assessment of civil penalties under sections 105(d) and 110 of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. ' 801 *et seq.* the Mine Act. The Secretary of Labor, on behalf of the Mine Safety and Health Administration, (MSHA), charges Newmont Gold Co. with the violation of the mandatory safety standard 30 C.F.R. ' 57.3360. This safety standard provides, in pertinent part, that 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. The regulation in entirety reads as follows:

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.

Newmont Gold Company (Newmont) denies any violation of the cited safety standard.

### **STIPULATIONS**

At the hearing, the parties entered into the record stipulations as follows:

1. The Carlin East Mine is a gold mine located near Carlin, Nevada, and is under the jurisdiction of the Mine Safety and Health Act.
2. There was a ground fall in the 5655 roadheader stope area on December 6, 1997.
3. The only issues are (1) Did Newmont violate 30 C.F.R. ' 57.3360? and (2) If there was a violation, was it caused by the Operator-s unwarrantable failure to comply?
4. Mr. Terry Hoch, Mr. Michael Evanto, Mr. David West and Mr. John Abel are able to testify in this proceeding as expert witnesses; Ahowever, their credibility as experts will be subject to attack on cross-examination.@
5. The five deposition transcripts are received into evidence as joint exhibits 3, 4, 5, 6 and 7 in lieu of the testimony of the following five individuals:

Scott Robertson - Joint Exhibit 3  
Craig Kerby - Joint Exhibit 4  
Larry Johns - Joint Exhibit 5  
Dennis Stone - Joint Exhibit 6  
Sam Lamb - Joint Exhibit 7

### **The Ground Fall**

On December 6, 1997, at about 2:30 p.m. at the Carlin East mine there was a large ground fall in the 5655 roadheader stope and stope access drift. There were no injuries nor equipment damage. The fall measured 20 feet wide, 22 feet high, 60 feet long and was estimated to be about 2,000 tons. The fall of ground was above the anchorage zone of the 12-foot rebar resin bolts and 8-foot split set stabilizers which along with metal chain link fencing were used in the roof support system in the area where ground fell.

On December 12, 1997, Inspector Bob Caples issued the citation in question charging mine management with unwarrantable failure to implement effective ground support measures to properly control ground conditions Aassociated with the current mining practices.@ The citation refers to the undisputed fact that there had been previous falls of ground at the mine which had been cited. The citation also refers to the fact that the company accident report dated Decem-

ber 6, 1997, the date of the ground fall, indicates that the 21 to 23 foot-wide stope access drift as a probable factor related to the most recent fall. The company accident report referred to in the citation was written by Mr. Robertson, one of the mine's underground supervisors.

Mr. Robertson, called by MSHA, as its witness testified that Inspector Caples misunderstood his report. Mr. Robertson testified that in his report he was not referring to the width of the stope access drift. He was not referring to the roof span in the access drift between the top of the backfill on one side and the top of the backfill on the other side. He was referring to the overall span of the stope where the coal had been mined out and the empty area backfilled with rock and concrete. Mr. Robertson freely admitted that he was not an expert in mine design. I credit Mr. Robertson's testimony that he was not an expert on mine design.

With respect to the prior ground falls, Newmont presented credible evidence that the previous ground fall at the mine occurred in ground conditions substantially different from those encountered in the 5655 roadheader stope and that Newmont had appropriately responded to each previous fall by evaluating, modifying and improving the mine's ground support.

Newmont first took over the mining operations at the Carlin East mine in May 1995. Prior to that time, the mine was developed first by a company called Small Mine Development. That company opened the ground and installed ground support that consisted primarily of 6-foot split set rock bolts. Newmont upon taking over the mine in 1995, brought in a highly qualified mining engineer, John Abel, as a consultant and Newmont continuously implemented and improved the mine's ground support system based on Dr. Abel's comprehensive recommendations.

