FREEPORT-McMoRan

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Monthly Contractor Safety Meeting

March 12, 2019

Meeting Agenda

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- Facilities
- Emergency Exits/Meeting Point
- Cell Phones
- Safety Share
- *This months focus*
  - Special Presentation
    - Kirstin Dreyfus – Geotemps, Inc.
- Environmental Share
  - Asset Recovery & Disposition
- New Health and Safety One Page policies
  - HDPE Pipe Handling Policy – FCX-HS12
- PFE's 2019 1 and 2
- SA's 2019 1 and 2

Morenci Environmental Services

Environmental Share

Asset Recovery and Disposition

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Morenci's Asset Recycling and Disposition (AR&D) Program manages all recyclable materials on site, in addition to the sale, transfer and removal of company assets.

******NO MATERIAL IS TO BE REMOVED FROM SITE BY EMPLOYEE FOR PERSONAL USE******

Recyclable Material	Company Assets	Asset Sales and Transfer
• Scrap Metal • HDPE Pipe • Mill Liners and Pump Parts • Drill Bits, Shovel Cable • Scrap Wood • Used Haul Truck Tires • Used Conveyor Belt • Transformers, Pumps and Electrical Parts	• Departments that no longer need assets and equipment will release assets to AR&D. • AR&D requires documentation (SS07 Form) for the release of assets before taking possession. • Contact AR&D to make an appointment. Do not leave equipment at the yard without an appointment or completed paperwork. • Do not remove items or parts from the AR&D Yard without prior approval from AR&D.	• Unwanted assets are only sold to approved private buyers. • AR&D is not authorized to sell assets or other company materials to FCX employees. • Morenci assets being transferred to other FCX properties must be approved through Accounting. • AR&D requires specific paperwork to authorize asset transfers, and ensures that all equipment being transferred is approved by Management and Accounting. • Contact AR&D early to ensure timely approval of transfer and proper documentation.

March 2019

HDPE Pipe Handling Policy

Health and Safety FCX-HS12 | Release Date 1/18/2019

One page policy

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POTENTIAL FATAL RISKS

Uncontrolled Release of Energy
Lifting Operations
Vehicle Impact on Person

CRITICAL CONTROLS

- Segregation, Guards, Barriers & Barricades
- Tensioned Lines Management
- HDPE Management
- Energy Isolation
- Mechanical Integrity of Lifting Equipment
- Lifting Execution
- Vehicle Preoperational Inspection
- Positive Communication System
- Fundamentally Stable Parking

TECHNICAL SUPPLEMENTS

HDPE Pipe Pulling Force Reference
HDPE Pipe Handling Permit
Push/Pull/Positioning Illustrations
Rigging Approval
HDPE Pipe Handling Engineering Review
Receiving/Loading/Unloading Checklist
HDPE Pipe Shipping Requirements
Approved Rigging Assemblies

TRAINING REQUIREMENTS

All employees and contractors handling HDPE pipe must be trained in this policy and required skills
HDPE Pipe Handling (Initial and Refresher)
HYD_FCX2027C & HYD_FCX2024C)
HDPE Pipe Fusing (HYD_MTI1002C)
HDPE Skills training/assessments
HDPE Datalogging (HYD_MTI1003C)
Technical Rigging (RIG_FCX1001C)
Remedial Training as necessary

POLICY

OVERVIEW

Permit is required for handling all pipe 2in. (5cm) in diameter or larger and 50ft. (15.24m) in length or greater,
All deliveries require a receiving/loading/ unloading checklist.
SOPs will be developed for activities around HDPE receiving, offloading, storage, pulling and installation, and coiled pipe.
Reference documents use is mandatory.
Engineering reviews and MOC may be required for new installations or major changes.

ACTIONS TO STAY SAFE

Conduct pre-job safety reviews.
Always complete all required permits and checklists.
Verify that equipment in use has adequate lifting/pulling capacity.
Task train employees for all equipment in use with HDPE.
Follow all SOPs when working with HDPE.
All personnel must remain 50ft. (15.24m) or more away from pipe being moved or handled, or utilize substantial barriers.
Personnel directly involved with handling activities and within 50ft. (15.24m) of HDPE must ensure pipe is controlled and blocked as necessary.
Eliminate interaction with traffic or utilize appropriate blocking during pulls.
Consider increased stored energy when bending pipe and install barriers as needed.

RECEIVING, OFFLOADING AND STORAGE

Complete load receiving/loading/unloading checklist.
Receiving personnel will coordinate with operations on all HDPE deliveries.
Establish 50ft. (15.24m) safe zone fully around truck being unloaded.
Safe zones must be demarcated.
Truck drivers will stay with Safety Watch(es) when unloading HDPE.
FCX vehicles moving pipe will have engineered controls to secure pipe.
Barriers/blocking will be utilized when unstrapping pipe.
Without engineering controls:
- Store pipe 10in. (.25m) in diameter or larger no more than two pipes high.
- Store pipe less than 10in. (.25m) in diameter no higher than 2ft. (.61m).

