FREEPORT-McMoRan

Contractor Safety Meeting

November 2015

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Agenda

- Opening/Safe production — Jodi
- Contact Information — Sophia
- Excavation and Trenching — Rory

The road to success must be paved with optimism!

Division	Date of Last Rep. Injury (FMMO)	# of Days w/o Rep. Injury (FMMO)	Date of Last Rep. Injury (Contractors)	# of Days w/o Rep. Injury (Contractors)	Date of Last HEHI Event	# of Days w/o a HEHI Event
MAINTENANCE SERVICES	8/25/2015	75	9/14/15	55	8/1/2015	99
HYDROMET & CLP	9/12/2015	57	3/27/15	226	6/10/2015	139
LEACHING	11/7/2015	1	10/22/15	17	2/25/2015	256
MORENCI CONCENTRATOR	10/30/2015	9	8/25/15	75	2/10/2015	271
METCALF CONCENTRATOR	11/5/2015	3	8/8/15	92	3/3/2015	250
CRUSH & CONVEY	10/14/2015	25	10/13/15	26	7/28/2015	103
MINE MAINTENANCE	10/5/2015	34	10/18/15	26	9/25/2015	44
FRAGMENTATION/LOADING/SUPPORT	7/26/2015	105	**4/19/12**	**1317**	5/7/2015	185
HAULAGE	9/22/2015	47	No Record as of 8/1/2008	2655	5/7/2015	185
RESOURCE MANAGEMENT	11/17/2014	356	11/6/14	367	10/13/2014	391
ADMINISTRATION	2/10/2015	271	9/15/15	54	No Record as of 1/1/2014	677
CONTRACTORS	10/22/2015	17	10/22/15	17	9/10/2015	59

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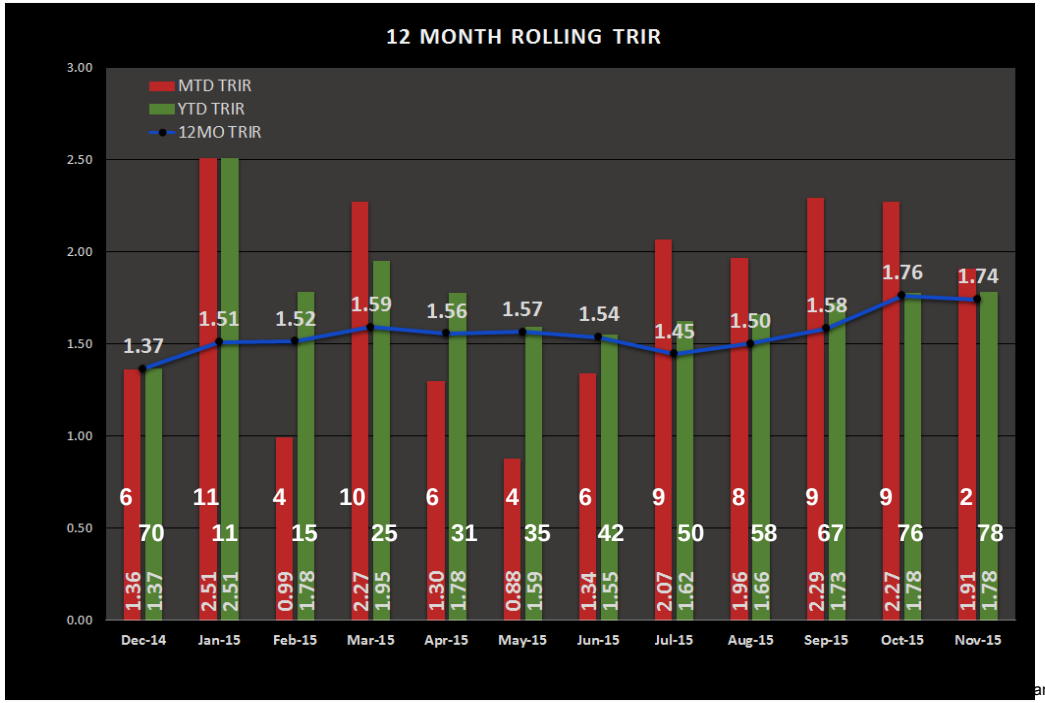
Safety Dashboard 11/8/2015

