MAI-2011-08

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Underground Metal Mine
(Gold Ore)

Fatal Explosives Accident
September 7, 2011

Kensington Mine
Coeur Alaska, Inc.
Juneau, Juneau County, Alaska
Mine ID No. 50-01544

Investigators

Joel L. Dozier
Mine Safety and Health Inspector

Kenneth C. Poulson
Mine Safety and Health Inspector

Thomas E. Lobb
Physical Scientist, Explosives and Blasting

John Kathmann
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
Western District
991 Nut Tree Road
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DIAMOND DRILL HOLE

OVERVIEW

On September 7, 2011, Joseph L. Tagaban, blaster's helper, age 30, was killed when he was struck by rock and debris after a production blast was initiated. The rock and debris passed through a 3-inch diameter diamond drill hole that intersected the blast site. Tagaban was standing next to a tractor positioned on the uphill side of a haulage ramp near the 1290 crosscut. He was approximately 200 feet from the blast site and in line with the drill hole when the blast was initiated.

The accident occurred because management policies, procedures, and controls were inadequate and did not protect persons from flying materials near the blast area. An old diamond drill hole, that intersected the blast pattern, had not been identified prior to initiating the blast. An adequate examination to check the area for hazards or to identify the diamond drill hole was not conducted prior to initiating the blast. Persons were not trained to be out of the blast area or in a location that would protect them from concussion, flying material, or gases. The blaster and blaster's helper were not provided with a blasting shelter or removed from the blast area to protect them from concussion and flying material.

GENERAL INFORMATION

Kensington Mine, an underground gold ore mine operated by Coeur Alaska, Inc., is located 45 miles north of Juneau, Juneau County, Alaska. The mine is owned by Coeur d'Alene Mines Corporation. The principal operating official is John Kinyon, General Manager. The mine operates two 12-hour shifts per day, seven days per week. Total employment is 214 persons.

Gold bearing ore is drilled, blasted, and loaded into haul trucks using LHD (Load Haul Dump) loaders. The broken rock is hauled to the surface and processed through a mill. The concentrate is shipped for further refining to be sold to commercial industries.

The last regular inspection at this mine was completed on July 7, 2011.

DESCRIPTION OF THE ACCIDENT

Joseph L. Tagaban (victim), and Kasey Clark, blaster, started their shift at 7:00 p.m. on September 6, 2011. Nathan Hill, shift supervisor, assigned work duties for the shift. Tagaban and Clark traveled to the 1290 drift level at approximately 8:30 p.m. to load the 1260-261 production round. They finished loading about 11:30 p.m. and went to the #910 drill. The drill was not working so they shut it down for the remainder of the shift.

They traveled to the #705 stope to help another blasting crew load a round. After loading, they went to the #630 stope to load a round. Clark and Tagaban went to the 900 refuge chamber where the blasting crew met before initiating a blast. The other miners left the mine. The blasting crew waited for Nathan Hill, shift supervisor, to give the signal that the miners were out of the mine.

Clark and Tagaban went to the 1290 drift to shoot the 1260-261 production round. Tagaban dropped Clark off in the 1290 drift and took the tractor to the uphill side of the haulage ramp. Clark picked up the i-kon ™ Logger and messenger wire and took them to the tractor. The tractor was shut off while Clark and Tagaban discussed the blasting procedures. The i-kon™ Logger was connected to the blaster. The i-kon™ Logger was programmed and the round was initiated at approximately 6:50 a.m.

Immediately after the blast, Clark saw Tagaban lying on the ground. He called Hill on the mine phone and stated they had an emergency. The mine rescue team and emergency medical personnel arrived. Tagaban was pronounced dead at 7:17 a.m. The cause of death was blunt force trauma.

INVESTIGATION OF THE ACCIDENT

On the day of the accident, the Mine Safety and Health Administration (MSHA) was notified of the accident 7:39 a.m. by a phone call to MSHA's National Call Center. James Fitch, safety specialist, was then notified of the accident and an investigation was started that same day. To ensure the safety of all persons, an order was issued under the provisions of section 103(j) of the Mine Act. This order was later modified to section 103(k) of the Mine Act after the arrival of an Authorized Representative to the mine site.

MSHA's accident investigation team traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees and the Juneau Police Department.