MSHA, based upon the opinion of its well-qualified expert witness Mr. Terry Hoch, contends that the primary cause of the ground fall was that the 5655 roadheader access drift was too wide for the ground support system, designed, installed and maintained in that area.

Respondents, based upon the opinions of its highly qualified expert witnesses, Dr. John Abel and Mr. David West, contend that the primary cause of the ground fall was a variable and unpredictable ground fault called the Leaky Fault and not on the width of the 5655 roadheader access drift.

### **ESTABLISHED LAW**

Newmont is correct in its assertion that the fact that there has been a ground fall does not mean there has been any violation of regulatory requirements. Underground mining is an inherently dangerous activity. Conditions sometimes are such that despite the operator's best efforts, roofs fall. It has been stated many times that even a good roof can fall without warning. Consolidated Coal Co., 6 FMSHRC 34, 37 (Jan. 1984). When roofs fall, tragedies can occur. Fortunately, in this case, no one was injured and no equipment damaged.

Liability for an alleged violation of a broad safety standard, such as that involved in this case, is resolved by reference to an objective standard of what action a reasonably prudent person,

familiar with the facts and the protective purpose of the standard would have taken to provide the protection intended by the standard. Specifically, the adequacy of particular roof support or other control must be measured against the test of whether the support or control is what a reasonably prudent person, familiar with the mining industry and protective purpose of the standard, would have provided in order to meet the protection intended by the standard. @ Canon Coal Co., 9 FMSHRC 667 (1987).

The Mine Act imposes on the Secretary the burden of proving the violation the Secretary alleges by a preponderance of the evidence. @ Garden Creek Pocahontas Co., 11 FMSHRC 2148, 2152-53 (1989) (citations omitted). Thus, with respect to this violation, MSHA must present evidence that convinces or at least persuades this Court that the fact that a violation occurred is more likely true than not true. See e.g., Hopkins v. Price Waterhouse, 737 F. Supp. 1202 (D.D.C. 1990), aff'd, 920 F.2d 967 (D.C. Cir. 1990). Accord Concrete Pipe and Products of California, Inc. v. Construction Laborers Pension Trust for Southern California, 124 L.Ed.2d 539, 563 (1993) (citation omitted). To prove by a preponderance means that the evidence supporting the violation must be more convincing than the evidence which is offered in opposition to it. @ St. Paul Fire & Marine Ins. Co. v. United States, 6 F.3d 763, 769 (Fed. Cir. 1993). Where the evidence is equally balanced or if it cannot be said upon which side it weighs more heavily, plaintiff has not met his or her burden of proof. @ Smith v. United States, 557 F. Supp. 42, 52.

### **MSHA Inspector Joel Tankersley's October Inspection**

MSHA Inspector Joel Tankersley conducted a regular complete inspection of the Carlin East Mine in October 1997. He inspected the 5655 roadheader stope and testified he was in the 5655 roadheader stope area quite awhile because we had a ventilation issue in that area. @ Inspector Tankersley inspected the drift spans in the 5655 roadheader area and concluded that the spans that he observed were probably 20 feet in width, measured from the top of the backfill on the left side of the access drift to the top of the backfill on the right side of the access drift. At the time of his inspection in October 1997 Inspector Tankersley concluded that the ground support in the 5655 roadheader stope area was in compliance with applicable MSHA regulations. Inspector Tankersley's testimony was credible.

On review of the record, I find the evidence presented by the government that the width of the drift was excessive is primarily conjectural. It consisted largely of inference from defective and presumptive evidence. It was not persuasive.

After the ground fault, Dr. Abel analyzed the available data and concluded that the mining plan and ground support he had recommended was more than adequate to support the span of the 5655 roadheader access drift. His analysis of the data demonstrates that a variable unpredictable geological feature called the Leaky Fault caused the ground fall. Based on Dr. Abel's testimony and report, I find this subtle, variable and unpredictable geological feature, the Leaky Fault, interfered with the planned transfer of stress as calculated by Dr. Abel. The Leaky Fault interference with the calculated arch load stress transfer was the primary cause of the ground fall.