VALUE AT OUR CORE

TRIR BREAKDOWN	MTD REP	MTD TRIR	YTD REP	YTD TRIR	4QTD REP	4QTD TRIR	HEHI
FMMO	2	2.56 156504	51	1.71 5963655	8	2.15 743439	0.64 MTD
CONTRACTORS	0	0.00 53135	27	1.91 2801079	3	2.32 259033	0.98 Target
CURRENT TOTAL MORENCI ALL	*2*	*1.91* *209639*	*78*	*1.78* *8764734*	*11*	*2.19* *1002472*	

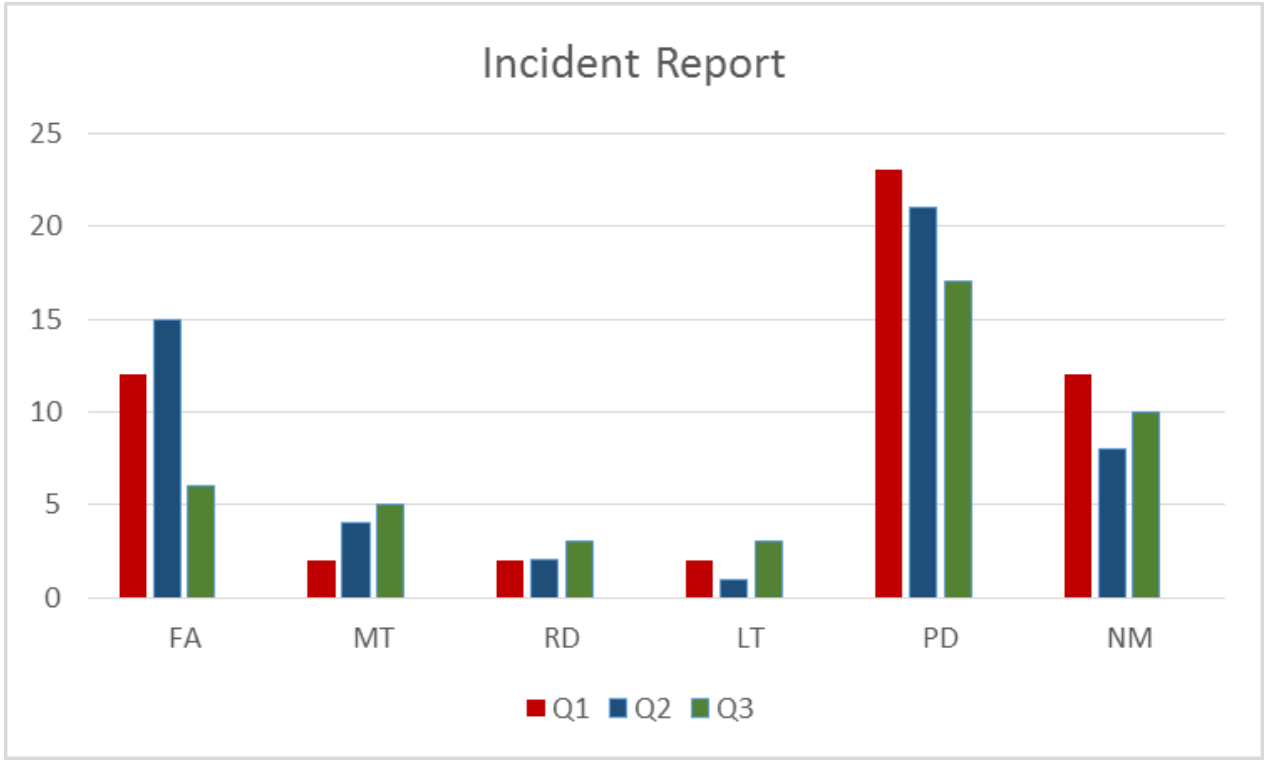
4th Quarter

* 11 / 15



Incident Date	Incident Type	Organization/ Division	Short Description
11/2/2015	First Aid	Processing Maintenance Services	An employee was cleaning around the P-11 Belt when he smashed his finger between the structure and the shovel handle.
11/2/2015	First Aid	Contractor Administration	An Ames employee was walking down the 2:1 slope at the 23 & 25 mm pond when he lost his footing causing him to fall down landing on his hip.
11/3/2015	First Aid	Processing Hydromet	An employee was opening a drain when backpressure from downstream pushed concentrate slurry out of the drain causing him to be splashed and irritating his skin.
11/4/2015	First Aid	Mine Haulage	The operator of the 609HT was loading at the 40 Shovel when she felt pain in her neck.
11/5/2015	Medical Treatment	Processing Metcalf Concentrator	An employee was replacing liners when one struck his finger causing a laceration.
11/4/2015	First Aid	Mine Frag-Loading/ Support	A Drill bit dislodged from the drill steel and shifted several inches causing it to make contact with the employees left thigh.
11/7/2015	Restricted Duty	Processing Leaching	An employee was walking on the 6200 ROM Leach Dump and twisted his ankle.

Quarterly Review



Increasing in numbers and severity TRIR
