

FEDERAL MINE SAFETY AND HEALTH REVIEW COMMISSION

OFFICE OF ADMINISTRATIVE LAW JUDGES
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November 3, 1995

ROCK OF AGES CORPORATION, : CONTEST PROCEEDINGS
Contestant :
v. : Docket No. YORK 94-76-RM
: Citation No. 4282251; 5/20/94
SECRETARY OF LABOR, :
MINE SAFETY AND HEALTH : Docket No. YORK 94-77-RM
ADMINISTRATION (MSHA), : Order No. 4282252; 5/20/94
Respondent :
: Docket No. YORK 94-78-RM
: Order No. 4282253; 5/20/94
: :
: Docket No. YORK 94-79-RM
: Order No. 4282254; 5/20/94
: :
: Docket No. YORK 94-80-RM
: Order No. 4282255; 5/20/94
: :
: Docket No. YORK 94-81-RM
: Order No. 4282256; 5/20/94
: :
: Docket No. YORK 94-82-RM
: Order No. 4282257; 5/20/94
: :
: Docket No. YORK 94-83-RM
: Order No. 4282258; 5/20/94
: :
: Rock Of Ages Lite Side
: Mine ID 43-00024
: :
SECRETARY OF LABOR, : CIVIL PENALTY PROCEEDING
MINE SAFETY AND HEALTH :
ADMINISTRATION (MSHA), : Docket No. YORK 95-55-M
Petitioner : A.C. No. 43-00024-05518
v. :
: Rock of Ages Lite Side
ROCK OF AGES QUARRIES, INC., :
A/K/A ROCK OF AGES CORP., :
Respondent :

DECISION

Appearances: Henry Chajet, Esq., Patton Boggs, L.L.P.,
Washington,
D.C., and M.

Shane
Edgington,
Esq., Patton
Boggs, L.L.P.,
Denver,
Colorado, for
the
Contestant/Resp
ondent;

David L. Baskin, Esq., Office of the Solicitor,
U.S. Department of Labor, Boston, Massachusetts,
for the Respondent/Petitioner.

Before: Judge Feldman

These consolidated contest and civil penalty proceedings are before me as a result of a petition for civil penalty filed by the Secretary of Labor pursuant to section 105(d) of the Federal Mine Safety and Health Act of 1977 (the Act), 30 U.S.C. ' 801 *et seq.* These proceedings concern a 104(d)(1) citation and seven 104(d)(1) orders that were issued as a result of the Mine Safety and Health Administration's (MSHA's) accident investigation of the May 20, 1994, death of Michael Bassett, a Rock of Ages (ROA) quarryman. Bassett, a channel burner operator at ROA's Smith Quarry in Graniteville, Vermont, was killed when his torch ignited pyrodex blasting material.¹

Prior to the hearing, the Secretary moved to vacate Order Nos. 4282252, 4282253, 4282254 and 4282258. The petition seeks a total civil penalty of \$135,000 for remaining 104(d)(1) Citation No. 4282251 and 104(d)(1) Orders Nos. 4282255, 4282256 and 4282257.

The hearing was conducted from January 10 through January 13, 1995, in Boston, Massachusetts, and, from April 25 through April 28, 1995, in Montpelier, Vermont. On July 28 and October 19, 1995, ROA filed unopposed Motions to Correct a total of approximately 540 errors in the transcript of these proceedings. However, ROA has not alleged any significant substantive transcript errors in its post-trial brief. I find the transcript to be substantially accurate, particularly with respect to the transcript pages referenced in this decision.

¹ The Smith Quarry is a component of Rock of Ages' Lite Side Quarry which is the subject mine site in this proceeding.

Accordingly, ROA's Motions to Correct are granted with the exception of any requested corrections that are substantively inconsistent with the transcript pages discussed and cited herein.

ROA is a granite manufacturing company that is subject to the Act. ROA is a large operator in that it has approximately 300 employees and annually produces approximately 1.2 million cubic feet of granite. (Tr.II at 453-55; ROA Proposed Findings at p.2).² The parties' post-hearing briefs and replies are of record.

Statement of the Case

ROA's Smith Quarry is a solid massive granite formation where blocks of stone, called benches, are removed by quarrying in a downward, fairly cubicle fashion. Thus, the base of a quarried (removed) bench becomes the top of the bench to be quarried below. A typical bench is approximately 40 feet wide, 35 feet deep and 16 feet high.

Benches are separated by a channel burner operator who proceeds with a torch up one side of the bench, along the back, and then down the other side to create the bench. After channels are burned to separate the bench on the sides and in the rear, the bench is separated from the quarry floor by blasting material that is loaded into lift holes drilled every six inches along the base of the bench at its face.

Typical lift holes are 1-7/8 inches in diameter and approximately 32 feet long. When a lift (blast) is clean, the top half of the lift hole becomes part of the lifted bench, while the lower half of the hole remains at the surface at the top of the next bench to be quarried. If the lift is not clean, caprock may remain in place at the surface after the bench is removed with the lift hole intact and the possibility of explosives inside.

ROA routinely used a continuous charge of primacord or seismic cord as its lift hole blasting agent prior to 1993. Beginning in February 1993, ROA departed from its usual blasting procedure and substituted pyrodex bags for blasting cord in

² Transcript references are cited as "Tr.I" and ATr.II@ for the first and second phases of the trial, respectively.

several shots in February through July 1993. The pyrodex bags were separated at the front, middle and rear of the loaded lift holes without any connecting ignition or detonating agents. The blast procedure contemplated that the flame and heat from each of the pyrodex bags at the mouth (front or collar) of each loaded lift hole would ignite the center and rear bags in sequence.

On Friday, May 20, 1994, channel burner operator Bassett was killed when his torch ignited pyrodex concealed in caprock as a result of misfires that occurred in June 1993. Bassett had been burning a channel at the rear of the bench being quarried. Quarry operations were suspended immediately after Bassett's death, at which time the post-accident investigation revealed, in addition to the fatal charge, two bags of unexploded pyrodex within two feet of Bassett's torch path. Ultimately, MSHA determined there were a total of 22 bags of unexploded pyrodex in the vicinity of the previously quarried June 22, 1993, Adeath bench.@ A total of 40 unexploded pyrodex bags, including those found in the Adeath bench,@ were found in ROA's Adams and Smith Quarries which are in the Barre complex.

MSHA Inspector Edward Blow arrived at the Smith Quarry on the afternoon of May 20, 1994, to secure the scene and open the investigation. Steven Luzik, who is the Chief of MSHA's Engineering and Testing Division at the Technical Support Center in Tridelfphia, West Virginia, Supervisory Inspectors Donald Fowler and Michael Music, and Inspector Guy Constant conducted the accident investigation from Monday, May 23, 1994, through the closeout conference on June 29, 1994.

