Miami Site Specific

Contractor Orientation
Site Specific Handout

Miami Technical Training
V 1 2023

FREEPORT-McMoRan

MIAMI OPERATIONS

HAZARD RECOGNITION

At Miami, we are "ALL IN" for safety by preventing fatalities.

The following rules and guidelines apply during your visit at Miami operations. For your personal safety and the safety of others, observe these rules and guidelines at all times.

CONFIDENTIALITY AGREEMENT

While on Miami operations property, use of photographic or video equipment or similar technology is prohibited without the express prior written consent if Freeport-McMoRan. In consideration for the granting of permission to enter the Miami operations property, I hereby agree all knowledge and information acquired or otherwise obtained by me relating to the site's operations may not be used by me for any purpose or divulged to any person other than authorized representatives of Miami operations without the express prior written consent of Freeport-McMoRan.

RELEASE AND INDEMNITY

On behalf of myself, my parent and subsidiary corporations, in consideration for the granting of permission to enter upon the property owned by Freeport-McMoRan Miami operations, I releases and agrees to hold harmless and indemnify Freeport-McMoRan, its affiliates, officers, employees, and agents, from and against all claims and all injuries, losses, and damages to any person or property arising out of entry onto the company's operations from the date of this release.

HAZARD RECOGNITION AND AVOIDANCE

- Freeport-McMoRan prohibits the transport or use of alcoholic beverages, drugs and narcotics on company property.
- Stay clear of working mobile equipment as the operator may not see you.
- Observe all No Smoking areas.
- Seatbelts must be worn by the operator and passengers while vehicles are in motion.
- Authorization is required to drive on roads in the Mining Division areas.
- A two-way radio with the mine frequency is required to drive in the Mine Division areas.
- Left-hand traffic is used throughout the Mine Division area.
- Maximum speed is 35 mph on mine roads.
- Observe traffic regulatory signs and rules at all times.
- If authorized to be in the Smelter, Rod Plant, Refinery or Maintenance Shop areas, watch for overhead cranes in operation. Cranes in motion will have audible and visual alarms.
- Do not walk under suspended loads.
- Be alert for slip, trip and fall hazards.
- Use proper eye protection in areas where cutting and welding work is being performed.
- One-ton vehicles or larger must be chocked and have the park brake set when parked.
- All vehicles are subject to periodic, unannounced inspections at any location on the site.
- Company policy is to arrest and prosecute anyone apprehended for committing theft from the plant premises.
- The maximum speed on our property is 35 mph unless otherwise posted. This is strictly enforced and violators will be cited. Repeat violators will lose their driving privileges on this property.

BASIC PERSONAL PROTECTIVE EQUIPMENT – PPE

- Hard hat
- Safety glasses with side shields
- Hearing protection
- Safety toe boots
- Long pants that extend over the top of boots
- Additional PPE requirements may include:
  - Reflective vest
  - Long sleeved shirt (in required areas)
  - Foam-fitted safety glasses, goggles or face shield
  - Fitted respirator with Acid/Gas P100 Cartridges – on your person at all times
  - MVP 100 Mercury cartridges for working in the solar pad area
  - Approved chemical-resistant suits for working in strong acid areas or caustic handling and storage areas
  - Safety toe boots with metatarsal guards and a defined heel
    - Visitors may wear closed-toed shoes with prior approval.
    - Truck drivers must have safety toe boots. Metatarsal guards are not required.

WIND SOCKS

There are multiple windsocks throughout the site that show you which direction the wind is blowing. In the event of a possible gas release, evacuate in the opposite direction (upwind) immediately.

GAI-TRONICS

The Gai-Tronics communication system is located throughout the smelter and designated by RED lights. When lit, these lights indicate a mandatory evacuation of the smelter areas. The system can be used to communicate with operators in the acid plant control room as well as to communicate other emergencies if necessary.

SAFETY SHOWERS

Safety showers and eye wash stations are located throughout the Miami operations and designated by BLUE lights. In the event you are exposed to a hazardous chemical or substance, proceed to the nearest safety shower and flush with water immediately for a minimum of 15 minutes, then seek medical attention.