FUSING, INSTALLATION AND REPAIR

Complete HDPE permit prior to starting work.
Never use banding clamps to splice pipe ends.
Dataloggers must be used when fusing pipe 12in. (.3m) and larger.

ENGINEERING REVIEW AND PERMIT REQUIRED WHEN:

Pulling pipe longer than 400ft.
Pulling pipe on grades greater than 25%.
Any activities (other than loading/unloading) pipe 42in. (1.07m) and larger diameter.
Pushing pipe of any diameter or length.
All tasks involving double walled or dual contained pipe.
Cutting pipe with significant bends and/or potential stored energy.

PFE – 2019-1

FREEPORT-McMoRan

POTENTIAL FATAL EVENT ADVISORY		
	**Rubber Tire Dozer and Shovel Collision**	PFE # PFE – 2019 - 1 IMS # 93134 OPERATION: El Abra INCIDENT DATE: 1/2/2019 TIME: 10:30 p.m. TYPE: Property Damage PFE Follow-Up:
Issued By: **Carlos Aguilera Viñas**	Contact For Additional Details: **caguiler@fmi.com**	

This Advisory is a NOTIFICATION of an event/condition, or potential which may have resulted in a fatality at a Freeport-McMoRan location. The information below is intended to be used for proactive preventative purposes.

DESCRIPTION / DETAILS OF ADVISORY

Summary: A rubber tire dozer operator was struck by the counterweight of a shovel after entering the swing radius to remove an oversized rock.

Description: A rubber tire dozer operator entered the swing radius of a 4100 shovel on the blind side to remove an oversized rock. When the shovel moved to load a haul truck, the left side of the counterweight struck the right side of the dozer cab, damaging the handrails, mirrors and windshields. The dozer operator immediately moved the vehicle out of the swing radius and reported the event to the Supervisor. The operator was not injured.

FATAL RISKS

Vehicle Collision	N/A

OTHER SIGNFICANT RISK (specific to site or task not categorized as global)

N/A

ABSENT / INSUFFICIENT CONTROLS CONTRIBUTING TO THE EVENT

- Failure to follow procedures for entering the shovel swing radius / request authorization to enter and remove the rock

PFE – 2019-1

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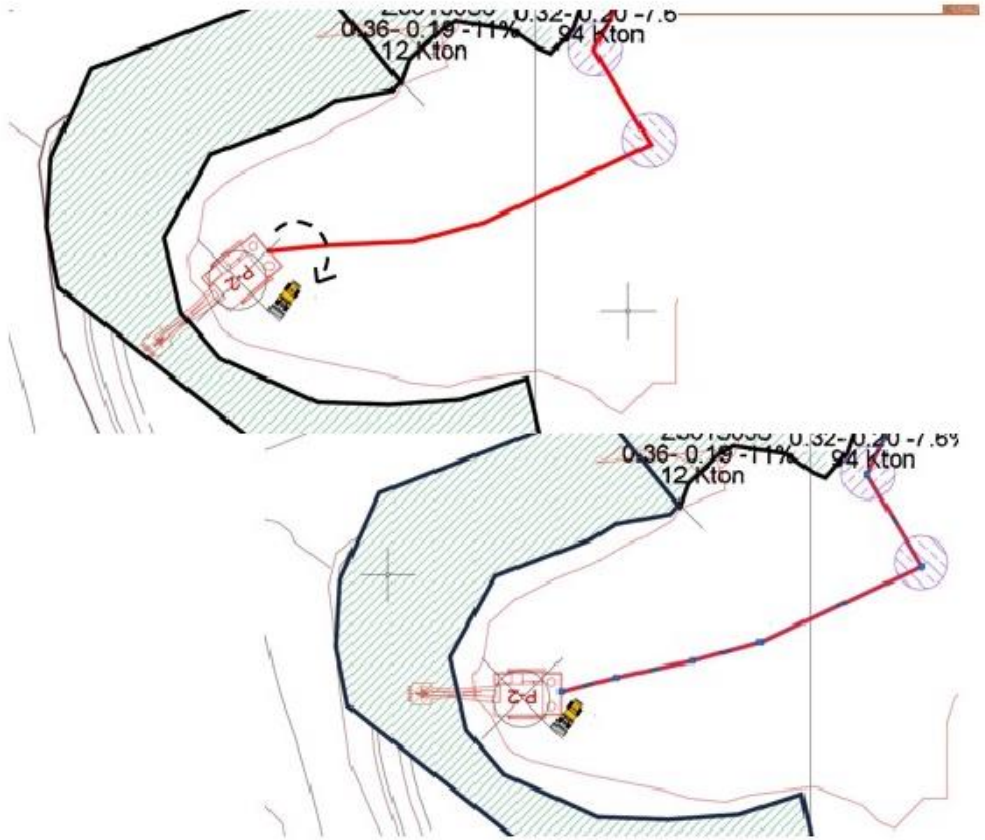
HEALTH AND SAFETY POLICIES	APPLICABLE STANDARDS / POLICIES / PROCEDURES
Mobile Equipment Interaction	• Internal Driving Regulation, • Electrical Shovel Operation Procedure • Wheel Dozer Operational Procedure