There is no evidence in the record to suggest that, prior to the ground fall, Newmont had any reason to believe that the Leaky Fault posed any threat to the integrity of the ground.

I credit the testimony of Mr. West, Mr. Robinson, Mr. Cross, Mr. Pentony and Dr. John Able. Based on their testimony and the reports of Dr. Able, received into evidence, I find the preponderance of the evidence fails to establish that the ground support in the 5655 roadheader stope was not properly designed, installed and maintained based on known ground conditions and Newmont's mining experience in similar ground conditions as required by 30 C.F.R. ' 57.3360.

It is only with hindsight that one can contend that the time, energy and money Newmont devoted to securing and controlling the underground roof was insufficient to prevent the December 6<sup>th</sup> ground fall.

Upon review and consideration of all the evidence, I find and conclude that the preponderance of the probative evidence does not, in this case, establish that Newmont did not provide what a reasonable prudent person, familiar with the mining industry and the protective purpose of the standard, would have provided in order to meet the protection intended by the standard.

The evidence and findings that support this conclusion are set forth in greater detail below under the heading Findings and Conclusions.

### **FINDINGS AND CONCLUSIONS**

1. Newmont Gold Company (ANewmont@) the owner and the operator of the Carlin East Gold Mine (ACarlin East@), located near Carlin, Nevada is subject to the jurisdiction of the Federal Mine and Safety Health Act of 1977, 30 U.S.C. ' 801, *et seq.*

2. A large ground fall occurred in Carlin East on December 6, 1997, in the 5655 roadheader stope.

3. Citation No. 7951941 (the ACitation@) alleging a violation of 30 C.F.R. ' 57.3360 was issued by MSHA on December 9, 1997, by MSHA Inspector Bobby Caples.

4. The Citation alleged, in part, that Amanagement has not implemented effective ground support measures to properly control the ground conditions associated with the current mining practices to ensure the safety of miners. This is an unwarrantable failure.@

5. Carlin East was first developed in 1993 by an independent contractor called Small Mine Development (ASMD@). At the time SMD began developing Carlin East, SMD was responsible for all aspects of the mining operation, including the design, installation and maintenance of ground support The ground support installed by SMD in Carlin East consisted primarily of 6-foot splitset rock bolts.

6. In May 1995 Newmont assumed the mining operations at Carlin East. At the time Newmont took over the mining operations of Carlin East it also assumed complete responsibility for the ground support installed in the mine.

7. One method used to excavate the area is undercut drift-and-fill mining. Drifts are mined out, then filled with a backfill made of cement and aggregate. The backfill is jammed into the mined out drift as tightly as possible using a specially modified tool. Once all of the cuts are mined and backfilled on a level, access is then driven to the next level below the prior level until the ore body is mined out.

8. Newmont engages in two types of drift-and-fill operations. The primary method involves blasting the drifts, after which the loosened material is mucked out. The other type of drift-and-fill operation employed by Newmont is the use of the roadheader.

9. Newmont introduced the roadheader into Carlin East in June 1997. Unlike traditional blasting methods the roadheader shears rock from an ore face in 12 to 15 foot advances. As the roadheader advances, the loosened material is mucked out and removed to the surface. After the cut is complete, the roadheader is moved to another ore face to cut while the roof of the prior cut is bolted.

10. Ground conditions vary considerably throughout Carlin East. The primary rock is a silty limestone, divided into two geotech units known as ASTls 1" and ASTls 2."

11. Geologic faults, many of which are undetectable until they are mined through, are present throughout Carlin East.

12. After Newmont took over the mining of Carlin East from SMD in 1995 it significantly strengthened the ground support that had previously been installed by SMD.

13. In 1995 Newmont experienced three ground falls in the areas that had been developed and the ground support designed and installed by SMD. One of these ground falls occurred at the 6090 level of Carlin East.