PHONE NUMBERS

- On Site Emergency: (928) 473-7555
- Emergency: 911
- Main Gate for Non-Emergency: (928) 473-7100
- Smelter Control Room: (928) 473-7036
- Acid Plant Control Room: (928) 473-7037

FATAL RISKS PRESENT AT MIAMI OPERATIONS

These symbols indicate a Fatal Risk may be present in the area. Please consult with local leadership before proceeding to ensure all Critical Controls are in place to prevent any serious incidents from occurring.


Blasting


Confined Spaces


Contact with Molten Material


Drowning


Entanglement and Crushing


Exposure to Electrical Hazards


Fall from Heights


Falling Objects


Fire


Ground Failure


Hazardous Substance – Acute Exposure


Hazardous Substance – Chronic Exposure


Interaction with Aircraft


Lifting Operations


Uncontrolled Release of Energy


Vehicle Impact on Person


Vechicle Collision or Rollover


Rail Collision


Rail Impact on Person

FREEPORT MIAMI: Site Delivery Locations

Remember:
Left hand traffic in mine
Cell Phone use prohibited while operating vehicles
Follow gold star to return to security gate

ACCESS ROAD

HAUL ROAD (Restricted Access)

REFINERY

ANALYTICAL LAB

CENTRAL ACCUMULATION

#3 SLAG DUMP

(.4 mi)

(.5 mi)

TAILINGS

ACID UNLOADING

To TANKHOUSE (1.1mi)
SX (2.6mi)

MIDC

CONCENTRATE STORAGE

SMELTER

(.6 mi)

NEW CONCENTRATE STORAGE

(.25 mi)

HEALTH CENTER

CONTRACTOR GATE

(.8 mi)

MAIN GATE

MAIN GATE EXIT

TRUCK SCALES

ROD PLANT

SMELTER
ACID PLANT
MIDC
HEALTH CENTER
SX EW
SECURITY GATE

1" = 500'

0' 500' 1000' 1500'

FREEPORT-McMoRan

Fatal Risk Management

North America Contractor Orientation Handout 2023

Fatality Prevention Program


Blasting


Confined Space


Contact with Molten Material


Drowning


Entanglement and Crushing


Exposure to Electrical Hazards


Falls from Heights


Falling Objects


Fire


Ground Failure


Hazardous Substances Acute


Hazardous Substances Chronic


Interaction with Aircraft


Lifting Operations


Personnel Hoisting


Rail Collision


Rail impact on Person


Uncontrolled release of energy


Underground Hazardous Atmosphere


Underground Inrush


Underground Rock Fall


Vehicle Collision or Rollover


Vehicle Impact on Person


Underground Shaft Hoisting

What is Fatal Risk Management?

It is a set of tools to enhance our Fatality Prevention Program

- Fatal Risk Management is a simple set of symbols, questions, and mobile software to help us further enhance our Fatality Prevention Program.

A set of visual symbols of the 25 fatal risks faced by our employees

- Through analysis of company and industry incidents we have identified 25 fatal risks that are present in our operations. For each fatal risk we created a symbol to represent the presence of that hazard.

A standardized set of critical controls to help keep you safe

- For each fatal risk we identified, there is a list of the critical controls necessary to prevent a serious injury or fatality. We also provided a set of short questions to facilitate discussion about the best way to implement each control.

Empowerment for operators and supervisors to "Stop the Work"

- Safety is the responsibility of every employee. Fatal Risk Management is about empowering everyone to "Stop the Work" if a critical control is missing or ineffective.

How Do I Use Fatal Risk Management?

Step 1 - Identify the Risks

Identify the Fatal Risks that may be present in your job task. Be reasonable and focus on the fatal risks you are most likely to encounter during your task.

Many tasks will have multiple fatal risks, but don't go overboard trying to pick as many as possible.

Step 2 - Review the Controls

This booklet contains the critical controls and verification questions to ask for each fatal risk. Review the information in the booklet to help you plan how to complete the task safely.

Step 3 - Communicate the Work Plan

Have a conversation with your co-workers/team/crew about how you will implement each of the critical controls. Talk about it in your tailgate meeting, in the field, or during a job. It's all about communication and understanding how to complete a task safely.