As a result of MSHA's accident investigation, the Secretary seeks to impose penalties on ROA for four alleged violations of mandatory safety standards in Subpart E of Part 56, 30 C.F.R. Part 56, which govern hazards associated with explosives. Namely, ROA was cited for an inadequate June 22, 1993, post-blast inspection in violation of 30 C.F.R. ' 56.6306(g); permitting

work other than work necessary to remove a misfire in the affected blast area in violation of 30 C.F.R. ' 56.6311(b); permitting an open flame within 50 feet of explosive material in violation of 30 C.F.R. ' 56.6904; and inadequately trained blasting personnel in violation of 30 C.F.R. ' 56.6300(a).

At the hearing the Secretary called Glenn Dean Barrett of the Hodgdon Powder Company, ROA's pyrodex supplier, and investigating officials Blow, Luzik, Fowler and Music. ROA relied upon the testimony of its Chief Engineer, Donald Murray, and ROA employees David Gomo, a channel burner operator, and Arnold Bolio, a front-end loader operator. ROA also called Dr. Chapman Young, a specialist in Geophysics and Material Science Engineering, as an expert witness. However, ROA did not call Earnest Batchelder, the derrick operator who found the critical four pyrodex misfires on or about July 1, 1993, Richard Bud Reynolds, the powderman who loaded those misfires, and Earl Kelty, the foreman who supervised Reynolds.

Background

ROA is a granite quarry manufacturing company with approximately 300 employees. The Smith Quarry, the site of the accident, is a solid massive formation in the Barre complex and has approximately 50 to 75 quarrymen. Quarrying proceeds in a fairly cubical fashion. The walls stay fairly straight. The quarry size remains relatively constant as the process proceeds downward, it does not taper. There are typically from five to seven levels of operation at the quarry. At these levels, a total of approximately a dozen benches (individual blocks of stone) are being worked at any given time.

The first step in the stone removal process is the channel burning operation. The channel burner operates the channel burning torch which creates thermal stresses causing the stone to break off. The channel burner proceeds up one side of the bench, along the back and then down the other side to create a channel, approximately six inches wide, on the sides and rear of the bench. Benches vary in size. A typical bench is approximately 40 feet wide, 35 feet in depth and 16 feet in height. (Ex. C-2). The channel burning process is completed in approximately 15 days.

After channel burning, lift holes are drilled at the base of the bench. The lift holes are about 1-7/8 inches in diameter, are drilled approximately six inches on center, and proceed from the base of the open face back into the bench, stopping about one foot from the channel in the back of the bench. The drill holes

are approximately one foot from the base of the quarry floor. The lift hole drilling process is completed by the 26th day of the bench quarrying process.

After the lift holes are drilled, a line of vertical holes are drilled every 5-2 feet in the top of the bench to create vertical slabs of stone. The vertical holes are drilled four inches apart and are drilled down to within a foot of the lift holes, but they do not intersect. The vertical drill holes eventually create slabs that are about 5-2 feet in width. The vertical holes are completed approximately 34 days into the process.

After all the holes are drilled, some, but not all, of the lift holes in the bench are loaded by the powderman and his assistant using various loading patterns. For example, every third or fourth lift hole may be loaded with explosives. With the exception of approximately seven pyrodex shots that occurred from February to July 1993, ROA used seismic cord which is continuous detonating cord placed in various lift holes connected by a trunk line ignited by blasting caps. Following the blast, the powderman, his assistant and the foreman go to the face of the bench to conduct an examination for a successful lift and to look for any evidence of a misfire.

In conducting a post-blast examination, the powdermen look for: (1) proper cracking from lift hole to lift hole; (2) signs of discoloration from blast residue on loaded holes; and (3) any indication of non-initiated blasting materials or other abnormalities. They also observe the top of the bench to see if the bench shifted in the blast. The blasting process is completed approximately 35 days into the process.

After blasting, the bench is quarried by separating slabs approximately 5-2 feet in width, by jack hammering a series of shims and wedges into the vertical holes in the top of the bench. The 5-2 foot slabs are then split from the bench by a front-end loader with a tipping boom used to topple each line down. As each line is toppled, fresh stone is exposed beneath and behind the line. The powdermen and quarrymen then examine this newly exposed stone in the same manner they examined the face.

The toppled slabs are split into smaller blocks 5'6" by 5'6" by the height of the bench. These smaller blocks are then transported by the front-end loader to an area underneath one of the derricks where the block is hoisted out of the quarry. The process of splitting off slabs and reducing the slabs to smaller blocks is repeated until the entire bench is quarried. During

this 10 to 12 day period following blasting during which the stone is removed, i.e., the post-blast inspection period, the quarrymen continue to examine the freshly exposed stone for misfires or other safety hazards. (See Tr.II at 15-16). The entire bench is removed approximately 10 to 12 days after the blast and 47 days after the initiation of channel burning work on the bench.

Findings of Fact and Conclusions

As noted above, ROA routinely used primacord or seismic cord as the blasting agent at the Smith Quarry. Seismic cord is unlikely to misfire if the blasting caps and trunk line ignite at the mouth of the loaded lift holes and detonate the cord because it is a continuous cord of blasting material. The greatest concern is the potential for a break in the seismic cord by a sharp piece of rock when the cord is unrolled and shoved into the lift hole. A break in the cord can usually be detected by the powderman because the cord would stop unrolling before it approached the rear of the bench. (Tr.I at 233).

The Hodgdon Powder Company is a manufacturer of pyrodex. Pyrodex is often referred to "as a replica of black powder" and is similar to black powder in ingredients. (Tr. I at 128). Black powder is a mixture of charcoal, sulfur and potassium nitrate. Pyrodex has all of the ingredients of black powder plus potassium perchlorate and binders and burning rate modifiers.

Pyrodex is a propellant explosive as contrasted with black powder which is a detonating explosive. A propellant explosive burns generating gas and energy. A detonating explosive generates gas and energy as well as shock energy through detonation. (Tr.I at 132). The Department of Transportation (DOT) classifies black powder as a Class A Explosive and pyrodex as a Class B Explosive. (Tr.I at 128).

In 1986, ROA was contacted by Glenn Dean Barrett, Vice-President of the Hodgdon Powder Company. Barrett encouraged ROA to use pyrodex as an alternative to seismic cord or other black powder blasting agents. Barrett stressed that pyrodex would have rock fracturing properties that were beneficial to the quarrying process because it could split dimensional stone without radial fracture. (Tr. I at 144). Barrett visited ROA's Adams, Smith, and Rock of Ages quarries, where he performed a total of four pyrodex test shots with Ernie Silly (phonetic) of the Rock of Ages Quarry, Jumbo Harris, foreman of the Adams Quarry, and an individual identified as "JR", foreman of the Smith Quarry. Barrett did not recall meeting Richard "Bud"

Reynolds or Earl Kelty, the powderman and foreman, respectively, who conducted pyrodex shots in 1993 at the Smith Quarry. (Tr.I at 136, 149).

