2017 Fatal Comparison Chart (**based on preliminary report data and fatalgrams**) Updated: 11/27/2017

MNM Total	12	Fatal #'s	Coal Total	14	Fatal #'s	Total
Underground	1	1	UG	8	1, 5, 7, 8, 9, 12, 13, 14	9
Surface & Sur of UG	11	2, 3, 4, 5,6, 7, 8, 9, 10, 11 & 12	Surface & Sur of UG	6	2, 3, 4, 6, 10, 11	17
Other			Other			
Contractor	2	2, 9	Contractor	1	2	3
Powered Haulage	6	3, 4, 7, 8, 11 & 12	Powered Haulage	7	1, 2, 6, 7, 9, 12, 14	13
Machinery	1	10	Machinery	2	8, 10	3
Roof, Rib, Highwall Fall	1	1	Roof, Rib, Highwall Fall	3	4, 5, 13	4
Electrical	1	5	Electrical			1
Slip & Fall of Persons			Slip & Fall of Person	1	3	1
Fall & Sliding Materials	3	2, 6, 9	Fall & Sliding Materials	1	11	4
Ignition/Exploding Gas			Ignition/Explosion			
Hoisting			Hoisting			
Inundation			Inundation			
Exploding Vessel			Exploding Vessel			
Maintenance/Repair Involved	1	8	Maintenance/Repair Involved	3	3, 4, 11	4
Examiner, Supervisor, or Owner	2	10, 12	Examiner, Supervisor, or Owner	4	4, 5, 9, 12	6
Age 0-19			**Age** 0–19			
Age 20-29	3	5, 8, 9	Age 20-29	1	10	4
Age 30-39	2	6, 11	Age 30-39	5	4, 8, 9, 11, 13	7
Age 40-49	1	7	Age 40-49	4	1, 3, 7, 14	5
Age 50-59	4	1, 2, 3, 4	Age 50-59	2	2, 12	6
Age 60-69	1	12	Age 60-69	2	5, 6	3
Age 70+	1	10	Age 70+	0		1
Experience			**Experience**			
Less than 1 year	3	5, 8, 11	Less than 1 year	0		3
1-5 years	5	3, 4, 6, 7, 9	1-5 years	1	10	6
6-10 years	0		6-10 years	7	2, 4, 7, 8, 9, 11, 13	7
11-20	1	2	11-20	3	3, 6, 14	4
21-30	2	1, 12	21-30	2	1, 12	4
31+	1	10	31+	1	5	2
Mine Site Experience			**Mine Site Experience**			
Less than 1 year	4	5, 8, 9, 11	Less than 1 year	9	1, 2, 3, 4, 5, 7, 8, 9, 10	13
1-5 years	5	3, 4, 6, 7, 12	1-5 years	2	12, 14	7
6-10 years	1	2	6-10 years	3	6, 11, 13	4
11-20	1	1	11-20	0		1
21-30	1	10	21-30	0		1
31+	0		31+	0		
Job/Task Experience			**Job/Task Experience**			
0-7 days	0		0-7 days	0		
Less than 1 year	4	5, 8, 9, 11	Less than 1 year	6	1, 3, 5, 7, 8, 9	10
1-5 years	4	3, 4, 6, 7	1-5 years	5	4, 10, 11, 13, 14	9
6-10 years	0		6-10 years	2	2, 6	2
11-20	2	1, 2	11-20	0		2
21-30	1	12	21-30	1	12	2
31+	1	10	31+	0		1
Day of the Week:			**Day of the Week:**			
Sunday	0		Sunday	0		0
Monday	1	2	Monday	3	3, 9, 14	4
Tuesday	4	8, 10, 11 & 12	Tuesday	2	8, 10	6
Wednesday	2	1, 9	Wednesday	0		2
Thursday	3	4, 6, 7	Thursday	7	1, 4, 5, 7, 11, 12, 13	10
Friday	2	3, 5	Friday	1	2	3
Saturday	0		Saturday	1	6	1

Focus on your safety goal with purpose!

2017 Fatal Comparison Chart (**based on preliminary report data and fatalgrams**) Updated: 11/27/2017

2017 - Month	MNM	Coal	Totals	Difference	Totals	2016 - Month	MNM	Coal
January	1	1	2	-1	3	January	0	3
February	0	3	3	+2	1	February	1	0
March	2	1	3	0	3	March	2	1
April	0	0	0	-2	2	April	2	0
May	0	2	2	0	2	May	1	1
June	1	2	3	-1	4	June	3	1
July	3	1	4	+2	2	July	1	1
August	0	2	2	+1	1	August	1	0
September	2	1	3	0	3	September	3	0
October	3	1	4	+3	1	October	1	0
November	0	0	0	0	0	November	0	0
December					3	December	**2**	1
2017 Total:	**12**	**14**	**26**	**+4**	**25**	**2016 Total:**	**17**	**8**