Step 4 - Stop the Work if Necessary

"Stop the Work" immediately if you realize that a critical control is missing or not correctly implemented

Blasting

Surface Mining

Exposure to thermal, overpressure and fragment hazards associated with explosives.

Critical Control	Am I Implementing the Control Effectively?
General	– Do all personnel working with explosives have the proper training, licensing, and accreditations? – Is licensing documentation current and properly updated if licensing conditions have changed? – Have blasting SOP's been developed, readily available and reviewed according to policy?
Storage of Explosives & Access Control	– Is the explosive storage area routinely inspected and properly secured with adequate fencing and signage? – Is the explosive storage area free of potential ignition sources? – Is proper documentation kept and maintained at the explosive's storage facility?
Explosives Transportation & Vehicle Inspections	– Has a pre-shift inspection been completed on transportation vehicles prior to operation? – Are all day boxes locked while transporting explosives? – Have all routes that will be used to get to the blast site been inspected prior to transporting explosive material? – Are detonators kept separate from explosives or blasting materials? – Are explosive transportation boxes constructed and maintained according to regulations?
Communication & Clearing	– Has a pre-blast meeting been held to ensure all parties understand assignments and responsibilities. – Is sufficient warning announced prior to blasting and are all calls being used to ensure all parties are aware of a blast? – Has a qualified and responsible FCX employee been present and involved with blocking assignments? – Have all personnel been cleared of the blast area prior to installing initiation devices? – Has all effected equipment been relocated to a safe position to prevent damage from potential fly rock? – Is the lightning detection system functioning and fully operational?
Blast Site Access Control & Work Execution	– When explosives or initiating systems are present, is the blast site secured against unauthorized personnel access? – In the case of any foreign metals in the blast holes, has proper communication been established and location documented? – Following the completion of loading activities, is any unused explosive material transported to a secure location?
Management of Misfires	– Before reentering a blast zone, has the area been cleared of any gasses? – Has the blast area been inspected and cleared for misfires prior to resuming normal operations?
	– Are personnel adhering to the 30-minute wait period before entering the blast area after a misfire or suspected misfire and has the misfire or suspected misfire been communicated to mining personnel? – Have barricades been placed a minimum of 30' from the center of the misfire location and is signage in place to notify personnel of the misfire? – If the misfire can be recovered, have the misfire products been safely disposed of? – Are shovel and loader GPS systems operational so that misfires can be properly communicated?

Confined Space

Exposure to a hazardous environment in a confined space.

Critical Control	Am I Implementing the Control Effectively?
Entry Permit Execution	– Has the space been evaluated using the permit to determine if the space is a Permit Required Confined Space? – Have the Confined Space Permit requirements been verified and are they understood by the entry team?
Atmospheric Monitoring	– Are proper air monitoring procedures being followed throughout the entry?
Energy Isolation	– Have all energy sources been identified, isolated, dissipated, locked out, and tried out?
Access and Working Surface	– Have fall from height, engulfment, safe access, working surfaces, falling object hazards been addressed?
Ventilation	– Is proper ventilation being provided (consider air flow requirements, adjacent work, e.g. generator exhaust, welding fumes, etc.)?
Communication	– Have proper communication practices been put in place?
Evacuation & Rescue	– Is there a dedicated Entry Attendant and do they know when to evacuate the confined space? – Is there an emergency plan designed and prepared for the confined space?