Barrett testified that he stressed the need for stemming lift hole collars with paper or rags to ensure the holes were pressurized and gas tight. Pressurization would ensure proper lift because there would be no loss of gas energy. (Tr.I at 141, 147). Although the pyrodex bag placed at the mouth of the lift hole is ignited by an electric squib, pressure creating a flow channel is also essential to ignition of bags placed in the middle and rear of the lift holes as these bags are not connected by any fuse or other ignition device. (Tr.I at 142). Ultimately, ROA Quarry Superintendent Larry Beede informed Barrett that ROA was not interested in pyrodex because the stemming process required to pressurize the lift holes was too labor intensive. (Tr.I at 147-48).

Barrett participated in a subsequent pyrodex test shot at the Smith Quarry in 1987, at which time he also did not recall meeting Reynolds or Kelty. (Tr.I at 149). This shot was used to demonstrate a mechanical plug that addressed ROA's concerns about manual stemming. However, the test shot did not adequately split the rock. Consequently, Beede informed Barrett that ROA was no longer interested in using pyrodex. (Tr.I at 149-50).

In January 1993, Barrett was advised by Beede and Controller Paul Hutchins that ROA was interested in resuming their experimentation with pyrodex. (Tr.I at 150). Barrett sent ROA information concerning the proper pyrodex pre-blast, blasting and post-blasting procedures. The information addressed hole cleaning and testing, loading patterns, blast initiation and hygroscopicity (pyrodex's water absorption qualities that interferes with ignition).

With respect to his views on proper loading, at trial, Barrett was reluctant to admit that he had recommended that the pyrodex bags be spaced in the lift holes, claiming that bags were touching each other in the 1987 test shot. (Tr.I at 171-72). However, Barrett ultimately conceded on cross-examination that he believed pyrodex bags spaced throughout a 30 to 40 foot lift hole could be ignited by a single squib at the outermost bag, provided there were no obstructions in the lift hole. (Tr.I at 174-77, 186). In fact, Barrett stated he has not advised pyrodex users to cease spacing pyrodex bags in lift holes despite Bassett's fatality. (Tr.I at 176). Finally, Barrett's paper on "Splitting Granite Using Pyrodex" presented to the Society of Explosive Engineers in February 1987, and provided to ROA in January 1993, notes that "powder had to be placed in more than one section of

the hole." (Ex. R-4, at p.3) In summary, the evidence reflects Barrett's recommended blasting procedure involved the placement of separated pyrodex bags in pressurized lift holes that were unconnected by any detonating cord or other ignition device.

During the period February through July 1993, ROA used separated bags of pyrodex in several blasts at its Smith and Adams Quarries by using an electric squib to ignite the outermost bag in each loaded lift hole. (Tr.I at 593-94). ROA had been operating the quarry for over 90 years. (Tr.II at 458). However, these were the only production uses of pyrodex as a blasting agent. Consequently, ROA Chief Engineer Donald Murray, Engineer Doug Goldsmith and Foreman Kelty informed MSHA accident investigators Fowler and Constant that pyrodex blasting reports were kept because these pyrodex shots were experimental rather

than routine. (Tr.I at 564, 569, 593). The blasting reports detailed the bench's quarry section location and dimensions, and identified the loading pattern by identifying the lift hole loading pattern and the number and spacing of pyrodex bags in each loaded hole. (See Ex. R-7).

Although blasting reports were made for each pyrodex shot, ROA Chief Engineer Donald Murray claimed blasting reports for three pyrodex shots at the Smith Quarry could not be located. Murray has characterized these "missing report" pyrodex blast sites as "possible pyrodex shots" based on witness recollections, none of whom were called by ROA at the hearing. (Ex. C-10 at p.4; see also n.4, *infra*). The existing reports detail pyrodex shots on February 5, 1993 at the U-1 Section of the Smith Quarry, shots on May 7, May 10 (or May 12), and June 22, 1993, at the U-13 Section of the Smith Quarry (where Bassett was ultimately killed), and a shot on July 29, 1993, at the Adams Quarry. (Exs. R-7, R-24, Tr.II at 638-50).

The June 22, 1993, blasting report reflects that 80 lift holes, 37 feet in length, were drilled approximately 6 inches apart at the base of the bench's 42 foot face. (Ex. R-7). The report further reflects powderman Richard Bud Reynolds, under the supervision of Foreman Earl Kelty, loaded a total of 52 pounds of pyrodex in 84 bags by placing four bags in each of 21 holes. (Tr.I at 567-68). The four bags in each loaded hole consisted of one bag at the mouth of the hole, one bag in the center of the hole, and two bags at the rear. The rear bags were placed approximately 32 to 37 feet from the hole's mouth. The loading pattern was every fourth hole, *i.e.*, holes 1-4-8-12-16-20-24-28-32-36-40-44-48-52-56-60-64-68-72-76-80). (Exs. R-7, R-10; Tr.I at 569, 577-78).

Kelty and Reynolds examined the bench after the blast. They noted the bench was "tight in front" and that the "back lifted good." (Ex. R-7). Fowler testified that "tight in front" meant the bench did not separate or move as anticipated. (Tr.I at 582, 638). On or about July 1, 1993, approximately seven to ten days following the June 22, 1993, shot, derrick operator Earnest Batchelder found three or four bags of pyrodex that had shaken loose from blocks of granite lifted from the quarry floor. (Ex. C-10 at p.5). Batchelder did not observe any matches or detonators with the bags. (Ex. R-19). The pyrodex misfires were reported to Kelty. Foreman Kelty noted that "4 bags [of] powder did not go off" on the June 22, 1993, blasting report. (Ex. R-7; Tr.I at 579-80).

Murray testified for ROA that Kelty ordered Reynolds to

wash out the lift holes after Batchelder's find. However, on cross-examination, Murray admitted he did not know whether the holes were first washed in July 1993, after the bags were found by Batchelder, or after Bassett's fatality. (Tr.II at 544-45, 564-65). Inspector Fowler also testified on the extent of Kelty's efforts to find more misfires. Fowler testified he interviewed Kelty on June 1, 1994, shortly after Bassett's death, in the presence of Murray and ROA Engineer Doug Goldsmith. Fowler testified:

Q: Did you ask [Kelty] whether four bags of powder had been found?

A: Yes.

Q: And did he respond?

A: Yes, he did.

Q: What did he say?

A: He said yes, that he was aware of four bags that had been found.

Q: And what did you say to him then?

A: Well, the question was to Mr. Kelty is, if he was aware of four bags of explosives that was not detonated in the 6/22/93 shot, why didn't you follow up on those four bags, the bags that was (sic) not detonated.

Q: And did he respond?

A: He did.

Q: And what did he say?

A: He shrugged his shoulders and said, I forgot.

Q: And what did Mr. Goldsmith do at that point?

A: Dropped his pencil. He was sitting directly across from him. (Tr.I at 586-87).

Fowler also testified that Quarry Superintendent Larry Beede apparently was also aware, prior to Bassett's death, that pyrodex misfires had been found. (Tr.I at 601-04). Neither Kelty, Reynolds, Goldsmith nor Beede were called by ROA as witnesses. Murray testified but he did not rebut Fowler's testimony

concerning Fowler's June 1 Kelty interview. While the evidence concerning the washing of holes is equivocal, ROA presented no evidence of any significant efforts to find additional misfires, such as probing under caprock, following the discovery of the June 22, 1993, misfires. However, Murray testified ROA was able to find a total of 40 pyrodex misfires shortly after Bassett's May 20, 1994, death. (Tr.II at 526, 562).