Product	Fatal #'s For 2017	2017 Total product	2016 Total product	2015 Total product
Alumina			0	0
Cement	9	1	2	2
Clay			0	0
Coal	1-14	**14**	**8**	**11**
Copper	7	1	0	0
Diatomaceous Earth	5	1		
Dimension Stone			0	0
Gold Ore	11 & 12	2	1	4
Granite	6	1	1	1
Gypsum			0	0
Iron Ore			0	0
Kaolin			0	1
Lead Ore			0	1
Lime			0	0
Limestone	1, 4	2	4	1
Magnesite			1	0
Phosphate			1	1
Salt			0	0
Sand & Gravel	2,3,8	3	**6**	**6**
Sandstone			0	1
Shale			0	0
Silver Ore			0	0
Stone	10	1	0	0
Titanium			1	0

State (2017)	Total	MNM	Coal	Fatal #
Alabama	**2**	1	1	C9, M9
Arizona	**1**	1	0	M7
Colorado	**1**	1	0	C11
Georgia	**1**	1	0	M6
Iowa	**1**	1	0	M1
Kentucky	**2**	0	2	C1, C4
Idaho	**1**	1	0	M10
Illinois	**1**	1	0	M4
Montana	**1**	0	1	C6
Nevada	**2**	2	0	M11 & M12
New Mexico	**1**	1	0	M3
North Carolina	**1**	1	0	M8
Oregon	**1**	1	0	M5
Pennsylvania	**1**	0	1	C10
Texas	**1**	1	0	M2
West Virginia	**7**	0	7	C2, C3, C5, C7, C8, C12, C14
Wyoming	**1**	0	1	C13

Part 48 = 19	Part 46 = 7
All Coal = 14 MNM: UG = 1 SUR = 4	Non Metal SUR# 2, 3, 4, 6, 8, 9, 10

Month	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	TOTAL	AVG
January	**2**	**3**	5	1	3	2	1	4	3	6	5	**35**	**3.18**
February	**3**	**1**	1	5	5	3	3	0	4	5	2	**32**	**2.91**
March	**3**	**3**	5	2	3	5	2	1	2	2	3	**31**	**2.82**
April	**0**	**2**	0	6	3	2	2	**33**	4	4	8	**64**	**5.82**
May	**2**	**2**	4	**6**	1	5	1	6	3	7	0	**37**	**3.36**
June	**3**	**4**	3	6	3	2	4	6	5	4	4	**44**	**4**
July	**4**	**2**	2	2	4	4	2	3	2	3	9	**37**	**3.36**
August	**2**	**1**	4	3	3	2	3	4	1	4	**16**	**43**	**3.91**
September	**3**	**3**	2	3	3	5	4	1	4	3	6	**37**	**3.36**
October	**4**	**1**	0	3	5	1	6	6	3	11	7	**47**	**4.27**
November	0	**0**	0	6	5	4	4	3	2	1	4	**29**	**2.64**
December		**3**	3	3	4	1	4	5	2	3	3	**31**	**3.1**
Total:	**26**	**25**	**29**	**46**	**42**	**36**	**36**	**72**	**35**	**53**	**67**	**467**	**3.58/mo**
								UBB			Crandall Canyon		

Average over past 10 years (2007-2016) = 45 per year

Average over past 5 years (2012-2016) = 36 per year

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2017 - MNM Fatals

Fatal #1 – Fall of Face, Rib, Highwall – UG Iowa

Final Report Conclusion: On January 25, 2017, a 52-year-old miner with over 25 years experience was fatally injured when he crossed over a berm that barricaded off the North 40 west 35 area to search for crystals and a portion of the rib collapsed, burying him. The accident occurred because safety protocols and training in place at the mine were not being followed. A miner entered an area of the mine where dangerous conditions existed and access was not permitted. While he was in the unpermitted area, a rib collapsed and buried him.

Cited Regulation: None

Root Causes:

- Management's policies, procedures and controls did not prevent employees from entering barricaded and dangerous areas.

Best Practices:

- Install barriers to impede unauthorized entry into areas where unattended hazardous ground conditions exist.
- Establish procedures to account for miners in all areas of the mine – surface, underground, shops, and facilities – across and at the end of shifts.
- Do not cross barriers that are intended to prevent access to dangered-off areas of underground mines.
- Train miners to recognize potentially hazardous ground conditions and to understand safe job procedures for elimination of the hazards.
- Never enter hazardous areas that have been dangered-off or otherwise identified to prohibit entry.
- Develop and train miners on a method that clearly alerts miners not to enter hazardous areas.
- If possible, do not work alone. If working alone, communicate intended movements to a responsible person.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

Fatal #2 – Falling Material – SUR Texas

Final Report Conclusion: On Tuesday, March 14, 2017, a 52-year-old independent owner/operator truck driver with 13 years experience died. The victim was engulfed in sand when he walked behind his tractor trailer while dumping a load of concrete sand. The accident occurred because the customer truck driver did not maintain a safe distance from the rear of trailer where the sand material was being unloaded.