Contact with Molten Material

Critical Control	Am I Implementing the Control Effectively?
Cooling Element Monitoring	– Have the required inspections on the cooling system been completed? – Has cooling water been established on the shaft furnace and/or vertical furnace? – Has adequate flow and temperature on the cooling elements been confirmed and do personnel know what to do if it is out of spec? – Have all hoses and fittings been inspected to ensure no leaks on the tap plates?
Eng. Molten Metal Conveyance Systems	– Have the fixed transport systems been inspected to ensure that they are in good operating condition and free of any foreign materials?
Water and Molten Metal Segregation	– Has the area below the furnaces been inspected to ensure they are free of standing water? – Are charged materials controlled to prevent explosive bath positions? – Has the system been purged to ensure water will not enter the vessel? – Are launders and converter aisles free of water? – Are hot pots being used to prevent explosion?
Fire Suppression Systems	– Does the equipment that interacts with molten metal have a fire suppression system installed and is it in good working order? – Are the fire suppression nozzles free of blockage and pointed in the right direction to facilitate an escape from a fire?
Furnace and Taphole Integrity	– Has a visual inspection for defects on the tap hole(s) been conducted along with all other required operational inspections? – Is a redundant tapping machine available and operational? – Are tap hole plugs and supplies available and in good condition? – Do personnel have the proper training to Oxy lance and drill a taphole? – Are refractory repair schedules being met and do inspections indicate that they are effective? – Are tap hole replacement procedures for cool down times and notification requirements followed? – Is the tapping machine drill steel properly aligned to prevent damage to the tap plate and tap hole? – Has the Oxy lance and all connections been inspected prior to use?
	– Are warning lights and barricades in place for active tapping? – Are the spill containment systems maintained and effective? – Are all areas below furnaces and tap holes free of any accumulated water or foreign material?
Hot Metal PPE	– Has all Hot Metal PPE been inspected prior to use, free from modifications and is the PPE being worn correctly?
Pot Level Control	– Are visual checks of the pot level taking place during the fill? – Are all automatic and manual level controls working properly? – Is adequate freeboard being maintained in the pot and is the pot on a level surface?
Chemistry & Process Controls	– Are temperatures within upper and lower limits? – Are samples collected and sent to the lab per established procedures? – Are furnace levels monitored according to the SOP requirements? – Are temperatures monitored according to the SOP requirements? – Are the established furnace process controls maintaining stable furnace conditions? – Are charged materials added per SOP requirements?
Access Control	– Are controls for restricting access of people and vehicles in place? – Have crossing gates been provided at vehicle crossing locations of the slag hauler, and are they closed during molten metal hauling operation? – Is equipment locked out/secured prior to personnel entry into molten metal discharge areas? – Are signs & procedures in place to keep people out of hazardous areas?
Cooling System Integrity	– Has the over-filled pot been cooled per the established SOP? – Have the molds been inspected to ensure no water can come into contact with molten material? – Have vessels been inspected for any hot spots? – Has the system been purged to ensure water will not enter the vessel?

Drowning

Exposure to the risk of drowning in natural or manmade bodies of water or other vats, cells, vessels, and open containers of liquid.

Critical Control	Am I Implementing the Control Effectively?
Barriers & Segregation	- Is access to the area restricted by physical barriers and are the controls to pass the barriers posted? - Is the possibility of an inrush of solution/material controlled and/or accounted for? - Does the signage in the area clearly display the appropriate and adequate information for the area?
Flotation PPE	- Is PPE readily accessible, in good condition, and in - accordance with manufacturer's specifications? - Is PPE being worn properly?
Access Control	- - Is safe access established?
Access Equipment & Vehicles	- Have the equipment inspections been performed? - Are the equipment/access vehicles being maintained to OEM standards? - Is the operation of the equipment within the safe operating capacities?
Emergency Response	- Has a rescue plan been established, approved and communicated? - Are the proper responding personnel notified and available to respond in the event of an emergency? - Do all personnel in the work area understand the rescue plan and what role they serve?

Entanglement and Crushing

Contact with machinery/moving parts (entanglement, crushing, pinching, penetrating, and cutting forces)

Critical Control	Am I Implementing the Control Effectively?
Barriers and Segregation	- Has flagging and barricading been properly installed to alert personnel of the hazards present?
Equipment Integrity	- Are interlocks, emergency stops and pull cords functioning properly?
Guarding	- When working around operating equipment, is the guarding sufficient to protect employees from entanglement?
Human Factors	- Is loose jewelry, clothing, hair, and other personal items tied back so that they do not get tangled in the equipment? - Is proper hand/body placement being observed to stay out of the line of fire?
Job Execution	- Are safe distances being maintained when working around unguarded moving equipment and are procedures clearly understood? - Have escape routes been considered if something was to go wrong? - Is the work process streamlined to minimize exposure to an entanglement hazard?
Energy Isolation	- Have all energy sources been identified, isolated and de-energized prior to starting work? - Have proper LOTOTO procedures been followed and completed?
Mechanical Blocking	- - Have devices installed to prevent unintentional movement been inspected for proper installation?
Work Completion	- Have any installed blocking devices been removed? - Has guarding or barricades been properly replaced and secured? - Have all employees been accounted for and notified of start-up?