The temperature of a channel burner torch is approximately 4,200 to 4,400 degrees Fahrenheit. (Tr.I at 208). The ignition temperature of pyrodex is between 750 and 800 degrees Fahrenheit. (Tr.I at 187). On May 22, 1994, Bassett was channel burning a bench in the U-13 Section. The bench was approximately 30 feet wide by 35 feet in depth by 18 feet in height. Channels had been cut on the east and west sides of the bench. The channel on the north (rear) side of the bench had been cut approximately 16 feet in length. At approximately 10:58 a.m. witnesses stated Bassett was thrown approximately 10 feet in the air and killed instantly when his channel burner apparently intersected pyrodex bags at the rear of the bench approximately 16 feet from the northwest corner. (Tr.I at 624, 625). ROA stipulated, for the purposes of these proceedings, "that its more likely than not that the cause of the fatality was ignition of Pyrodex bag(s) causing a fatal injury to Mr. Bassett." (Tr.I at 428). In any event, as noted below, Bassett's torch passed within two feet, but missed, two misfired bags of pyrodex just minutes before he was killed.

As indicated, MSHA Investigator Luzik determined Bassett's torch passed within two feet of two bags of unexploded pyrodex encapsulated in caprock only minutes before Bassett's torch tip came within one foot of the fatal explosive material. (Tr.I at 433-34, 541, 688). The proximity of the channel burned by Bassett to these unexploded bags is clearly depicted in photographs proffered by the Secretary. (See Ex. R5-C, R5-D, and R5-E). There were three unloaded holes between the fatal lift hole and the two misfired bags, as depicted in photograph R5-D. At trial, Luzik explained he arbitrarily labeled these lift holes as Hole Nos. 1 through 5 in photograph R5-D, with the fatal hole as Hole No. 1, intervening unloaded holes as Hole Nos. 2, 3 and 4, and, the hole containing the two misfires as Hole No. 5.³ (Tr.I at 455-56, 681). Luzik testified

³ ROA misstates Luzik's testimony that he found pyrodex in the fifth hole at the accident site. (ROA br. at p.14). The rear channel had been burned 16 feet when Bassett was killed. Luzik testified he arbitrarily labeled the fatal blast lift hole as Hole No. 1, followed by three intervening unloaded Hole Nos. 2, 3 and 4, and two misfires in the next loaded hole

the June 22, 1993, blasting report was the only report that corresponded to the three unloaded holes between every loaded hole loading pattern found at the death scene. (Tr.I at 688-89). The two bags found in the rear of the hole also conformed to the June 22, 1993, loading pattern. (Ex. R-7).

Further investigation of the fatal U-13 bench site revealed 14 additional bags of unexploded pyrodex comprised of two bags in the rear of each of seven lift holes. It is undisputed that several of the seven misfired holes had three unloaded holes between them entirely consistent with the June 22, 1993, loading pattern. (See Ex. R-10). These 14 misfires, when combined with the four misfires found by Batchelder, the two misfires discovered by Luzik near the explosion, and the two bags believed to have caused the explosion, resulted in a total of 22 misfires. Thus, the 22 misfires of the 84 pyrodex bags loaded in the June 22, 1993, shot represent a misfire rate of 26 percent.

Further Findings of Fact and Conclusions of Law

a. Pyrodex Misfires are Governed by Section 56, Subpart E

As a threshold matter, in an exercise in futility, ROA argues that pyrodex is not an explosive regulated by Part 56, Subpart E, because it is a propellant that ignites or deflagrates, as distinguished from blasting agents such as black powder, or seismic cord, that detonate. In this regard ROA relies on the definition of "misfire" in section 56.6000:

The complete or partial failure of explosive material to detonate as planned. The term also is used to

labeled Hole No. 5. This is the equivalent of Hole No. 16 being loaded, with intervening Holes Nos. 17, 18 and 19 unloaded, and Hole No. 20 the next loaded hole, which is consistent with the June 22, 1993, loading pattern.

describe the *explosive material* itself that has failed to detonate (emphasis added).

The plain language of the definition section of 56.6000 defines "an explosive" or "explosive material" as any substance classified as an explosive by the Department of Transportation (DOT) in DOT regulations 49 C.F.R. ' ' 173.53, 173.88 and 173.100. Section 173.88 of the DOT regulations defines liquid or solid propellant explosives that function by rapid combustion rather than detonation as Class B Explosives. Thus, it is indisputable that propellants such as pyrodex are "explosives" and "explosive material" under section 56.6000.

Regulations and statutes must be interpreted to harmonize rather than conflict with their intended purpose. See *Emery Mining Corp. v. Secretary of Labor*, 744 F.2d 1411, 1414 (10th Cir. 1984). Here, it is obvious the word "misfire" in section 56.6000 refers to any explosive material that has failed to perform and thereby remains hazardous. Consequently, this provision must reasonably be interpreted to include a misfire of any explosive that has failed to detonate or ignite. Thus, it is clear the 40 bags of unignited pyrodex found at the Smith and Adams Quarries immediately after Bassett's death are properly characterized as section 56.6000 misfires. Any other interpretation is ludicrous for it would exempt pyrodex misfires from Part 56 even though pyrodex is a Part 56 explosive.

b. The June 22, 1993, Blast Site
is the Site of the Fatality

The appearance of a quarry changes as benches are removed and quarrying progresses to lower levels. Therefore, ROA contends it is difficult to determine each location where pyrodex had been used and to correlate that location with a written shot report. (Ex. C-10 at p.3). Thus, ROA argues that the Secretary has not established that the June 22, 1993, pyrodex blast was the site of Bassett's fatal accident.⁴ While, as

⁴ ROA, in its brief, at p.3, n.6, citing Tr.II at 308-310, alleges it was denied due process because the Court placed the burden on ROA to demonstrate the June 22, 1993, pyrodex shot was not the site of the fatal accident. A fair reading of these transcript pages reflects that, given the overwhelming evidence presented by the Secretary demonstrating the June 22, 1993, pyrodex shot as the site of Bassett's fatality, the Court ruled the burden would shift to ROA to show where the accident occurred, particularly if ROA, despite its previous admissions, was now relying on purported blasting reports that no longer

discussed below, the Secretary has satisfied his burden of proof that June 22, 1993, misfires were the proximate cause of Bassett's death, resolution of this issue is not material to the disposition of important issues in this case, such as the adequacy of ROA's efforts to find and remove misfires. For if ROA had exercised reasonable prudence following the discovery of four misfires shortly after the last documented Section U-13 pyrodex shot on June 22, 1993, regardless of whether this blast was the site of Bassett's fatality one year later, at least 22 misfires would have been found. Discovery of these 22 misfires would have alerted ROA, given the potential use of torches in a virtual mine field, to thoroughly inspect the Smith and Adams Quarries for the additional 18 misfires that were found. In so doing, Bassett would probably be alive today.