159 Events 92 Low Risk 59 Medium Risk 8 High
Less than 5% are high Risk.
What ideas do you have we can use to finish out the year and make improvements?

Part of Body

Head	11
From Shoulder to finger	24
Torso	08
Hip and leg	18

Slip trip and falls
Speed Haste
Caught in or between
Cuts and Laceration

Cut resistant gloves-part of proper PPE

What ideas do you have we can use to finish out the year and make improvements?

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Contact Information

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Rory Wilson Trenching and Excavation

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EXCAVATION AND TRENCHING

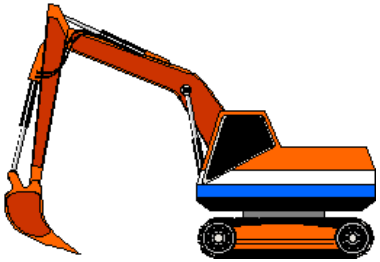
Rory Wilson

Objectives

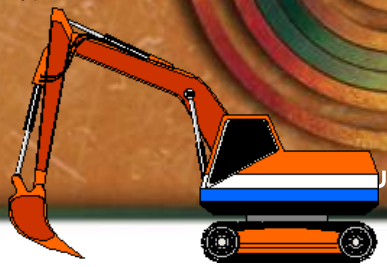
- **Describe the three different soil classifications and the appropriate slope ratios for each.**
- **Describe various protective systems and controls used when working in excavations**

Definitions

- **"Excavation" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.**



Definitions



- **"Trench (Trench excavation)" means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet.**

TRENCH & EXCAVATION FACTS

- Annually
  - 100 to 400 people are killed by cave-ins
  - 1000 to 4000 people are injured

- Average Fatality
  - Male
  - 20 to 30 years of age
  - Has NO Training
  - Occurs in Trenches 5 to 15 feet deep

TRENCH &EXCAVATION FACTS (CONT.)

Soil Can Weigh…

- Pure Dry Sand
  - 90 pounds per cubic foot
  - 2400 pounds per cubic yard

- Saturated Clay
  - 140 pounds per cubic foot
  - 3700 pounds per cubic yard

EXCAVATION FACTS (CONT.)