Exposure to Electrical Hazards

Exposure to electrical shock or arc flash.

Critical Control	Am I Implementing the Control Effectively?
Switching Procedures	- Are the ground isolators working? - Is there access to up-to-date drawings? - Have all affected parties been notified? - Has an SOP and/or Risk Assessment been established and reviewed for the work that is taking place? - Has a JSA been conducted and reviewed prior to performing work? - Have the switching procedures been reviewed, approved and communicated?
Labeling & Energy Identification	- Are arc flash rating labels up-to-date and reviewed by a competent person? - Is the equipment and isolation point(s) required label- ing present and the information accurate and legible? - Are personnel using any electrical drawings for the work that is being performed?
Energy Isolation	- Are personnel trained for the task at hand? - Have personnel verified if there is any stored or residual energy? - Has the load been removed or reduced to a proper switching level prior to energy isolation? - Have all potential energy sources been identified? - Is an ECC required for the task/work being performed? - Is the equipment maintained and in good condition? - Has any energized work taking place been reviewed and approved?
Electrical PPE	- Has the correct PPE been selected, inspected and worn properly prior to work starting? - Is the arc flash protection PPE adequate per the labeling?
Barriers & Segregation	- Are the barriers adequate for the protection of all personnel? - Have all evacuation points been identified and communicated?
Emergency Response	- Has a rescue plan been developed and reviewed? - Have personnel been trained to respond to someone that is being electrocuted?

Fall from Heights

Working at height where the danger of falling exists.

Critical Control	Am I Implementing the Control Effectively?
Fall Protection System	- Has the fall protection harness been properly inspected prior to use? - Has the right fall protection been selected for the task? - Are proper tie off/anchor points readily available and allow for 100% tie off at all times?
Fixed Work Platforms & Scaffolding	- Has the scaffolding/work platform been approved and inspected prior to use by a qualified and competent person? - Is the scaffolding protected from any potential impact by equipment?
Mobile Platforms	- Has the mobile platform been approved for the work and inspected by a competent person? - Do the operating conditions (weather, ground conditions) allow for safe operation of the mobile platform?
Leading Edges and Open Holes	- Have all leading edges and/or open holes been properly guarded or hard barricaded? - Have adequate protection systems been installed and inspected?
Emergency Response	- Has a rescue plan been reviewed and approved by the team?

Falling Objects

Exposure to falling objects

Critical Control	Am I Implementing the Control Effectively?
Barriers and Segregation	- Are the barricades/flagging appropriate for the hazard(s) present and placed 360 degrees around the hazard(s)? - Is the work area protected by barricading or flagging at enough distance to prevent objects/materials from impacting personnel on a lower level?
Overhead Structure	- Does the overhead structure show signs of degradation/impact that could compromise its integrity? - Is the work platform(s) maintained in good condition? (e.g. toe boards, continuous work surface, no holes in grating, etc.) - Is guarding sufficient to catch any materials that may have the potential to fall?
Work Execution	- Has the work execution been reviewed to eliminate the need for personnel to work below active work areas? - If people are working below, are proper protections and PPE in place and being used? - Are tool lanyards in use when people need to be working below the work area? - When pausing/completing a job, have potential objects that could fall been properly secured or removed (consider environmental factors such as wind)?

Fire

Exposure to thermal, particulate, gas or vapor hazards from a fire.