14. The ground fall in the 6090 area of Carlin East occurred on July 12, 1995, approximately two months after Newmont assumed operational control of Carlin East from SMD. It occurred in an area that was being mined using blasting methods. Newmont was not employing a mining sequence in the 6090 area. The back in the 6090 area was supported primarily by 6-foot splitset bolts.

15. As a result of the 6090 ground fall. Newmont hired the highly qualified expert Dr. John Abel to begin advising them on the ground support requirements for Carlin East.

16. In 1995 Dr. Abel recommended that Newmont install longer bolts in Carlin East and also recommended using dywidag bolts in addition to the splitset bolts in all open areas of the mine.

17. In order to execute Dr. Abel's recommendations, Newmont shut down the Carlin East Mine for a period of several days in 1996 for the sole purpose of enhancing the ground support in various locations throughout the mine including resupporting all the intersections with 12-foot resin bolts.

18. The ground support in Carlin East was continually improved by Newmont since it began operations in Carlin East in 1995.

19. Before beginning the roadheader mining activity in Carlin East in June 1997, Newmont engaged Dr. Abel to develop a mining plan and design for the roadheader mining activity.

20. Newmont provided the best available data regarding ground conditions in the 5655 roadheader area to Dr. Abel to use to develop a ground support plan, including percent core recovery data; rock quality designation (RQD) core recovery data; and underground rock mass ratings (AURMR®).

21. In a report dated May 23, 1997, Dr. Abel recommended sequencing the headings off the main access drift in order to produce what is known as a yield pillar in order to shift the weight of the ground in all directions from the area being mined. Dr. Abel's report also recommended a detailed ground support plan, employing what Dr. Abel testified was a belt and suspenders approach to ground support.

22. Dr. Abel's May 23 report noted that the back and rib side ground conditions should actually be improved by mechanical roadheader excavation, which would eliminate blast damage. MSHA's expert, Mr. Hoch, also acknowledged that the roadheader would provide an advantage over blasting in terms of ground support because blasting would probably fracture the roof or ribs a little more.

23. According to Dr. Abel, based on the data provided by Newmont relating to the ground conditions in the 5655 roadheader area, a rock bolt back support would be necessary and should be effective in the 5655 roadheader stope.

24. The ground support recommended by Dr. Abel for the 5655 roadheader stope involved the use of one-inch diameter dywidag threadbar tensioned bolts at specified intervals. The length and spacing of the dywidag bolts was dependent upon the drift span to be supported. Dr. Abel also recommended the use of splitset bolts at equal intervals between the dywidag bolts.

25. The dywidag bolts recommended by Dr. Abel provide tensioned ground support. The dywidag bolt is inserted into a hole wherein it contacts polyester resin that has previously been

inserted into the hole. The resin provides an anchorage connection between the bolt and the rock. Once the resin sets, the bolt is torqued to get tension top to bottom.

26. The tensioned dywidag bolt squeezes rock layers together between the two ends of the bolt to build a beam. The beam is designed to pull the layers of rock together to provide support.

27. The May 23 report also recommended the use of mesh support between bolts . . . and supplementary intermediate splitset bolt support between point-anchored bolts. Consistent with his May 23 report, every bolt pattern recommended by Dr. Abel was designed to support the full height--the maximum height of the arches. [Dr. Abel] estimated it as a fourth of the span, plus to allow 2 feet of anchorage beyond the top of the arch.

28. Dr. Abel's May 23<sup>rd</sup> report includes a diagram labeled "Figure 4" which contains a bolting pattern and bolt lengths for various drift spans ranging in width from 14 feet to 28 feet. Referring to the 28-foot span depicted in Figure 4, Dr. Abel recommends the use of 9-foot dywidag bolts on a 6-foot pattern. Dr. Abel noted in his May 23 report that 9-foot long bolts should provide a minimum anchorage length of 2 feet at the maximum reasonable 7-foot height of the tension zone underlying the maximum 28 feet wide planned roadheader drift. Dr. Abel's May 23 report recommends the use of intermediate support between the tensioned bolts for the planned 28-foot span in the form of 6-foot splitset bolts combined with a wire mesh membrane.