Cave-Ins Cause Death & Injury…

- Suffocation
- Crushing
- Causing Loss of Circulation
- Being Struck by Falling Objects

Fatalities in Excavations & Trenches

- **The following examples are just some of the many accidents that occur in excavations or trenches. In each of these cases the worker did not have to die.**

Accidents in Excavations & Trenches

- **Case #1:**

- **A 53-year-old laborer employed by a city sewer department entered an 11 1/2-foot-deep un-shored, vertical-walled, manhole excavation in order to lower and level the area where the manhole foundation was to be set.**

- **As he was leaving the excavation after completing this task, one wall collapsed burying him completely and killing him.**

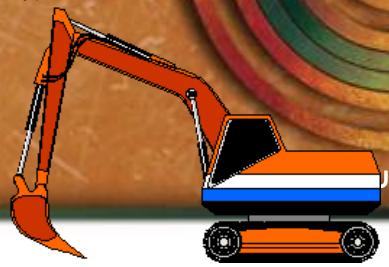
Accidents in Excavations & Trenches

- **Case #2:**

- **A 22-year-old laborer was manually digging a dry well and a trench 8 feet deep for a drainage pipe connection. None of the walls of the excavated areas were shored or sloped to a safe angle of repose, i.e., the greatest angle above the horizontal plane at which a material will lie without sliding.**

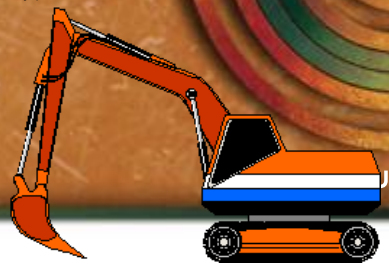
- **As the worker was digging the trench, one wall collapsed covering him with 6 feet of soil and killing him.**

Definitions



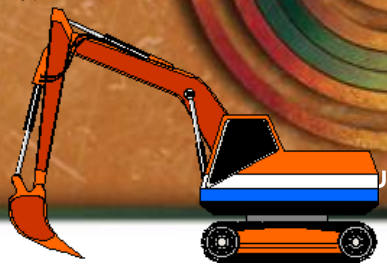
- **The following definitions must be followed when conducting Excavation or trenching operations.**
- **The competent person should know each of these definitions.**

Definition



- **"Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.**

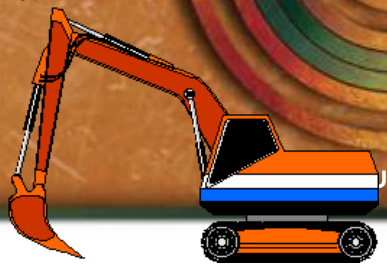
Definition



- **"Sloping (Sloping system)" means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins.**

- **The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.**

Definition



- **"Benching (Benching system)" means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.**

Specific Excavation Requirements

- **Means of egress from trench excavations. A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.**

SPECIFIC EXCAVATION REQUIREMENTS

- Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when made entirely in stable rock or in excavations less than 5 feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

Specific Excavation Requirements

- **Surface encumbrances. All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.**

Specific Excavation Requirements

- **Sidewalks, pavements and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.**

Specific Excavation Requirements

- **Exposure to vehicular traffic. Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.**

Specific Excavation Requirements

- When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation,

- a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation

SLOPING. Maximum allowable slopes for excavations less than 20 ft (6.09 m) based on soil type and angle to the horizontal are as follows:

Soil type	***Height/Depth ratio***	***Slope angle***
Stable Rock		
Vertical	90°	
Type A	¾:1	53°
Type B	1:1	45°
Type C	1½:1	34°

What is wrong with this picture?

Correct Answer

- **Safe access and egress must be provided when the excavation is 4 feet or more in depth.**
- **No more then 25 feet of lateral travel to access/egress allowed.**
- **When using shoring or shielding, the ladder must be inside the protective system.**

What is wrong with this picture?

Correct Answer

- Surface encumbrances that expose employees to hazard of cave-ins shall be removed
- Employees shall be protected from vehicular traffic.

In closing

- Our knowledge and understanding of excavations and excavation standards can make the difference in saving hundreds of lives every year!