Cited Regulation: None

Root Cause:

- The customer truck driver failed to stand clear of the trailer gate while unloading material.

Best Practices:

- Evaluate the effectiveness of Site-Specific Hazard Awareness Training provided to customer truck drivers to ensure all hazards associated with each task are identified and understood.
- Customer truck drivers should follow warning signs and equipment labels and follow company's policies and procedures while on mining property.
- Conduct pre-operational checks to identify any defects that may affect the safe operation of equipment before it is placed into service.
- Ensure workers who operate heavy equipment are adequately informed, instructed, trained and supervised.
- Do not position yourself near a truck that is actively dumping, or near a truck while it is raising its bed.
- Ensure that the tailgate is unlocked before elevating the cargo box to the dump position.
- Do not attempt to dump the material if it sticks in the bed. Stuck material can imbalance the load and affect the stability of the truck. Always deflate trailer air springs prior to raising the dump body.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

2017 - MNM Fatals

Fatal #3 – Machinery – SUR New Mexico

On Friday, March 24, 2017, a 53-year-old crusher operator with 2 years experience died at a sand and gravel mine. The victim exited his personal flatbed truck, which was left running in 6th gear, to turn-off the genset (diesel generator). Prior to ascending the steps to the diesel generator, it appears the flatbed truck moved forward and pinned him against the genset trailer. The victim was found on Monday, March 27, 2017, and pronounced dead at the scene.

Best Practices:

- Place the transmission in park and set the park brake before exiting vehicle.
- Do not depend on hydraulic systems to hold mobile equipment in a stationary position.
- Always chock the wheels when parking vehicles on a grade.
- Never place yourself in front of an unsecured piece of mobile equipment.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - MNM Fatals

Fatal #4 – Powered Haulage – SUR Illinois

On Thursday, June 8, a 56-year-old truck driver with 3 years experience was dumping a load of gravel at a dump point when the ground at the dump collapsed. The truck went over the edge, overturning, and landing on the roof of the truck approximately 30 feet below. Due to not wearing a seat belt the victim was thrown from the seat. The miner was found in the cab lying on the roof. The victim was transported to the hospital, where he later died of his injuries.

Final Report Conclusion: The victim was fatally injured when his truck overturned due to a stockpile foundation failure. The accident occurred because the mine operator failed to ensure berms, bumper blocks, safety hooks or similar impeding devices were provided at dumping locations where there was a hazard of over traveling or over turning. The mine operator did not ensure dumping locations were inspected before dumping commenced at this location, and did not ensure loads were dumped from a safe distance from where ground may fail to support mobile equipment. Miners had not been trained in proper stockpiling procedures, and management failed to ensure miners always wore seat belts while operating haulage trucks.

Cited Regulations: 46.7(a), 56.9301, 56.9304(a), 56.9304(b), 56.14131(a)

Root Causes:

- The operator's procedures and controls were inadequate. The mine operator failed to ensure berms, bumper blocks, safety hooks or similar impeding devices were provided where there was a hazard of over traveling or overturning.
- The mine operator failed to ensure dumping locations are visually inspected before work begins at those locations.
- The mine operator failed to ensure miners were dumping loads at a safe location back from the edge of an unstable area.
- The mine operator failed to provide task training for miners performing stockpiling activities.
- The mine operator failed to ensure miners wore seat belts when operating haulage trucks.

Best Practices:

- Ensure seat belts are provided, maintained, and worn at all times.
- Visually inspect dumping locations prior to work and as conditions change.
- Do not excavate the toe of the slopes below dumping points and travelways.
- Utilize the "dump-short, push-over" (double load) method when stockpiling material.
- Provide and maintain adequate berms where a drop-off exists.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

2017 - MNM Fatals

Fatal #5 – Electrical – SUR Oregon

On Friday, July 14, 2017 a 26-year-old grounds keeper with 11 weeks mining experience was fatally injured. The victim was electrocuted when he contacted overhead, high voltage power lines with an aluminum pipe while moving an irrigation pipeline. The accident occurred because the overhead powerlines were not de-energized, and there were no other precautions taken, such as barricades or signs to indicate dangerous overhead conditions, to protect miners working in the area.

Cited Regulations: 56.12066, 56.20011, 56.18002(a)

Root Causes:

- The overhead powerlines were not de-energized and no other precautions were taken when working near the high voltage lines.
- The area where the accident occurred was not barricaded nor were there posted signs to indicate dangerous overhead conditions existed.
- A work place examination was not being conducted in this area.

Best Practices:

- Before work begins, conduct a hazard assessment and examine the work area to identify and correct hazards, and ensure safe distances to overhead power lines.
- Place signs under the powerlines warning of overhead hazards.
-
- Contact the electrical utility to determine the operating voltage of the line and confirm the safe limits of approach distances.
- Do not use electrically conductive tools or materials in situations where they may contact overhead power lines.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

Fatal #6 – Fall of Material – SUR Georgia

On Thursday, July 20, 2017, a 36-year-old ledge man with about a year and half experience was fatally injured at a surface granite mine. The victim was driving wedges into a block of granite in an attempt to break it loose. A piece of granite weighing 9 tons fell and crushed the victim against the quarry floor.