29. In a June 5, 1997, letter to James Pentony, Carlin East's underground mining engineer, Dr. Abel clarified the basis for his recommendations, explaining that the bolt lengths are based on providing bolt anchorage 2 feet beyond the maximum height of the rock arch potentially loosened above the flat back openings cut by the roadheader commonly referred to as the tension zone. Dr. Abel further noted that the design height of potentially loosened rock is a function of the width of the underlying drift, conservatively assumed to be 1/4 the drift width. By way of example, Dr. Abel recommended using 9-foot dywidag point-anchor bolts to support a 28 foot span: 7 feet of the bolt were required to push through the tension zone, allowing 2 feet of the 9-foot bolt to solidly anchor in stable rock.

30. Dr. Abel advised Newmont that by calculating 1/4 of the drift span plus 2 feet, Newmont could calculate the proper bolts lengths necessary to support wider or narrower drift spans than the examples included in his May 23 and June 5 reports. (Con. Ex. 2, pp. 1 and 5; and Tr. 254-3 through 6 and Tr. 970-23 through 971-8).

31. The ground support design for the 5655 roadheader area recommended by Dr. Abel was conservative; that is, the recommended ground support design provided greater support than the existing ground conditions otherwise warranted. The mining design and ground support recommended by Dr. Abel for the 5655 roadheader area reflects the application of widely accepted procedures and methodology used by rock mechanics and mining engineers.



32. Dr. Abel's May 23 report and his June 5 report include diagrams reflecting drift spans no greater than 28 feet across. Dr. Abel testified that the diagrams were not meant to reflect maximum recommended spans, but rather, were intended to demonstrate the application of the rule that the design height of potentially loosened rock is a function of the width of the underlying drift, conservatively assumed to be 1/4 the drift width. (Con. Ex. 2, p. 11; and Tr. 245-15 through 20). Based on that, he testified that given the ground conditions in the 5655 roadheader stope, if Newmont used 12-foot bolts to support the back Newmont could support a drift span in excess of 28 feet.

33. James Pentony, is the underground geotechnical engineer for Carlin East. He was involved with the design, installation and maintenance of the ground support in the 5655 roadheader area, including the implementation of Dr. Abel's design and plan for the 5655 roadheader area. Newmont followed the ground support methodology detailed in Dr. Abel's May 23 (Con. Ex. 1) and June 5 (Con. Ex. 2) reports. (Tr. 963 through 13).

34. For drifts in the 5655 roadheader area with planned widths of 14 - 28 feet (Con. Ex. 1, p. 9) Newmont installed 12-foot dywidag bolts at 6-foot intervals and 8-foot splitset bolts at 3-foot intervals between the dywidag bolts, and covered the entire back with wire mesh. The bolts installed by Newmont were longer than those recommended by Dr. Abel. (Tr. 969-8 through 16). The bolting patterns installed by Newmont resulted in overlapping bolting patterns at the intersection of the access drift and the left and right headings. (Tr. 263-8 through 13; 963 through 13; 1051-16 through 1052-9).

35. Newmont complied with Dr. Abel's mining sequence for the area. (Tr. 963-14 through 969-4). The purpose for using the mining sequence is to basically control the method and the timing of distribution of the load transferring to the abutment pillars. In conjunction with the backfill, you get your backfill sequence and mining sequence all incorporated into one.

36. The backfill used by Newmont in the 5655 roadheader drift-and-fill mining is a cement and rock fill which . . . exceeds the strength of the actual rock itself because it does not have many joints in it.

37. The parties stipulated to the admission of the deposition transcript of Inspector Joel Tankersley in lieu of his testimony. In October 1997 MSHA Inspector Joel Tankersley conducted an inspection of the Carlin East Mine. (Tankersley Deposition, 5-23 through 24).