DISCUSSION

Location of the Accident

The accident occurred at the intersection of the 1290 level stope and haulage ramp. A production blast was initiated in the 1260-261 stope. The haulage ramps are 16 feet wide by 16 feet high. The stopes or working headings are 15 feet wide by 15 feet high. The area is mostly dry with a small amount of water run off.

Mining

Prior to blasting, management provided the blaster with a computer generated map of the blast site showing the drill holes that could possibly intersect the blast site. The K-364-91 drill hole was not indicated on the map to intersect the 1260-261 stope. The production blast for 1260-261 stope used a "long-hole ring" (blasting term for a single row of blast holes drilled upward in a fan shaped orientation) computer designed blast layout.

This blast pattern was drilled and loaded from the 1290 level. The three long-hole rings, detonated in this blast, were drilled as per the computer designed locations. Each ring was laid out parallel to the adjoining rings (perpendicular to the stope) and consisted of a series of blast holes drilled out radially as in a fan design from the 1290 level. The 30 blast holes (three rings) involved in this accident functioned as designed by the computer program, except for the venting of the gas pressures through the K-364-91 diamond drill hole.

Explosive Product Involved in the Accident:

ANFO (Ammonium Nitrate Fuel Oil) – Alaska Pacific Powder Company Blasting Agent 1.5D, 27MY11
Powder – "Austin." EMULEX 1 ½ X 16 inch emulsion based 1.1D explosive 08AU11Y1

Explosive Boosters – Orica 450 gr. cast boosters 1.1D
Detonation Cord – DYNO Primacord (18 gr/ft), UN0065 1.1D
Detonators – Orica i-kon™ electronic 1.4S - Individually programmable period delays (0 – 15 seconds) with 50 foot lead-in leg wires.

Other Factors Relating to Blasting Practices:
Stemming material – The blaster indicated that 6 ½ - 7 feet of stemming were used for this blast.
Detonators – 30 Orica i-kon™ electronic detonators programmed to produce a typical V-echelon type of blast, designed to move the muck away from the 1290 ramp.
Number of timing circuits - 1 series
Range of pounds of explosives used per hole– 69 pounds (2.65 lb./ft blast hole)
Type of firing circuit – Specially coded electronic [w/in-hole programmable delays]
Blast initiating device – Special purpose i-kon™ Logger with dedicated blasting machine

Training and Experience
Joseph L. Tagaban (victim) had 1 year and 20 weeks of mining experience, all at this mine. Kasey Clark had 7 years of total mining experience, 1 year and 6 weeks at this mine. Investigators reviewed the training records for these miners and found the task training and annual refresher training records to be up-to-date. However, the training did not specifically address all of the hazards associated with blasting. Management established new policies and procedures for persons working around blasting areas and trained all persons regarding these new policies and procedures. Additionally, management provided additional training regarding work place examinations to all miners

ROOT CAUSE ANALYSIS

A root cause analysis was performed and the following root causes were identified:

Root Cause: Management's policies and procedures were inadequate and failed to ensure that persons were trained to be out of the blast area or in a location that would protect them from concussion, flying material, or gases.

Corrective Action: Management implemented new policies and procedures for blasting that removes all persons from the blast area. Management has designated a safe zone in an area where there are not any diamond drill core holes and a significant distance away from any active blast areas. A centralized blasting initiation system has been installed to allow the initiation of blasts from the designated safe zone.

Root Cause: Management failed to ensure that persons were trained to conduct adequate workplace examinations to identify hazards.

Corrective Action: Management provided additional training regarding workplace examinations to all miners. The training included conducting adequate examinations to check for hazards or to identify diamond drill holes prior to initiating a blast, ventilation, and ground control.

CONCLUSION

The accident occurred because management policies, procedures, and controls were inadequate and did not protect persons from flying materials near the blast area. An old diamond drill hole, that intersected the blast pattern, had not been identified prior to initiating the blast. An adequate examination to check the area for hazards or to identify the diamond drill hole was not conducted prior to initiating the blast. Persons were not trained to be out of the blast area or in a location that would protect them from concussion, flying material, or gases. The blaster and blaster's helper were not provided with a blasting shelter or removed from the blast area to protect them from concussion and flying material.

ENFORCMENT ACTIONS

Issued to Coeur Alaska, Inc.

