

Martin Marietta Materials Plant 862

Fatal Accident: March 22, 2016

Overview

- March 22, 2016 Tracy L. Hockemeier, Leadman, age 42 was fatally injured when he was struck by fly rock
- He was sitting in his pickup truck, about 1,200 feet from the blast site
- At blast initiation, fly rock was propelled upward, landing on and penetrating the roof of the truck and striking the victim



Information

Read the section entitled “Discussion” on pages 5-7 of the Accident Investigation report.

Information

- What are the main contributing factors to the accident?
- Were there any training issues?
- In your opinion, what role did communication between the Martin Marietta employees and the contract drillers and blasters play in this accident?

Accident Cause

What was the cause
of the accident?

MSHA Root Cause 1

Management's policies, procedures and controls failed to adequately assess the geology or material to be blasted; blast pattern, burden, depth, diameter, and angle of the holes; historical blasting experience at this mine; delay system, powder factor, and pounds per delay; type and amount of explosive material; type and amount of explosive material; type and amount of stemming and their inter-relationship with each other in properly determining the blast area.

MSHA Corrective Action 1

Management established updated blasting policies, procedures and controls to ensure persons are not exposed to fly rock. Management trained all affected mine employees so that mine supervision and blasting personnel have better communication regarding variable blasting pattern conditions and avoid fly rock potential.

MSHA Root Cause 2

Management's policies, procedures and controls failed to ensure the blasting contractor complied with applicable mandatory standards of adequately assessing the potential for fly rock, by failing to communicate geological conditions effectively. Information regarding which drill holes were unloadable as a result of mud seams or voids encountered in the drilling and loading process, the geological conditions, and water infiltration of holes would have provided critical knowledge to warrant an expanded security area for the blast.

MSHA Corrective Action 2

Management established updated blasting policies, procedures and controls to ensure persons are not exposed to fly rock. Management trained all affected mine employees so that mine supervision and blasting personnel, including contractors, have better communication regarding variable blasting pattern conditions and reduce fly rock potential.

MSHA Root Cause 3

Hockemeier was not task trained to assess the geology or material to be blasted; blast pattern, burden, depth, diameter, and angle of the holes; historical blasting experience at this mine; delay system, powder factor, and pounds per delay; type and amount of explosive material, type and amount of stemming and their inter-relationship with each other in properly determining the blast area so persons were not exposed to fly rock.

MSHA Corrective Action 3

Management established updated blasting policies, procedures and controls to ensure persons are not exposed to fly rock. Management established policies to train persons to properly assess blast sites and trained all affected mine employees so that mine supervision and blasting personnel have better communication of variable blasting pattern conditions and reduce fly rock potential.

Accident Prevention

What could have prevented this accident?

Accident Prevention

Outline proper
procedure for
performing this task

MSHA Best Practices

- Review and follow site specific blast plan prior to loading any explosives.
- Utilize technology, such as face profilers and borehole probes, to obtain specific details of the material to be blasted.
- Adjust stemming depth and/or decking to maintain adequate burden on all sections of the blast hole.

MSHA Best Practices

- Develop a drill pattern by considering geology, face geometry and surface topography.
- Clear and remove all persons from the blast area unless suitable blasting shelters are provided to protect persons from fly rock. Allow at least 15 seconds after a blast for any fly rock to drop.
- Ensure blasting and fly rock areas are properly calculated to ensure the blast site is clear of all persons.

MSHA Best Practices

- Examine blast site geology, communicate with the driller and review the drill log for angles, voids, competency of rock, loss of air, etc., prior to the loading of any explosives. Make appropriate adjustments to ensure that the holes are not overloaded.
- Determine the actual burden for all face holes along with their length and adjust the explosive power factor along the borehole accordingly.