38. As part of Mr. Tankersley's October 1997 inspection he inspected the 5655 roadheader stope area quite awhile because we had a ventilation issue in that area.

39. At the time Mr. Tankersley conducted his inspection, headings had been mined and backfilled off the left and right side of the main access drift. (Tankersley Deposition 13-7 through 10). Mr. Tankersley inspected the drift spans in the 5655 roadheader area. Mr. Tankersley concluded that the spans that he observed were probably 20 feet in width, measured from the top of the backfill on the left side of the access drift to the top of the backfill on the right side of the

access drift. (Tankersley Deposition, 13-17 through 14-3). At the time of Mr. Tankersley's inspection in October 1997 he concluded that the ground support in the 5655 roadheader stope area was in compliance with applicable MSHA regulations. (Tankersley Deposition, 15-18 through 25).

40. Prior to the December 6 ground fall in the 5655 roadheader stope, Mr. Pentony inspected the progress of the mining in that area approximately once a week. (Tr. 975-24 through 976-6). Based on his inspections Mr. Pentony concluded that the bolting pattern, the mining sequence, the type of bolts, the length of bolts, and the type of backfill procedures used were all proper and in accordance with Dr. Abel's ground support recommendations.

41. Mr. Pentony concluded as a result of his inspections of the 5655 roadheader stope that the spans in both the access drift and the headings to the left and right of the access drift were properly supported. (Tr. 980-23 through 982-4).

42. Mr. Pentony has observed wider spans in similar ground conditions in other parts of Carlin East. These spans are supported using a bolt system less than or equal to that in the 5655 roadheader stope. These spans have been opened and remained stable for periods in excess of two years. (Tr. 986-7 through 987-15).

43. In approximately August or September 1997, Mr. Pentony measured the rock strength in the 5655 roadheader stope by taking Rock Mass Ratings. Based on these measurements, and applying the Laubscher System, Mr. Pentony concluded that the ground conditions and the rock strength in the 5655 roadheader area in both the Stsl 1 and Stsl 2 geotech units were stable. These measurements were provided to Dr. Abel as data for his post-mortem on the December 6 ground fall. (Joint Exhibit 2; and Tr. 987-19 through 997-23).

44. Scott Robertson is a supervisor at the Carlin East Mine. He has held this position since November 1996. (Tr. 526-22 through 527-10). He and Craig Kerby were the Ashift bosses responsible for the miners working in the 5655 level on December 6, 1997, at the time the ground fall occurred.

45. The miners performed a workplace inspection of the 5655 roadheader stope. As part of the workplace inspection Dennis Stone observed a small pile of rocks on the ground which, according to Mr. Stone, was not totally abnormal. Neither observed any conditions that indicated that the ground was unstable. (Stone Deposition, 10-13 through 11-9).

46. While in the 5655 roadheader stope at approximately 8:30 a.m. on December 6, 1997, Mr. Robertson made a good visual inspection of the back (Tr. 567-4 through 7). He did not observe any bolts that appeared to be counter sunk (Tr. 567-8 through 10), he did not observe any baskets that had formed around the bolts (Tr. 567-11 through 13), in fact, he did not see any indication that the area was taking weight (Tr. 567-14 through 16). Mr. Robertson testified that he was not aware of any hazardous ground conditions prior to the December 6 ground fall in the 5655 roadheader area. (Tr 533-15 through 534-2).

47. Mr. Robertson returned to the 5655 roadheader area at approximately 12:00 p.m. on December 6. At that time there were no indications that the ground was taking weight. Nor did the miners report any unusual conditions. (Tr. 536-15 through 20; 568-15 through 569-4).

48. At approximately 1:00 p.m. on December 6, 1997, one of the shift bosses, Craig Kerby showed up at heading R8 in the 5655 roadheader area and spoke with Dennis Stone. While he was in the area a small stone fell through the wire and landed on Mr. Kerby's tractor. At that point both Mr. Kerby and Mr. Stone noticed that other small rocks were coming down and hitting the vent line at the top of the drift. (Stone Deposition, 15-20 through 16-6).

