

MNM Fatal 2015-09

- Falling Material
- June 30, 2015 (Massachusetts)
- Construction Sand and Gravel
- Equipment Operator
- 65 years old
- 19 years of experience

Overview

On June 30, 2015, Charles E. Pace, equipment operator, age 65, was killed while operating a front-end loader at the base of a sand bank. Pace was trapped in the operator's cab when a portion of the bank collapsed and engulfed the front-end loader.

The accident occurred due to mine management's failure to utilize previously established mining methods to maintain wall, bank, and slope stability in the area. The victim was extracting material from the base of a 128 feet high bank that was not sloped to a safe angle. In addition, management failed to adequately examine the mining area prior to commencing work and periodically throughout the shift as changing ground conditions warranted.



Root Causes

The investigators conducted a root cause analysis and identified the following root cause:

- **Root Cause:** Management failed to utilize previously established mining methods to maintain wall, bank, and slope stability in the area. The mine operator had used bulldozers in the past to push the bank material down to a flatter slope; however, this mining practice had not been employed during this phase of mining. The victim was extracting material from the base of a 128 feet high bank that was not sloped to a safe angle.
- **Corrective Action:** Management established and implemented new policies and procedures to reclaim the existing phase 4 excavation (accident area). In addition, new policies and procedures were made to address future excavations at the mine. These new policies and procedures utilize bulldozers to push material down the slope toward the face of the excavation while maintaining a uniform slope gradient of 2.5:1 to 3:1. Future excavations will have a minimum working width of 300 feet, sloped on all three sides. The slope gradients will be monitored on a daily basis. Material pushed down the slope will be windrowed or stockpiled and will be loaded and transported to the screening plant. All mobile equipment operators were trained in these new policies and procedures.

Root Causes (conti.)

- **Root Cause:** Management failed to adequately examine the mining area prior to commencing work and periodically throughout the shift as changing ground conditions warranted.
- **Corrective Action:** Management established and implemented an examination plan for the mining area and designated an exam coordinator, responsible for ensuring adequate examinations and monitoring slope gradients. Examinations of the face of the slope and side slopes will be conducted each day prior to the start of excavation and as weather conditions dictate, particularly during and after precipitation events. The slope surfaces will be evaluated for bulging, cuts, seepage, and cracking. Any adverse conditions found will be corrected prior to the commencement of mining in the area. Mining will also cease at any time during the shift when adverse conditions are encountered until they can be evaluated and addressed. All mobile equipment operators were trained by the exam coordinator in the new examination plan relative to identifying adverse ground conditions, changing slope conditions, and remedial actions.

Best Practices

- Establish and discuss safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed and the methods to properly protect persons.
- Task train all persons to recognize all potential hazardous conditions that can decrease bank or slope stability and ensure they understand safe job procedures for elimination of the hazards.
- Observe and evaluate all pit, highwall, slope, and bank conditions prior to beginning work and throughout the shift to ensure safety. Be especially vigilant for these conditions after each rain, freeze, or thaw.
- Provide equipment cabs strong enough to resist burial pressure.