Top diagram – the position of the dozer to the shovel and the clockwise movement of the shovel.

Bottom diagram – the location of the shovel and dozer after impact.

PFE – 2019 - 2

FREEPORT-McMoRan

POTENTIAL FATAL EVENT ADVISORY		PFE #	PFE- 2019 - 2
		IMS #	93490
		OPERATION:	Cerro Verde
	**Loss of Vehicle Control**	INCIDENT DATE:	1/16/19
		TIME:	11:45 am
		TYPE:	Lost Time
		PFE Follow-Up:	
Issued By: **Johanna Illanes Reyes,** Environmental Manager		Contact For Additional Details: **Luis Grajeda,** Safety Superintendent	

This advisory is a NOTIFICATION of an event / condition, or potential that could have resulted in a fatality at a Freeport-McMoran site. The following information is destined to be used to preemptive proactive measures.

DESCRIPTION / DETAILS OF ADVISORY

Summary: Two sewage contractor employees were injured when their sewage truck sped out of control, went over a safety berm and rolled on to its right side.

Description: Two sewage contractor employees were approximately 265 meters (869 feet) from the mine access gate when their sewage truck began to speed out of control. The truck drove through the gate and hit a plastic jersey barrier without stopping. It continued to pick up speed, traveling downhill approximately 900 meters (3,000 feet) before crossing into the opposite lane of traffic at a curve in the road. It then went over the safety berm (more than three-quarters the height of the truck tire), rolled on to its right side and slid approximately 9 meters (30 feet) before stopping.

Each employee was wearing a seat belt. Both sustained injuries but were able to exit the vehicle without assistance. The vehicle was sent for full inspection. An investigation currently is underway.

FATAL RISKS

Vehicle Collision	N/A

OTHER SIGNFICANT RISK (specific to site or task not categorized as global)

- Vehicle rollover

ABSENT / INSUFFICIENT CONTROLS CONTRIBUTING TO THE EVENT

- An RCA is being conducted to determine absent / insufficient controls

PFE – 2019-2

The sewage truck's route during the incident.

The dotted yellow line shows the path of the truck through the mine access gate. The red starburst is where it hit a plastic jersey barrier without stopping.

PFE - 2019-2

The dotted yellow line shows the path of the truck around the curve.

Final position of the sewage truck.

Safety Alert 2019-1

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FREEPORT-McMoRan

SAFETY ALERT NOTIFICATION		Safety Alert #	SA – 2019 - 1
		IMS #	94913
		OPERATION:	Fort Madison
	Small Sulfur Pit Fire	INCIDENT DATE:	1/9/2019
		TIME:	4:45 p.m.
		TYPE:	Property Damage
Issued By: **Javier Guevara**		Contact For Additional Details: **Sarah Johnson**	

This is NOT an investigation report. It is a NOTIFICATION of a Significant Incident that has taken place at a Freeport-McMoRan location. The information below is a preliminary assessment and not a formal investigation.

INCIDENT DESCRIPTION

Summary: A property damage occurred when the sulfur furnace feed pit caught fire.

Description: During normal operations, the west sulfur furnace feed pump in the sulfuric acid plant unexpectedly went down. The operator was unable to re-start the west pump or the backup east pump from the control room and notified the on-shift supervisor, who went to the acid plant to assist. Once there, the supervisor saw that the top of the sulfur furnace feed pit was on fire and the wires on both the east and west sulfur furnace feed pumps had burned. With no way to pump sulfur into the furnace, the acid plant main gas blower was shut down to maintain temperature and enable a re-start later. After further evaluation, the supervisor discovered a fire below the sulfur furnace feed pump platform in the small feed pit, which had carried over to the pit overflow trench area. Both fires were put out using a combination of steam and fire extinguishers.

FATAL RISKS	HEALTH AND SAFETY POLICIES
Fire	N/A
Exposure to Hazardous Substance	N/A

OTHER SIGNFICANT RISK (specific to site or task not categorized as global)

- The incident resulted in an SO_2 gas limit exceedance reportable to federal and state regulators.