49. In response to the rock noises, at approximately 1:00 p.m. the decision was made to contact the shift boss, Scott Robertson. Mr. Robertson returned to Heading R8 in the 5655 roadheader stope. (Stone Deposition 16-15 through 23). Messrs. Robertson, Kerby, Johns, and Stone conducted a thorough inspection of the area. The group observed that the bolts were taking weight (the bolts . . . were starting to recede slightly into the rock . . . and they weren't rusty anymore). It was decided at that point that it would be a good idea to pull out the equipment from the 5655 roadheader area. (Tr. 536-21 through 538-6). Messrs. Robertson, Kerby, Stone, and Johns reached a general consensus to remove the roadheader from the R8 area to the main access drift of the 5655 roadheader area. (Stone Deposition, 10-18 through 11-3; Tr. 538-2 through 14; Tr. 539-12 through 15).

50. Messrs. Robertson and Kerby worked with the two miners to back the roadheader out of the R8 area and into the main access drift. It took approximately 20 minutes to back out the machine. It was approximately 2:00 p.m. when they finished backing out the roadheader. (Tr. 539-16 through 23; 541-16 through 20). After the roadheader was backed out, the crew planned to bring in the bolter to reinforce the back. (Tr 538-2 through 14; 542-19 through 543-19).

51. After the roadheader was backed out of the area and all personnel had been removed from the area, the access drift was roped off. Even after the roadheader was pulled out of the 5655 roadheader access drift, it still was not clear that a ground fall was likely to occur. (Stone Deposition, 18-1 through 7; and Tr. 543-1 through 5; 544-6 through 8; and 593-8 through 594-17).

52. The ground fall on December 6, 1997, occurred at approximately 2:30 to 2:45 p.m.

53. After the ground fall, Messrs. Robertson and Kerby decided that [they] should pull everybody out of the mine working on [the 5655] level or below . . . . (Tr. 549-9 through 13).

54. The shift preceding the December 6 ground fall began approximately 6:30 p.m. on December 5 and continued until approximately 5:00 a.m. December 6. (Tr. 520-18 through 22). During that prior shift, the miners in the 5655 roadheader stope were Mitch Woods and Rick McBride. Larry Cross was one of the shift bosses.

55. The workplace inspection form prepared by Mr. Woods on behalf of both himself and Mr. McBride for the December 5 - 6 shift did not report the presence of any hazards in the 5655 roadheader area, even though the form specifically contains blocks relating to hazardous conditions. Nothing unusual was noted on this form. (Con. Ex. 7; and Tr. 491-7 through 494-7; 846-4 through 847-13).

56. At the end of the shift on December 6, 1997, Mr. McBride completed a form used to monitor the roadheader cutting activity. Mr. McBride made numerous detailed entries on this form in his own handwriting. Mr. McBride, however, did not make any comments on the form that he was delayed during the shift by reason of investigating ground conditions in the 5655 roadheader stope. Mr. McBride did not make any comments on the form relating to ground conditions in the 5655 roadheader area even though the form contains an area reserved for such remarks, if applicable.

57. On December 5, 1997, Mr. Cross issued a three-day disciplinary layoff to Mr. McBride because of his second unexcused absence which occurred on December 4, 1997. (Con. Ex. 10; and Tr. 498-2 through 499-16).

58. Mr. McBride stated to Mr. Carrico that he thought that Larry Cross was ~~out~~ to get him. (Tr. 896-18 through 24). Mr. McBride also told Mr. Carrico (referring to Mr Cross): ~~L~~Larry, I hate that mother f----- and I don't mind telling anybody.

59. Mr. Hoch, MSHA's expert, acknowledged that the faults running through Carlin East were subtle and variable. (Tr. 159-2 through 160-18).