Turning to the issue of the accident site location, the June 22, 1993, blasting report conclusively establishes that Bassett was killed by a June 22, 1993, misfire. At the outset, this conclusion is consistent with ROA's own initial accident investigation. (See R-8). However, in an effort to refute its own initial accident findings to minimize the significance of the discovered misfires, ROA now attempts to change the facts by portraying the plain meaning of the 1-4-8-12 loading pattern on the June 22, 1993, blasting report as indicative of a 1-4-8-12-15-19-23-27-30-etc., loading pattern (repeating the pattern of only two unloaded holes between Hole Nos. 1 and 4). (See Tr.I at 1050-1051, 1057).

ROA's interpretation of the June 22, 1993, loading pattern is frivolous because: (1) ROA's claim was rejected by Investigators Luzik, Fowler and Constant, who concluded, based on information provided by ROA, that the June 22, 1993, blasting report established loaded holes 16-20-24-etc., followed loaded hole 12 (see, e.g., Tr.II at 105-07); (2) ROA's purported irregular loading pattern of alternating configurations of two or three unloaded holes defeats the purpose of pyrodex's intended goal of creating even splitting and avoiding radial cracking; (3) ROA's claim of different numbers of unloaded holes at the same blast site is inconsistent with all other blast reports which show a constant number of unloaded holes between loaded holes at each pyrodex shot (Ex. R-7); (4) ROA's purported loading pattern as illustrated in Ex. R-10A results in Hole No. 75,

exist. It is fundamental that the burden to rebut shifts to the operator when the Secretary presents *prima facie* evidence.

rather than Hole No. 80, as the last loaded hole; and (5) ROA's alleged exculpatory loading pattern is belied by ROA's own May 25, 1994, initial accident report wherein it concluded that, "[the fatal] undetonated explosive material must have been remaining from [the] lift blast conducted in June of 1993" (Ex R-8, p.2).

As if this were not enough, the 14 bags found at the rear of seven different lift holes at the "death bench" included several loaded holes separated by three unloaded holes, which is entirely consistent with the June 22, 1993, loading pattern and inconsistent with all other blasting reports. (See Ex. R-10; See also n.4, *supra*). In this regard, Murray could not explain why Kelty, who supervised the loading of the June 22, 1993, blast site, would draw the diagram, admitted as Ex. R-10, reflecting a June 22 loading pattern of every forth hole at the fatal accident site.⁵ (See Ex. R-10; Tr.II 663-66). Thus, the purported loading pattern advanced by ROA at trial is insupportable as it is inconsistent with all of the information and documentation concerning the June 22, 1993, loading pattern provided to MSHA officials by ROA during the course of the accident investigation.

ROA's assertion that the pressure of the explosion in each lift hole makes it difficult to determine the original location of misfired bags found at the rear of lift holes is unconvincing.

Since the pyrodex bags are spaced to ignite in sequence in extremely small lift holes approximately 1-7/8 inches in diameter, bags found at the rear of holes must have been loaded the furthest distance from the mouth of the lift hole. Therefore, the sets of two bags found at the rear of eight lift holes at the accident site (seven lift holes plus the presumed ignition of two bags at the blast lift hole) are consistent with the June 22, 1993, loading pattern.

⁵ Ex. R-10 is a diagram prepared by Kelty depicting the accident bench as the June 22, 1993, blast site showing the location of the 14 misfired pyrodex bags and a loading pattern of every fourth hole corresponding to "[the] holes loaded in 6/93."

This diagram was given to Inspector Fowler by ROA Engineer Goldsmith who obtained it from Murray. (Tr.I at 827-28). This exhibit was marked for identification on January 12, 1995, at which time ROA's counsel requested postponement of admission until Murray could authenticate the document. (Tr.I at 829-30).

Murray authenticated the exhibit on April 27, 1995. (Tr.II 656-57, 663-66). However, Ex. R-10 was never formally admitted.

ROA's contention that the bags discovered by Batchelder were in intact lift holes indicating underbreak (lift with intact lift holes) that was not present at the accident site is equally unconvincing. Luzik's accident scene photographs depict pyrodex concealed under caprock. Given the 40 misfires found after the fatal accident, it is apparent that many of the misfires remained in intact lift holes on the surface. ROA's assertion that the entire June 22, 1993, bench lifted with intact lift holes is speculative and unsupported by the facts.

Finally, an admission is any oral or written statement, or conduct, of a party, or his representative, which is inconsistent with respect to the claim of that party with respect to some fact relevant to the issues at trial. Jerome Prince, *Richardson On Evidence*, ' 218 (10th ed. 1973). Admissions are entitled to great weight if they were made understandably and deliberately; if they are of pure fact within the knowledge of the party; if they were made under conditions and circumstances conducive to veracity; and if they are not overborne by other facts in evidence. *Id.* at ' 229.

ROA's May 25, 1994, accident report finding that Bassett's fatality occurred at the site of the June 22, 1993, misfires is a probative admission worthy of great weight. This finding was based on ROA's own blasting reports as well as facts personally known to ROA blasting personnel. This finding is presumptively truthful because ROA would have no reason to lie given this admission's damaging nature. As a final matter, this admission is supported by the accident investigators' observations of the two misfires near Bassett's body as well as the 14 additional misfires subsequently found by ROA nearby in seven lift holes.

ROA now seeks to distance itself from the admissions made in its initial May 25, 1994, accident report. Thus, ROA has issued a Revised February 17, 1995, accident report in which ROA attempts to move the fatal accident site from the June 22, 1993, blast location to some other unspecified location in the U-13 section of the Smith Quarry, based on blasting reports that no longer exist for "possible pyrodex shots" that might have occurred. (Ex. C-10). ROA's revised accident report is self-serving, speculative, undocumented, and of little probative value. (See Exs. R-8, C-10 at p.4; and n.4, *supra*). It is also noteworthy this revised accident report was first provided to MSHA on February 27, 1995, more than one month after the initial trial phase in these proceedings. (Tr. 561-62).

While I am mindful that MSHA's investigation revealed the accident bench is 10 feet shorter in width than the June 22, 1993, bench, the accident bench is only two feet shorter,

35 feet as compared to 37 feet, in depth. (Tr.I at 685-87). With respect to the relatively small difference in depth, Murray conceded on cross-examination the dimensions of benches change slightly with depth. (See Ex. R-6, p.3; Tr.II at 566). With respect to the 10 foot variation in width, it must be noted that the MSHA investigators had no reason to take precise measurements as ROA officials Kelty, Murray, and Goldsmith, as well as union representative Price Lewis, had all agreed the fatal site was the June 22, 1993, blast. (See, e.g., Tr.I at 816-19). Therefore, the apparent variation in bench width is far outweighed by the other evidence of record. Thus, the Secretary has established the June 22, 1993, blast site was the scene of Bassett's May 20, 1994, fatality. (See Ex. R-8, p.2).

c. The Applicable Significant and Substantial and Unwarrantable Failure Standards

A violation is properly designated as significant and substantial if there is ~~A~~ a reasonable likelihood that the hazard contributed to will result in an event in which there is [a serious] injury.@ *U.S. Steel Mining Co.*, 6 FMSHRC 1834, 1836 (August 1984). In addressing the significant and substantial question, the Commission has noted the likelihood of injury must be evaluated in the context of an individual's continued exposure during the course of continued normal mining operations to the hazard created by the violation. *Halfway, Inc.*, 8 FMSHRC 8, 12 (August 1986); *U.S. Steel Mining Co.*, 7 FMSHRC 1125, 1130 (August 1985); *U.S. Steel Mining Company*, 6 FMSHRC 1573, 1574 (July 1984).