Best Practices:

- Always conduct examinations of work place to identify loose ground or unstable conditions before work begins and as changing ground conditions warrant.
- Ensure that the person conducting the examination has the training and experience to recognize potential hazards.
- Danger off hazardous conditions and prohibit work or travel in areas where hazards from unstable ground have not been corrected.
- Discuss work procedures and identify all hazards associated with the work to be performed along with the methods to protect personnel.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - MNM Fatals

Fatal #7 – Powered Haulage – SUR Arizona

On Thursday, July 27, 2017, a 41-year-old haul truck driver with 5 years experience was fatally injured when his light-duty truck was run over by a haul truck.

Best Practices:

- Do not park smaller vehicles in a large truck's potential path of movement.
- Before moving mobile equipment, be certain no one is in the intended path; sound the horn to warn possible unseen persons; and wait to give them time to move to a safe location.
- Ensure all persons are trained to recognize workplace hazards - specifically, the limited visibility and blind areas inherent to operation of large equipment and the hazard of mobile equipment traveling near them.
- Establish and enforce procedures that require smaller vehicles to maintain a safe distance from large mobile equipment until eye contact is made or approval to move closer is obtained from the mobile equipment operator. Provide training on these procedures.
- Install cameras and collision avoidance systems on large trucks to protect persons.
- Regularly monitor work practices and reinforce their importance. Take immediate action to correct unsafe conditions or work practices.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - MNM Fatals

Fatal #8 – Powered Haulage – SUR North Carolina

On September 5, 2017, a 20-year-old plant operator with 23 weeks experience was fatally injured while performing maintenance on a belt conveyor and becoming entangled in the tail pulley.

Best Practices:

- Establish and enforce policies and procedures for conducting specific tasks on belt conveyors.
- Before beginning any work, ensure that persons assigned to work on belt conveyors are task trained and understand the hazards associated with the work to be performed.
- Do not perform work on a belt conveyor until the power is off, locked, and tagged, and machinery components are blocked against motion.
- Never clean pulleys or idlers manually while belt conveyors are operating.
- Identify hazards around belt conveyor systems, design guarding, and securely install the guarding to ensure miners do not contact moving machine parts.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #9 – Fall of Material – SUR Alabama

On Wednesday, September 20, 2017, a 28-year-old contractor technician was fatally injured while rappelling within a conditioning tower. The victim was examining the inside of a 300-foot vertical conditioning tower when an object fell from above and struck him in the head. The victim was conscious and transported to a local hospital where he died of his injuries the next day.

Best Practices:

- Remove all loose materials and other hazards before working.
- Have fall protection available and ready for use.
- Check bin atmosphere for oxygen content, combustible gases, and toxic contaminants.
- Provide adequate lighting.
- Be sure the person entering the bin is trained in safe entry and confined space procedures.
- Have standby personnel available to observe and to assist in an emergency.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - MNM Fatals

Fatal #10 – Machinery – SUR Idaho

On Tuesday, October 17, 2017 a mine owner with 60 years mining experience was fatally injured while operating a bulldozer on a downward slope. While pushing overburden to a rock bench below the top of the pit, he was ejected from the cab and run over by the left track. The machine continued to tram over the edge of the 58' highwall.

Best Practices:

- Always wear a seat belt when operating mobile equipment.
- Never jump from moving mobile equipment.
- Ensure that persons are trained, including task-training, to understand the hazards associated with the work being performed.
- Block the dozer against motion by setting the parking brake and lowering the blade to the ground before dismounting equipment. Set the transmission lock lever to ensure the transmission is in neutral.
- Establish, enforce, and discuss safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed and use methods to properly protect persons.
- Do not place yourself in a position that will expose you to hazards while performing a task.
- Maintain control of mobile equipment while it is in motion.
- Maintain equipment braking systems in good repair and adjustment. Do not depend on hydraulic systems to hold mobile equipment stationary.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - MNM Fatals

Fatal #11 & 12 – Powered Haulage – SUR Nevada

Preliminary Information: On Tuesday, October 31, 2017, a 60-year-old safety superintendent with 25 years experience and a 39-year-old miner with 16 weeks experience were fatally injured. A 340-ton haul truck ran over a passenger van carrying nine miners. The driver of the van and the miner in the front seat were fatally injured. Of the remaining seven miners, one suffered a non-life threatening injury.