Order No. 8601142 was issued on September 7, 2011, under the provisions of Section 103(j) of the Mine Act:

> A fatality occurred at the operation on September 7, 2011, at approximately 6:50 a.m. at the 1260-1290 access. A blast was initiated in the 1290-261 East stope. Material from the blast passed through an old diamond drill core hole, striking the victim that was positioned on a haulage ramp at the intersection of the 1290 drift. This order is being issued to prevent the destruction of any evidence which could assist in the investigation of the cause or causes of the accident. It prohibits all activity in the 1260-1290 level and the 1290-261 E stope, until MSHA has determined that it is safe to resume mining operations in these areas.
>
> This order was later modified to Section 103(k) of the Mine Act when the first Authorized Representative arrived at the mine.

Order No. 8563088, was issued on November 9, 2011, under the provisions of Section 104(d)(2) of the Mine Act for a violation of 57.6306(e):

> On September 7, 2011, a fatal accident occurred at this operation when a blaster's helper was struck with flying debris which passed through a 3-inch diameter diamond drill hole that intersected the blast site. When the blast was initiated the blaster and blaster's helper were positioned at the intersection of the 1290 drift and a haulage ramp approximately two hundred feet from the initiated blast.
>
> The blaster and blaster's helper were not provided with a blasting shelter or removed from the blast area to protect them from concussion, flying material, and gases. Management engaged in aggravated conduct constituting more than ordinary negligence in that they were aware that this could occur due to a past incident and failed to provide protection for the miners from concussion, flying material, and gases. This violation is an unwarrantable failure to comply with a mandatory standard.

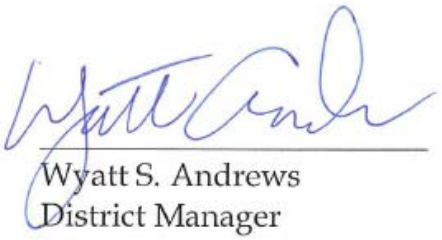
The mine operator developed, implemented, and trained blasters on a new plan to remove all miners from the blast area to a designated safe zone where the blast is initiated.

Citation No 8563089, was issued on November 9, 2011, under the provisions of Section 104(a) of the Mine Act for a violation of 57.18002(a):

> On September 7, 2011, a fatal accident occurred at this operation when a blaster's helper was struck with flying debris which passed through a 3 inch diameter diamond drill hole that intersected the blast site. The blaster and blaster's helper were positioned at the intersection of the 1290 drift and a haulage ramp approximately 200 feet from the initiated blast. An adequate area exam was not conducted to identify the diamond drill hole prior to initiating the blast.

The mine operator provided training to all miners regarding work place examinations.

Approved By:



Wyatt S. Andrews
District Manager

2/3/2012

Date

APPENDIX A

Persons Participating in the Investigation

Coeur Alaska, Inc.

John Kinyon	Vice-President and General Manager
David Turcotte	Director of Safety & Loss Control
Jeff Franke	Senior Safety Coordinator
Jeremy Whitmore	Safety/Mine Rescue Coordinator

Patton Boggs, LLP

Donna Vetrano Pryor	Associate Attorney

Juneau Police Department

Russ Haight	Investigator

Mine Safety and Health Administration

Joel Dozier	Mine Safety and Health Inspector
Kenneth Poulson	Mine Safety and Health Inspector
John Kathmann	Mine Safety and Health Specialist
Thomas E. Lobb	Physical Scientist/Explosives & Blasting

APPENDIX B

Accident Investigation Data - Victim Information
Event Number: 1 1 5 3 1 4 1

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
Joseph L. Tagaban	*M*	*30*	*01*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 09/07/2011 b.Time: 6:50	*a. Date: 09/06/2011 b.Time: 19:00*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
007 Blaster Helper	*003 Blasting*	Yes X No

10. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*0*	*3*	*2*	b. Regular Job Title:	*0*	*3*	*2*	c: This Mine:	*1*	*20*	*0*	d. Total Mining:	*1*	*20*	*0*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
092 Broken flyrock	*170 Blasted flyrock striking victim*

13. Training Deficiencies:
Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)
Operator
Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment:
Not Applicable: | First-Aid: | CPR: | EMT: X | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1) *220112650027* 17. Union Affiliation of Victim: *9999* *None (No Union Affiliation)*