Here, continued normal mining operations involved the routine channel burning process. It is evident, as illustrated by the tragic events of this case, that the hazard contributed to by the alleged violations, *i.e.*, a flame in close proximity to misfires, resulted in a fatal event, *i.e.*, an explosion. Consequently, the alleged violations in these proceedings, if established by the Secretary, were properly characterized as significant and substantial in nature.

Unwarrantable failure is "aggravated conduct, constituting more than ordinary negligence, by a mine operator in relation to a violation of the Act." *Emery Mining Corporation*, 9 FMSHRC 1997 (December 1987); *Youghioghney & Ohio Coal Company*, 9 FMSHRC 2007 (December 1987); *Secretary of Labor v. Rushton Mining Company*, 10 FMSHRC 249 (March 1988). In distinguishing aggravated conduct from ordinary negligence, in *Youghioghney & Ohio* the Commission stated:

We stated that whereas [ordinary] negligence is conduct that is >inadvertent,= >thoughtless,= or >inattentive,= unwarrantable conduct is conduct that is described as >not justifiable= or >inexcusable.= Only by construing unwarrantable failure by a mine operator as aggravated conduct constituting more than ordinary negligence, do unwarrantable failure sanctions assume their intended distinct place in the Act's enforcement scheme.
9 FMSHRC at 2010.

Ultimate Findings and Conclusions

In addressing the matters in issue, there is one relevant and crucial fact concerning the quarry process. Blasting material is always placed in or near the first and last lift hole, as well as near the rear of all loaded lift holes, to ensure separation of the bench from the granite formation. The channel burner operator tracks the placement of the previously positioned blasting material when he torches the sides and rear of the next lower bench. Consequently, it is of paramount importance to make every reasonable effort to discover and remove all potential misfires in order to minimize, if not avoid, the catastrophic events that occurred in this case. If the likelihood of misfired pyrodex was apparent, but overlooked or ignored, the Secretary must prevail.

ROA, in its brief, argues that negligence is not relevant to the question of fact of the violation. Therefore, ROA asserts **A**substantial errors of law[@] were committed when the Court stated at trial that a fundamental issue in these proceedings was whether ROA knew or should have known misfires were present at the accident site.⁶ (ROA br. at p.8, n.2). ROA misses the

⁶ ROA also contends the Court interfered with its right to present its case because the Court refused to allow **A**relevant cross-examination intended to rebut MSHA's case.[@] (ROA br. at p.8, n.2). While the extensive eight day transcript in this proceeding reflects ROA was given every opportunity to present its case, this allegation must be briefly addressed. As stated

point. Although operators are strictly liable for their violative conduct, the requisite precautions necessary to satisfy the mandatory safety standards pertaining to post-blast hazards are dependent upon whether there were any signs of potential misfires at the blast site. ROA's apparent failure to take any meaningful action to find additional misfires after four misfires were discovered is material to the fact of occurrence of each of the cited standards, *i.e.*, inadequate examination for misfires, resumption of work in a blast site, open flames near explosive material, and, inadequate training.

a. Citation No. 4282251
30 C.F.R. ' 56.6311(b)

As a result of MSHA's accident investigation, ROA was issued 104(d)(1) Citation No. 4282251 for an alleged violation of the mandatory safety standard in section 56.6311(b), 30 C.F.R. ' 56.6311(b). Section 56.6311 provides:

' **56.6311 Handling of misfires**

(a) Faces and muck piles shall be examined for misfires after each blasting operation.

(b) Only work necessary to remove a misfire and protect the safety of miners engaged in the removal shall be

on the record, ROA's right to present its case must be balanced by the Court's responsibility to regulate the course of the hearing under Commission Rule 55, 29 C.F.R. ' 2700.55, in order to ensure a fair and accurate record. (See Tr.I at 970-75; see also Tr.I at 963, Tr.II at 247). In this regard, the Court stated, although it "repeatedly permitted the [contestant] to pursue lines of questioning [it] deem[ed] to be irrelevant, there comes a time when the Court must limit the cross-examination to issues that are pertinent to this proceeding.@ (Tr.I at 972-73).

permitted in the affected area until the misfire is disposed of in a safe manner.

(c) When a misfire cannot be disposed of safely, each approach to the area affected by the misfire shall be posted with a warning sign at a conspicuous location to prohibit entry, and the condition shall be reported immediately to mine management.

(d) Misfires occurring during the shift shall be reported to mine management not later than the end of the shift.

ROA argues that it properly disposed of the four misfired bags of pyrodex found by Batchelder and noted by Kelty on the June 22, 1993, blasting report. Consequently, ROA asserts the Secretary has failed to demonstrate a violation of this cited mandatory standard. However, this mandatory standard, when read in its entirety and in conjunction with subsection (a), requires adequate post-blast inspection procedures for the purpose of finding and disposing of misfires. Surely, a perfunctory post-blast inspection that results in the discovery and proper disposal of one misfire, while overlooking numerous other misfires, would not satisfy this mandatory safety standard.

In applying the provisions of section 56.6311, it is important to note the Commission has recognized that mandatory safety standards must be broadly adaptable to a myriad of circumstances. *Kerr McGee Corp.*, 3 FMSHRC 2496, 2497 (November 1981). Consequently, resolution of the fact of occurrence issue requires an analysis of whether an adequate post-blast granite quarry inspection occurred. Thus, the adequacy of ROA's efforts to find and remove misfires at the June 22, 1993, shot must be viewed in the context of distinguishing granite quarry operations from blasts at muck piles or blasts for the purpose of extracting crushed stone. (Tr.II at 15-16).

ROA's assertion that the plain meaning of section 56.6306(g) "clearly requires a single post blast examination" for granite quarry operations is mindless, and, inconsistent with ROA's proposed findings and conclusions. (ROA br. at 19). Granite quarrying involves the removal, during an approximate ten day period, of multi-ton benches with potential explosives concealed in the middle and rear of lift holes. Even ROA, in its findings and conclusions, admits the post-blast inspection period consists of a series of examinations by powdermen and quarrymen for misfires, just as they examined the face, as new stone is

exposed after each line in the bench is toppled and removed during the ten day bench removal period. (See ROA Proposed Findings at p.4, Finding Nos. 24, 30, and 31; Tr.II at 15-16). Thus, Batchelder's discovery, seven to ten days after the June 22, 1993, shot, when the face of the bench was retreating as each slab line was toppled by the front-end loader and hoisted by the derrick operator, occurred during the post-blast inspection period.