Best Practices:

- When approaching large mobile equipment, do not proceed until you communicate and verify with the equipment operator your planned movement and location. Provide radio communication systems between vehicles and large mobile equipment.
- Ensure, by signal or other means, that all persons are clear before moving equipment.
- Minimize situations where smaller vehicles need to approach large haul trucks (e.g., arrange for haul truck drivers to have supplies available at the pre-shift meeting place, rather than delivering supplies to the truck).
- Do not drive or park smaller vehicles in a large truck's potential path of movement.
- Equip smaller vehicles with flags or strobe lights positioned high enough to be seen from the cabs of haulage trucks.
- Install and maintain proximity detection or collision avoidance/warning systems and cameras

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

MSHA investigates all deaths on mine property; however, some deaths are unrelated to mining activity and are not counted in the statistics MSHA uses to assess the safety performance of the mining industry. These deaths are termed "non-chargeable" and include homicides, suicides, deaths due to natural causes, and deaths involving trespassers.

MSHA uses a formal Fatality Review Committee to determine whether a questionable death is chargeable.

Nine (9) MNM mining accidents are **pending** chargeability determination.

2017 - Coal Fatals

Fatal #1 – Powered Haulage – UG Kentucky

Final Report Conclusion: On Thursday, January 26, 2017, a 43-year-old beltman with 23 years experience was attempting to remove coal spillage from beneath the belt drive. The victim received fatal injuries when he came in contact with the rotating shaft of a belt drive tandem roller. This occurred because the belt drive was not adequately guarded, and the mine operator did not have effective programs, policies, or procedures in place to ensure that prior to performing work in close clearance areas around conveyor belt drives, power was de-energized, and machinery was blocked against motion.

Cited Regulations: 75.1725(c), 75.1728(c), 75.1722(a), 75.360(a)(1), and 75.362(b)

Root Causes:

- The mine operator did not have effective programs, policies, or procedures to ensure that belt drives at the mine were adequately guarded. The inadequate area guard with a "door" at the No. 3 belt drive created a hazardous condition that allowed a hazardous practice for miners working on, and/or being in close proximity to, the moving belt drive without first de-energizing it and blocking it against motion.
- The mine operator failed to ensure that persons conducting examinations have been adequately trained to perform thorough examinations that will identify hazards. Citations and orders have been issued during this investigation because examiners did not identify violations of mandatory standards.

Best Practices:

- Before working on equipment, de-energize electrical power, lock and tag the visual disconnect, and block parts that can move against motion.
- Keep guards securely in place while working around conveyor drives.
- When working around moving machine parts, avoid wearing loose-fitting clothing such as shirts or jackets with hoods. Secure ends of sleeves and pant legs, as well as loose items such as personal light cords.
- Establish and enforce policies and procedures for conducting specific tasks on belt conveyors.
- Train all employees thoroughly on the dangers of working or traveling around moving conveyor belts and their associated components.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

Fatal #2 – Powered Haulage – SUR West Virginia

On Friday, February 3, 2017, a 54-year-old truck driver with 10 years experience received hip and leg fractures when he jumped from the cab of his truck as it was overturning. The victim positioned the truck on the dump pad and began raising the bed. Material in the bed was frozen or compacted which created an uneven load. As the bed reached full extension, the truck fell over. Due to complications associated with his injuries, the victim passed away 7 days later on February 10.

Final Report Conclusion: The 2005 Mack TT tractor and 2000 East TL trailer overturned on the truck dump while dumping. The hung load in the trailer caused the trailer to be over-weighted on one side and unbalanced. As the hoist cylinder was raised to its fully extended position, the unbalanced weight of the hung load caused the truck to fall over, injuring the victim who later died. The accident occurred because the manufacturer's warnings and cautions for the trailer were not followed.

Cited Regulation: 77.404(a)

Root Causes:

- The manufacturer's warnings and cautions for the trailer were not followed.
- The mine operator did not have a policy in place requiring coal truck trailers to be treated with antifreeze when temperatures are at freezing conditions.

Best Practices:

- Stay in the cab when problems are encountered while operating the truck. Do not jump.
- Always wear a seat belt when operating mobile equipment.
- Establish and enforce safe work procedures for dumping a loaded truck and train all employees.
- Use techniques to prevent material from freezing or sticking in truck beds.
- After dumping, remove compacted material from the truck bed before adding more material.
- Ensure all loads are evenly distributed.
- While dumping, use mirrors to see if the truck bed begins to lean and, if it does, immediately lower the bed.
- Examine work areas and routinely monitor work habits to ensure that safe work procedures are followed.
- Identify and control all hazards associated with the work to be performed.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

2017 - Coal Fatals

Fatal #3 – Slip/Fall of Person – SUR West Virginia

Final Report Conclusion: On Monday, February 27, 2017, a 43-year-old plant attendant with 13 years experience received fatal injuries when he fell from the top of the plate press onto an operating conveyor belt below, where he traveled 55 feet before coming to rest in a conveyor transfer chute. No fall protection was used when working from areas where a risk of falling existed. Also, the operator did not provide a safe means of access to all areas where miners are required to work or travel.