Safety Alert Continued

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PROBABLE DIRECT CAUSES

- Pyrophoric iron ignition leading to sustained sulfur fire – based on employee accounts of shallow, blue, sparky flames and fairly clear combustion gas, it was determined that the fire was sustained by the presence of elemental sulfur. Pyrophoric iron ignition is a common cause of fires within refinery and sulfur systems. See Supporting Documentation section for more information.

IMMEDIATE CORRECTIVE ACTION(S)

- Put out fires using extinguishers and steam.
- Stopped roaster feed throughout the day and night while sulfur pit fires continued – spotter monitored fires overnight.
- Shut down acid plant for heat conservation purposes – outside ambient temperature was below freezing point.
- Replaced burned cables and restarted acid plant.

REQUIRED ACTIONS

Action Plan – The following action plan is based on recommendations from an expert on sulfur fires from the acid and sulfur marketer company for Fort Madison. See Supporting Documentation section for more information.

- Install steam piping in small sulfur pit (steam snuffing system)
  - Similar to the existing installations in the large sulfur pit and the sulfur tank
- Review construction materials for the small sulfur pit pump platform
  - If the materials are carbon steel, then replace with stainless steel or add a coating
- Install adequate vent system on small sulfur pit
- Review RCM plan for sulfur furnace feed pumps to increase frequency of seal/bearing inspection so issues are noted early
- Reset expectations around sulfur storage housekeeping
- Request Oxbow assist with conducting an audit of sulfur system in 2019

Safety Alert Continued

Burned power cables to the sulfur pumps.

Safety Alert 2019-2

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SAFETY ALERT NOTIFICATION		
	Over pressurization of Ammonia Tank	
Issued By: **Matt Linnenbrink, Safety Specialist I**	Contact For Additional Details: **Jan v.d. Linden, Operations Manager**	

Safety Alert #	SA – 2019 - 2
IMS #	95005
OPERATION:	Fort Madison
INCIDENT DATE:	2/1/2019
TIME:	2:30 p.m.
TYPE:	Near Miss

This is NOT an investigation report. It is a NOTIFICATION of a Significant Incident that has taken place at a Freeport-McMoRan location. The information below is a preliminary assessment and not a formal investigation.

INCIDENT DESCRIPTION

Summary: A site wide evacuation was called due to an ammonia release in the chemical plant.

Description: Chemical plant operators closed a valve on the ammonia storage tank in order to make a repair on a leaking needle valve. This isolated the pressure control loop and the high pressure alarm switch, causing the control loop to read zero pressure. As a result, the liquid ammonia control valve opened and excess liquid ammonia flowed into the vaporizer. The tank then became over pressurized, and ammonia vapors came out of two pressure relief valves – one on the vapor line going to the chemical plant and one by the ammonia truck unloading area.

The operators noticed the release, pushed the emergency shut off valve and activated the emergency deluge system. Following a brief delay in sprinkler discharge, the system dissolved the ammonia vapor cloud. Operators then shut off the system, and an employee wearing a self-contained breathing apparatus entered the tank area and opened the valve. This returned the tank pressure to normal.

During the event, a site wide evacuation was ordered as wind was blowing across the plant. No symptoms or physical discomfort from exposure to ammonia vapors have been reported.

FATAL RISKS	HEALTH AND SAFETY POLICIES
Exposure to Hazardous Substance	N/A
Uncontrolled Release of Energy	N/A

OTHER SIGNFICANT RISK (specific to site or task not categorized as global)

N/A

Safety Alert Continued

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PROBABLE DIRECT CAUSES

- Lack of knowledge / skill – This job is not performed very often and the procedure that exists is not specific to the task performed.
- Inadequate instructions, orientation and / or training – The Safe Job Procedure for isolating the ammonia tank did not include steps to isolate the needle valve.
- Inadequate identification and evaluation of risks – Consequences of shutting the valve were not clear.
- Inadequate work planning – Subject matter experts on the ammonia system were not consulted.

IMMEDIATE CORRECTIVE ACTION(S)

- Activated site wide evacuation
- Notified surrounding businesses and residents of release
- Opened valve to return conditions back to normal – all clear was announced
- Conducted incident debrief immediately after incident
- Conducted Root Cause Analysis
- Fixed needle valve that was leaking once all subject matter experts were on site

REQUIRED ACTIONS(S)

- Update / develop Safe Job Procedures for any work being conducted on Ammonia Storage Tank
- Develop / update training to include valve isolation procedures
- Follow up on conditions that caused the deluge system to delay
- Review other critical systems on site and train employees
- Re-emphasize the obligation to stop the job with employees

Safety Alert Continued

Circled in green is the needle valve that was leaking.

Safety Alert

Circled in red is the closed valve that caused the tank to become over pressurized.

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Questions?

Thank you for attending!

Go Slow to Go Fast…