Having determined ROA had an obligation to seek and remove misfires throughout the bench removal process, we turn to the dispositive question of whether ROA knew or should have known, through the exercise of reasonable prudence, of the undisputed systematic incomplete ignition (40 unexploded bags) of its non-routine, experimental pyrodex shots performed from February through July 1993.⁷ Assuming, *arguendo*, that ROA had no cause for concern after viewing and examining the pyrodex blasted benches prior to Batchelder's discovery, ROA certainly was on notice one week after the June 22, 1993, blast when four pyrodex misfires were noted by Kelty.

To determine the significance of these four misfires, it is helpful to revisit the pyrodex blasting procedures. These procedures called for sequential ignition of spaced bags of pyrodex, without any connecting ignition sources, from bags with electric squibs placed in the mouth of lift holes. Batchelder, in a written statement, reported he did not find any electric matches or squibs in the bags he discovered during the removal of the June 22, 1993, bench. Thus, it is reasonable to assume that these bags were not front lift hole bags. Therefore, they could have come from the center of the hole if they were from four separate holes. This would reflect eight additional misfires (two bags in the rear of each of these four holes). Alternatively, the four discovered bags could have come from the rear of two holes. The failure of these two pair of rear bags to be ignited by the middle bags should have alerted a

⁷ ROA objects to the characterization of these five documented (by blasting reports) pyrodex shots as non-routine or experimental. However, these blasts are the only documented production uses of pyrodex by ROA in its 90 year history. (See Tr.I at 592-94).

reasonably prudent person familiar with pyrodex blasting of a potential for systematic failure of rear bag ignition as well as a possible failure of middle bag ignition.

Thus, it is clear that the discovery of four pyrodex misfires either ensured the existence of additional misfires, or, at the very least, was a significant indication of the potential for a systematic failure of rear bag ignition. With respect to washing of lift holes, ROA failed to call Kelty or Reynolds to testify regarding whether they had washed down the lift holes. In any event, even ROA expert witness Chapman Young opined that washing holes after bags had been found is not an adequate response when misfires are suspected but the exact location of the misfires is unknown. In such instances, Young stated it is prudent to "probe [the holes] in some fashion to investigate them" if the misfire locations are unknown. (Tr.II 972-73).

In the absence of any meaningful efforts to search for and remove additional misfires prior to Bassett's death, ROA failed to perform the "work necessary to remove misfires" as required by section 56.6311(b). The Secretary, therefore, has established the fact of occurrence of the cited significant and substantial violation.

With respect to the question of unwarrantable failure, it is important to note any potential misfires would not harmlessly remain under tons of rock. On the contrary, these misfires would be exposed on the surface as the bench is removed.

Significantly, 40 misfired bags were found after Bassett's death. Kelty's failure to take any meaningful action to probe caprock in search of the apparent likelihood of additional misfires, particularly in view of the channel burning quarrying process, evidenced a callous disregard for the hazards associated with misfires in the presence torch flames. Such conduct is imputable to ROA and clearly constitutes the requisite aggravated conduct to sustain the Secretary's unwarrantable failure charge.

See Rochester & Pittsburgh Coal Co., 13 FMSHRC 189, 194-98 (February 1991).

Finally, ROA's attempt to mitigate its negligence by asserting Bassett did not adequately clean and check the vicinity of the accident prior to channel burning is unavailing. (See, e.g., Tr.II at 893-94). In this regard, the Commission has stated that a requirement that employees work cautiously does not lessen the responsibility of operators under the Mine Act, to prevent unsafe conditions. @ *Eagle Nest Incorporated*, 14 FMSHRC 1119 (July 1992).

Accordingly, 104(d)(1) Citation No. 4282251 is affirmed. Given the large size of the operator, the extremely high degree of negligence, the grave consequences of the violation, and, the absence of any significant mitigating factors, the maximum civil penalty of \$50,000 is assessed for Citation No. 4282251.

b. Order No. 4282255
30 C.F.R. ' 56.6306(b)

The accident investigation resulted in the issuance of 104(d)(1) Order No. 4282255 for an alleged significant and substantial violation of section 56.6306(g), 30 C.F.R. ' 56.6306(g). The effective date of this mandatory standard was January 31, 1994. 58 Fed. Reg. 69596 (1993). Section 56.6306(g) provides:

' **56.6306 Loading and blasting**

* * * * *

(g) *No work shall resume in the blast area until a post-blast examination addressing potential blast-related hazards has been conducted by a person having abilities and experience that fully qualify the person to perform the duty assigned (emphasis added).*

The violation of section 56.6311 for failing to adequately perform a post-blast inspection and remove misfires is distinguishable from a violation of 56.6306(g). Section 56.6311 concerns creating a hazardous condition by failing to adequately search for and remove misfires. Section 56.6306(g) concerns exposing personnel to the hazardous condition created by the violation of 56.6311. Bassett would not have died had he not resumed work on May 20, 1994, at the June 22, 1993, U-13 blast site.

ROA argues that Order No. 4282255 must be vacated because it is an impermissible retroactive application of a standard that became effective at least seven months after ROA's last pyrodex shot in July 1993. In response, the Secretary asserts the cited violation occurred on May 20, 1994, when Bassett was assigned to continue channel burning operations in the absence of an adequate post-blast examination that addressed potential blasting hazards.

The essence of ROA's contention is that the resumption of work prohibition in potentially unsafe blasting areas does not apply to areas that were blasted prior to January, 31, 1994, the

effective date of section 56.6306. The limited applicability of this important mandatory standard would result in the anomalous situation where a channel burner operator's life could be put at risk with impunity simply because of the date of the hazardous misfire. Such an interpretation cannot be reconciled with the intent of the mandatory safety standard.

In addition, ROA argues that it already resumed work at the blast site when it continued to quarry the June 22, 1993, bench. However, the concept of resumption of work is a continuing process. An operator cannot escape liability under section 56.6306(g) simply because it "resumed work" prior to the implementation of this standard.

Nor is ROA prejudiced by the obligation to ensure a safe workplace, particularly one in which torches are used near potential misfires. Rather, ROA is responsible for knowing about and implementing this mandatory safety precaution as of its effective date on January 31, 1994. Thus, when ROA assigned Bassett to channel burn on May 20, 1994, it did so at its own risk. Accordingly, 104(d)(1) Order No. 4282255 is affirmed. In view of the extremely high negligence and serious gravity associated with this violation as discussed above, a civil penalty of \$40,000 is imposed for violation of this mandatory safety standard.

c. Order No. 4282256
30 C.F.R. ' 56.6904

As a result of Bassett's fatality, ROA was cited for violation of section 56.6904, 30 C.F.R. ' 56.6904. This safety standard provides:

' **56.6904 Smoke and open flames**

Smoking and use of open flames shall not be permitted within 50 feet of explosive material except when separated by permanent noncombustible barriers. This standard does not apply to devices designed to ignite safety fuse or to heating devices which do not create a fire or explosion hazard.