Cited Regulations: 77.1710(g) and 77.205(a)

Root Causes:

- The mine operator failed to ensure safety belts and lines were used when there is a danger of falling, as required by 30 CFR § 77.1710(g).
- The mine operator failed to provide a safe means of access to all areas where miners are required to work and travel, as required by 30 CFR § 77.205(a). An effective means was not provided for miners to tie off when working on top of the plate press.

Best Practices:

- Provide and maintain safe access to all work areas. Train miners on how to safely access all work areas.
- Protect and guard all openings through which persons may fall. Use fall protection, maintaining 100% tie off, when fall hazards exist. Establish and enforce specific policies and procedures for the use of fall protection.
- Ensure workers are trained in the use of fall protection. Monitor and enforce work practices to ensure fall protection is being properly used.
- Conduct a risk assessment of the work area prior to beginning any task and identify all possible hazards. Use the SLAM: Stop, Look, Analyze, and Manage approach for work place safety.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

Fatal #4 – Fall of Highwall – SUR Kentucky

On Wednesday, March 30, 2017, a 33-year-old miner (auger operator/foreman) with 8 years mining experience was fatally injured at a surface auger mine. The miner was struck by a rock that fell from the bottom section of the highwall while changing worn cutter-head bits located at the front of the auger machine. The rock was about 4 feet by 5 feet by 2½ feet in size.

Final Report Conclusion: The accident occurred because the mine operator did not implement policies and procedures to prevent miners from standing between the auger machine and highwall. Examinations conducted in the work area did not adequately identify all hazardous conditions. The mine operator did not comply with the auger mining safety precautions of the acknowledged ground control plan. A section of rock fell from the highwall, resulting in fatal injuries to the victim.

Cited Regulations: 77.1006(b), 77.1000, 77.1501(a), 77.1001, and 77.1713(a)

Root Causes:

- The operator did not implement policies and procedures to prevent any person or persons from working between equipment and the highwall or spoil bank.
- The operator did not comply with the Auger Mining Safety Precautions identified in the acknowledged ground control plan.
- The operator did not ensure mine examiners identified all hazardous highwall conditions, recorded all hazardous conditions daily, and took action to eliminate all hazardous highwall conditions.

Best Practices:

- Establish, implement, train, and enforce written policy of safety procedures to ensure that no person is allowed to work between equipment and the highwall or spoil bank.
- Follow the approved ground control plan at all times to ensure the safe control of highwalls including safety precautions for auger mining.
- Establish, implement, train, and enforce a plan to ensure mine examiners identify and record all hazardous conditions and take corrective actions during mine examinations.
- Position and reposition the auger machine canopy as needed to protect miners near the toe of a highwall from falling material.
- Safely examine a highwall from as many perspectives as possible (bottom, sides, and top) before work begins. Examine areas at the back of the top and the face of the highwall for hazards presented by cracks, sloughing, loose ground, and large rocks.
- Observe and notify miners of highwall hazards immediately. Remove highwall hazards or barricade hazardous areas to keep miners away.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

Fatal #5 – Fall of Roof – UG West Virginia

Final Report Conclusion: On Thursday, February 23, 2017, a 62-year-old section foreman with 40 years experience was seriously injured when a portion of loose, inadequately supported roof rock fell, crushing him against the mine floor. Due to complications from the injuries received during the accident, the section foreman died on April 6, 2017. The accident occurred because examinations failed to identify loose, inadequately supported mine roof where miners are required to work and travel.

Cited Regulations: 75.202(a), 75.360(b), 75.362(a)(3)(i), and a noncontributory citation was issued for failure to preserve the evidence at the scene in violation of 30 CFR § 50.12.

Root Cause:

- The mine operator failed to identify adverse roof conditions and take appropriate actions to support and/or control the mine roof where miners were required to work and travel.

Best Practices:

- Install the most effective roof "skin" control technique, screen wire mesh, when roof bolts are installed. Most roof fall injuries are caused by rock falling from between roof bolts (failure of the roof skin).
- Conduct thorough examinations of the roof, face, and ribs where persons will be working and traveling; including sound and vibration testing where applicable.
- Scale loose roof and ribs from a safe location. Danger-off hazardous areas until appropriate corrective measures can be taken.
- Be alert for changing conditions and report abnormal roof or rib conditions to mine management and other miners.
- Correct all hazardous conditions before allowing persons to work or travel in such areas. Install and examine test holes regularly for changes in roof strata.
- Propose revisions to and update the roof control plan to provide measures to control roof hazards.
- Know, follow, and enforce the approved roof control plan and provide additional support when cracks or other abnormalities are detected. Remember, the approved roof control plan contains minimum requirements.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report

2017 - Coal Fatals

Fatal #6 – Powered Haulage – SUR Montana

On Saturday, May 6, 2017, a 62-year-old miner with 14 years mining experience was fatally injured when the haul truck he was operating went over the highwall and fell approximately 150 feet. The victim was dumping overburden over the highwall when the accident occurred.