60. The conclusions reached by Messrs. Hoch and Evanto were based, in part, on their assumption that the Cavity Monitoring System (the ~~C~~CMS) used to measure the length, width, and depth of the December 6 ground fall also reflected the width of the 5655 access drift. This assumption was not correct. (Gov. Ex. 8, p. 4; and Tr. 63-14 through 64-11; Tr. 147-22 through 148-2).

61. The Leaky Fault caused the ground fall in the 5655 roadheader access drift by interfering with the transfer of stress in all directions as had been planned by Dr. Abel in his May 23, 1997, design.

62. Dr. Abel reached the following conclusions regarding the December 6 ground fall:

The planned 5655 Level overcut extraction sequence would have functioned as planned in the absence of the Leaky Fault for the following reasons:

1. The 5655 AXS drift remained stable during advance and retreat when temporary L8 pillar yielded because of the solid unmined waste to the south, west and north sides.

2. The ground fall was anomalous in that it occurred in the more competent Stls 2 geotech unit in the south end of 5655 AXS.
3. The modifications to the initial extraction sequence increased the R9 yield pillar factor of safety which should have increased overcut back stability.
4. The Leaky Fault dipped away from the 5655 Stope presenting a low strength weakness that did not provide a path for arch load transfer to the south.

63. David West testified as an expert witness on behalf of Newmont. Mr. West took issue with the analysis, findings, and conclusions set forth in the Hoch/Evanto report. Mr. West noted that the Hoch/Evanto Report analysis failed to consider the material strengths of the beam created by Dr. Abel's ground support design. Whether that beam fails is a function of how much stress the material will sustain. Using the example of the single sheet of paper, Mr. West noted:

If a stronger piece of paper, in this case, a piece of the card, which is more rigid, and as I increase the span, the bending or the deflection of the beam is not as great . . . .

64. Mr. West reviewed Dr. Abel's May 23 report and concluded that it was based on sound engineering and rock mechanic principles that are accepted throughout the industry.

65. Mr. West recognized that Dr. Abel's May 23 report presented a conservative design for the 5655 roadheader stope. (Tr. 346-11 through 12).

66. Mr. West reviewed Dr. Abel's post-mortem reports of the December 6 ground fall. Mr. West agreed with the analysis and conclusions reached by Dr. Abel. (Tr. 355-21 through 356-20).

67. Mr. West testified that his independent observations of the Leaky Fault in the Carlin East Mine indicate a high degree of variability and unpredictability. (Tr. 365-21 through 24).

68. Because of the variability and unpredictability of the Leaky Fault, the detection and prediction of the fault [is] extremely difficult. (Tr. 366-23 through 367-1).

69. Mr. Sutich was Newmont's Mine Superintendent for Carlin East. Mr. Sutich testified that after each ground fall in the Carlin East Mine, Newmont conducted an evaluation of the circumstances that led to the ground fall situation and Newmont modified its mining techniques and strengthened ground support in order to ensure that ground falls based on similar circumstances would not occur in the future. I credit Mr. Sutich's testimony.

70. The increased ground support measures taken by Newmont included using longer bolts (Tr. 917-5 through 14); using an increased number of bolts and using different types of bolts (Tr. 917-5 through 10); bringing in an expert, Dr. Abel, to provide design recommendations on mining

methods and ground support (Tr. 916-13 through 21); and even shutting down all production activities in the mine in order to install additional ground support at various sites throughout the mine, regardless of whether the site was showing signs that the existing ground support was not adequate.

### **CONCLUSION**

The Petitioner failed to demonstrate by a preponderance of the evidence that Respondent did not provide what a reasonable person, familiar with the mining industry and the protective purpose of the standard, would have provided in order to meet the protection intended by the standard. Thus the record, as a whole, does not establish a violation of the cited safety standard 30 C.F.R. ' 57.3360. The citation should be vacated.

### **ORDER**

Citation No. 7951941 and its related proposed penalty are **VACATED**.

August F. Cetti  
Administrative Law Judge

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