ROA argues the application of this standard requires actual knowledge of both the location and existence of explosive material. (ROA br. at 26) It is clear this mandatory standard requires actual knowledge of the location of the explosive material because it prohibits conduct, i.e., use of an open flame, within a defined 50 foot area. It is also clear that ROA

had actual knowledge of the exact location of the pyrodex explosive material by lift hole number, and placement location within each loaded lift hole. In fact, ROA's blasting reports were "road maps" documenting the location of each pyrodex bag.

Finally, it is evident that ROA had actual knowledge that the channel burner operator would be burning in close proximity to the area where pyrodex bags had been placed at the rear of lift holes. In fact, ROA's own witness, channel burner operator David Gomo, admitted the greatest danger is channel burning the rear channel, which intersects the previously loaded lift holes, because pyrodex bags were always placed near the back of these holes to ensure bench separation in the rear. (Tr.II at 832-34).

Having actual knowledge of the placement of this explosive material and the fact that a torch flame would ultimately be used within several feet of its placement, ROA now seeks to escape liability because it ignored the signs of a potential systematic ignition failure in the rear of the lift holes. However, the misfires, discovered by Batchelder and noted by Kelty, provided ROA with constructive knowledge of the likelihood of the continued existence of the loaded explosive material. Thus, ROA's actual knowledge of the location of the subject explosives and the use of torch flames nearby, coupled with its constructive knowledge of the explosive's continued existence provides a basis for liability under section 56.6904.

Simply put, having closed its eyes to this potentially extremely hazardous condition, ROA cannot hide behind its lack of awareness. Accordingly, Order No. 4282256 is affirmed. The extremely high negligence and serious gravity associated with this violation warrants the imposition of a \$40,000 civil penalty.

d. Order No. 4282257
30 C.F.R. ' 56.6300(a)

Finally, ROA was cited for a violation of the mandatory standard in section 56.6300(a), 30 C.F.R. ' 56.6300(a), which provides:

' **56.6300(a) Control of blasting operations**

(a) Only persons trained and experienced in the handling and use of explosive material shall direct *blasting operations and related activities*.

(b) Trainees and inexperienced persons shall work only in the immediate presence of persons trained and experienced in the handling and use of explosive material (emphasis added).

As a threshold matter, ROA seeks to have it both ways. On the one hand, ROA argues that propellant explosives such as pyrodex should not be governed by Part 56 because they are different from detonating explosives. On the other hand, ROA asserts Kelty and Reynolds' experience with detonating explosives qualifies them to use propellant explosives. Obviously, the "inexperienced in the handling and use of explosive material" language contained in section 56.6000(a) must not be broadly construed. Rather, the standard requires blasting personnel to be trained and experienced in the particular explosive being used. One need look no further than ROA's 26 percent June 22, 1993, misfire rate to conclude that Kelty and Reynolds were not properly trained in the use of pyrodex.

Significantly, in addition to requiring expertise in blasting operations, the 56.6000(a) standard also requires training in "related activities" such as post-blast inspections and misfire removal. Kelty's failure to take any meaningful action to determine if other misfires occurred after the four bags were found by Batchelder, given the sequential ignition process, alone establishes inadequate training in "related" post-blast activities. Consequently, the evidence clearly supports the fact of occurrence of a significant and substantial violation of the cited mandatory safety standard.

With respect to whether this training violation is attributable to ROA's unwarrantable failure, ROA blames its numerous misfires on the instructions provided to it by Barrett of the Hodgdon Powder Company during his four test shots in 1986 and one test shot in 1987. For example, ROA geophysics expert, Chapman Young, maintains Barrett's spaced loading procedure was flawed because microscopic moisture in a lift hole would prevent sequential ignition. Consequently, ROA argues Barrett did not adequately warn it about the effects of moisture on the ignition process. In contrast, Barrett attributes the systematic ignition failure to ROA's improper use of stemming to pressurize the holes.

Resolution of whether Barrett's pyrodex loading procedure was flawed is unnecessary for disposition of the unwarrantable failure issue. Regardless of the efficacy of Barrett's instructions, there is evidence that Barrett's instructions were

not followed. Inspector Fowler testified that he questioned both Kelty and Reynolds in the presence of Murray about whether the June 22, 1993, lift holes were pressurized. Neither Kelty nor Reynolds recalled pressurizing the holes. (Tr.I at 588-89).

Moreover, it is not clear whether Kelty or Reynolds were trained by Barrett. Barrett did not recall ever meeting them. Neither Kelty nor Reynolds testified. What is clear is that ROA personnel received no meaningful training in the use of pyrodex during the approximate six year period between Barrett's last 1987 test shot and ROA's use of pyrodex beginning in February 1993. ROA seeks to minimize this six year hiatus in pyrodex training as unnecessary "refresher training." (Tr.II at 346; ROA br. at p.15). I view this six year lack of interim training as evidence of an inexcusable and cavalier use of pyrodex explosives by inexperienced and inadequately trained individuals.

Finally, Kelty's failure to order any meaningful searches for additional misfires after four pyrodex bags were found during the bench removal process, given the separated charge sequential ignition blasting procedure, is further evidence of a grievous lack of training justifying the Secretary's unwarrantable failure charge. Significantly, despite the efficacy of Barrett's loading procedure, Bassett's death could have been prevented if post-blast inspection procedures had been competently conducted. Accordingly, 104(d)(1) Order No. 4282257 is affirmed. The extremely high negligence exhibited by ROA's failure to properly train its blasting personnel in the use of pyrodex and the significance of sequential misfires, as well as the serious gravity that resulted from this lack of training, justifies the imposition of the maximum statutory civil penalty of \$50,000.

ORDER

In view of the above, the Secretary's motion to vacate 104(d)(1) Order Nos. 4282252, 4282253, 4282254 and 4282258 **IS GRANTED**. Consequently, Rock of Age's contests in related Docket Nos. YORK 94-77-RM, YORK 94-78-RM, YORK 94-79-RM and YORK 94-83-RM, **ARE GRANTED**.

IT IS ORDERED that 104(d)(1) Citation No. 4282251, and, 104(d)(1) Order Nos. 4282255, 4282256 and 4282257 **ARE AFFIRMED**. Consequently, Rock of Ages Corporation's contests in related Docket Nos. YORK 94-76-RM, YORK 94-80-RM, YORK 94-81-RM and YORK 94-82-RM, **ARE DENIED**.

IT IS FURTHER ORDERED that Rock of Ages Corporation pay a total civil penalty of \$180,000 within 30 days of the date of this decision in satisfaction of the 104(d)(1) Citation and Orders affirmed herein. Upon timely receipt of payment, the civil penalty matter in Docket No. York 95-55-M **IS DISMISSED**.

Jerold Feldman
Administrative Law Judge

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