Best Practices:

- DUMP SHORT and PUSH OVER when dumping loads over highwalls. See MSHA's Dump Point Inspection Handbook.
- Maintain adequate ground conditions, including berms, at dump locations.
- Examine dump locations prior to beginning work and as mine conditions change. Clearly mark dump locations with reflectors and/or markers.
- Train miners to use safe dumping procedures and recognize dumping hazards.
- Monitor dumping activities to assure safe work practices are followed.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #7 – Powered Haulage – UG West Virginia

On Thursday, May 18, 2017, a 44-year-old outby utility miner with 6 years mining experience received fatal injuries when his head hit the mine roof and/or roof support. He and another miner were travelling in a trolley-powered supply locomotive when the accident occurred. While the locomotive was still in motion, the trolley pole came off the trolley wire. The victim grabbed the pole to place it back on the trolley wire. In this slightly elevated position, the victim hit his head on the mine roof and was fatally injured.

Best Practices:

- STOP trolley-powered vehicles before placing the trolley pole back on the trolley wire.
- Mining conditions change – often abruptly. Always face the direction of travel and exercise extreme caution in low clearance areas.
- Keep all body parts within the operator's compartment while a vehicle is in motion. Stay below the highest part of a vehicle frame or windshield, especially when travelling through low clearance areas.
- Install signs to warn miners of approaching low clearance areas and train miners to reduce speed in those areas.
- Conduct proper travelway examinations to identify and mitigate the hazards presented by low clearances.
- Properly install and maintain trolley wire and trolley poles to eliminate areas where the trolley pole is prone to coming off the trolley wire.
- Examine the trolley pole harp for excessive wear. Ensure it is properly lubricated to allow it to swivel adequately to maintain proper contact with the trolley wire.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #8 – Machinery – UG West Virginia

On Tuesday, June 13, 2017, a 32-year-old continuous miner operator with 10 years mining experience was fatally injured when he was pinned between the cutter head of a remote controlled continuous mining machine and the coal rib. The victim was backing the continuous mining machine from the working face when the accident occurred.

Best Practices:

- Avoid "**RED ZONE**" areas when operating or working near a remote controlled continuous mining machine. Ensure all personnel including the equipment operator are outside the machine turning radius before starting or moving the equipment. **STAY OUT of RED ZONES**.
- Maintain a safe distance from any moving equipment and frequently review avoiding **Red Zone** areas. Position the conveyor boom and the cutter head away from yourself or other miners working in the area or when moving the machine.
- Tram or reposition a remote controlled continuous mining machine from the rear of the machine to prevent disorientation. Never position yourself between the face and the continuous mining machine when the machine is on.
- Disable the continuous mining machine pump motor before handling trailing cables or positioning trailing cable tie-offs onto the machine.

For Machines Equipped with Proximity Detection Systems

- Correct proximity detection system malfunctions when they occur and **only** use "**Emergency Stop Override**" **to move** the continuous mining machine **to a safe location** for repairs.
- Perform recommended manufacturer's dynamic test to ensure the proximity detection system is functioning properly. Verify that the shutdown zones are at sufficient distances to stop the machine before contacting a miner.
- Mine wearable components should be worn securely at all times in accordance with manufacturer recommendations and in a manner so warning lights and sounds can be seen and heard.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #9 – Powered Haulage – UG Alabama

Monday, June 19, 2017, a 32-year-old preshift examiner with 8 years experience was fatally injured when he was thrown or jumped from a moving locomotive. Two locomotives (front and rear) were being used to transport three supply cars into the mine. The examiner was riding in the passenger seat of the front locomotive when the operators lost control on a grade and the front locomotive and the first two supply cars derailed.

Best Practices:

- Maintain all equipment, including diesel-powered locomotives, in approved and safe operating condition or remove from service.
- Conduct a pre-operational examination of mobile diesel-powered track equipment to be used during a shift. Equipment defects affecting safety shall be reported and corrected before the equipment is used.
- Perform functional tests of the brakes and sanders as part of the pre-operational examination.
- Train all mobile diesel-powered track equipment operators on the braking systems, as well as on changing conditions that can create dampness on the rails reducing traction.
- Operate the haulage equipment at a safe speed consistent with the track's condition. Sand the tracks when there is high humidity at the mine.
- Engage both the automatic and manual braking systems when the locomotive is stopped for any reason.
- Secure loads to prevent shifting while in motion. Ensure clear communication between operators when multiple locomotives are used for haulage.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #10 – Machinery – UG Pennsylvania

On Tuesday, July 25, 2017, a 28-year-old bulldozer operator with 1 year and 9 months experience was fatally injured at a surface facility. The victim was operating a bulldozer, pushing material off of a refuse bank before the accident occurred. He was found lying in the bulldozer's push path at the top of an incline near the edge of the refuse bank. The bulldozer had run over the victim and continued over the edge of the incline, coming to rest at the bottom of the embankment.

Best Practices:

- Ensure that persons are trained, including task-training, to understand the hazards associated with the work being performed.
- Maintain control of mobile equipment while it is in motion.
- Maintain equipment braking systems in good repair and adjustment. Conduct proper maintenance on safety related systems.
- Before leaving a bulldozer unattended, operators should follow manufacturer recommended operating procedures to ensure that the equipment is secured from movement. This could include disengaging the transmission, setting the parking brake, and lowering the bulldozer blade to the ground before dismounting the equipment.
- Do not depend on hydraulic systems to hold mobile equipment stationary.
- Establish, discuss, and enforce safe work procedures before beginning work. Identify and control all hazards associated with the work to be performed and use methods to properly protect persons.
- Do not place yourself in a position that will expose you to hazards while performing a task.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - Coal Fatals

Fatal #11 – Falling Material – SUR of UG Colorado

On Thursday, August 3, 2017, a 32-year-old surface mechanic with 6 years experience was fatally crushed while he was cutting one end of a metal beam. He was dismantling a metal structure at a preparation plant when the beam fell on him.

Best Practices:

- Securely block equipment and components against hazardous motion at all times while performing work.
- Ensure that blocking material is competent, substantial, and adequate to support the load.
- Require all persons to be positioned where they will not be exposed to hazards. Do not work in pinch points where inadvertent movement could cause injury.
- Before beginning work, analyze all tasks, establish safe work procedures, train miners, and eliminate hazards. Be alert for hazards that may be created while the work is being performed.
- Monitor all persons to ensure safe work procedures, including safe work positioning, are followed.
- When possible, do not allow miners to work alone. If a miner works alone, establish a routine of checking on them.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Fatal #12 – Powered Haulage – UG West Virginia

On Friday, August 25, 2017, a 51-year-old mine examiner with 27 years mining experience died when, near the transfer point with the No. 2 conveyor belt, he apparently lost his footing attempting to cross over the moving No. 1 conveyor belt. He fell onto the No. 1 belt and hit a belt crossover located approximately 10 feet outby. The victim was found beside the conveyor belt just outside the mine entrance.

Best Practices:

- Never attempt to cross a moving conveyor belt except at suitable crossing facilities.
- Train all employees thoroughly on the dangers of working on or traveling around moving conveyor belts.
- Provide conveyor belt stop and start controls at areas where miners must access both sides of the belt.
- Install practical and usable belt crossing facilities at strategic locations, including near controls, when height allows.
- Install pull cords and switches that control power to the belt along the wide side of the length of the conveyor belt to stop the belt in emergencies.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

2017 - Coal Fatals

Fatal #13 – Fall of Face or Rib – UG Wyoming

On Thursday September 28, 2017, a 39-year-old long wall section operator with 10 years mining experience was fatally injured when coal from the longwall face rolled out and completely covered him. The victim was assisting with roof bolting by untangling the mesh during the longwall recovery process. At the time of the accident, the victim was located between the coal face and the pan line.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

Best Practices:

- DO NOT ENTER the panline, or any immediate work area, unless the roof and longwall face have been made safe. This includes reducing exposure by minimizing the distance from the face to the tips of the shield.
- Scale roof, face, and ribs with a bar of suitable length and design or other safe means.
- Ensure miners are trained on the minimum requirements of the approved roof control plan.
- Conduct thorough and more frequent examinations of the roof, face, and ribs when miners work or travel close to the longwall face, and continuously monitor for changing conditions
- Before beginning a longwall recovery, ensure miners are trained to recognize the hazards associated with the recovery area.
- Be aware of and correct potential hazards when working or traveling near mine ribs, especially when conditions exist that could cause roof or rib disturbance

2017 - Coal Fatals

Fatal #14 – Powered Haulage – UG West Virginia

On Monday, October 23, 2017, a 48-year-old mine examiner with 19 years experience received fatal injuries after he fell on the No. 1 conveyor belt near the transfer point with the No. 2 conveyor belt and was transported by the belt conveyor system to the raw coal pile. It appears he was attempting to cross the No. 1 conveyor belt at the time of the accident.

Best Practices:

- Never attempt to cross a moving conveyor belt, except at suitable crossing facilities.
- Train all employees thoroughly on the dangers of working on or traveling around moving conveyor belts.
- Provide conveyor belt stop and start controls at areas where miners must access both sides of the belt.
- Install practical and usable belt crossing facilities at strategic locations, including near controls, when height allows.
- Install pull cords to disconnect power to the conveyor belt at strategic locations along the conveyor belt.

Use the following links to view additional information:		
Preliminary Report	Fatalgram	Final Report (not available yet)

MSHA investigates all deaths on mine property; however, some deaths are unrelated to mining activity and are not counted in the statistics MSHA uses to assess the safety performance of the mining industry. These deaths are termed "non-chargeable" and include homicides, suicides, deaths due to natural causes, and deaths involving trespassers.

MSHA uses a formal Fatality Review Committee to determine whether a questionable death is chargeable.

Eight (8) *coal mining accidents are* ***pending*** *chargeability determination.*