Critical Control	Am I Implementing the Control Effectively?
Escape Routes	- Are walkways, pathways and exit routes free and clear of debris? - Are exit routes properly identified and posted?
Pre-Work Planning, Inspections & Communication	- Are extinguishers easily accessible at exit locations and the size/style appropriate for the area? - Is the appropriate PPE available and being used for the hazards present? - Has a JSA/JRA/HASP been completed and reviewed prior to work starting? - Have LOTOTO and isolation points been identified to ensure that flammable gases/liquids are mitigated from being a hazard? - Have pre-op inspections been completed prior to work starting work? - Has a communication method been established for the employees involved in work execution?
Hot Work & Fire Watch	- Has the fire watch received training, understand the workflow and any associated risks? - Has a dedicated fire watch been assigned to the work? - Have communication paths been identified for the fire watch? - Have the proper permits been completed prior to work and properly closed out after the work?
Storage of Product & Material	- Have all products/materials been identified, properly labeled and stored in good order? - Have incompatible products and materials been separated or stored away from each other and properly secured? - Have stored materials been protected from any hot work? - Are chemical off-loading points secured so that materials/products/reagents are not off loaded in the wrong area(s).
Proper Use & Disposal of Chemicals, Materials and Product	- Are personnel properly trained to handle the product/chemical or material? - Has the proper PPE been identified and is it in use? - Have chemicals/products/materials been properly disposed of? - Are the proper tools being used for the identified material/product being handled?
Barriers & Segregation	- Has the proper barricading for the type of work been completed been established and is it properly labeled? - Has the work, hazards and duration of work been communicated to all affected personnel?
Emergency Response	- Have rescue services, if applicable, been notified of the work being completed? - Has a rescue or emergency response plan been reviewed and established? - Are employees trained to respond to a fire and how/where to evacuate?
Fire Suppression Systems	- Do suppression systems provide adequate coverage and have they been inspected/tested? - Have the fire containment devices been verified, tested and are the inspection tags updated?
Detection and Alarms	- Have the smoke alarms and detection systems been inspected, tested and tags updated? - Are fire control panels, if applicable, in working order, tested and inspected? - Do the employees know what the alarms and tones mean?

Ground Failure

Exposure to failure of natural slopes and temporary or permanent slopes which are excavated or constructed in relation to mining activities or associated supporting infrastructure.

Critical Control	Am I Implementing the Control Effectively?
Verification Systems/ Monitoring System	– Are monitoring systems in place and in working condition? – Have personnel received any notifications from dis- patch or geotechnical groups that any issues are present in the area of work? – Are evacuation procedures established and understood by all personnel?
Visual Inspections & Reporting	– Is the angle of repose for stockpiles within acceptable limits? – Are berms at adequate heights and thickness to keep equipment from going through? – Have area inspections for ground conditions been conducted prior to work commencing? – If adverse ground conditions are noted, were the conditions addressed and/or reported prior to work starting?
Slope Planning & Building	– Do personnel understand the construction methods and design parameters that will maintain ground stability in order to prevent ground hazards from developing? – Are controls in place to keep the below work area clear of personnel/equipment so slope construction can proceed? – Are the equipment operators qualified and competent to execute the work at hand?
Excavation & Trenching	– Is proper barricading and segregation established with adequate signage to keep all unauthorized personnel out of the work area? – Have protections and safeguards been installed to prevent collapsing? – Have entry and exit routes been established and are they adequate for the work at hand? – Have all utilities been identified, demarcated and documented by using the sites approved process?

Hazardous Substances—Acute

Workplace exposure to substances that are immediately toxic, asphyxiating or corrosive (e.g. H2S gas, NO2 gas, CO gas, concentrated acids, caustic, etc.).

Critical Control	Am I Implementing the Control Effectively?
Atmospheric Monitoring	– Is personal air monitoring equipment in use, functioning properly, and within the designated breathing zone, where required?
Emergency Response	– Do I understand the evacuation procedures if an alarm (both personal and/or stationary) is triggered? – Can I recognize an upset condition that may warrant – evacuation if no alarms are present?
Engineering Controls	– Are proper process controls (pH, temperature, cell voltage, ventilation, etc.) systems (including backups) functioning properly to prevent unintended release of hazardous substances? – Are chemical connections unique / locked to prevent mixing of incompatible materials? – Are eyewash stations / safety showers / wind socks available and functioning properly?
Storage and Distribution	– Are chemical process lines / storage containers in good condition and/or monitored through instrumentation to verify proper function (e.g. leak detection)? – Are high hazard process lines clearly labeled to indicate substance and flow direction?
Handling Requirements	– Are proper loading / unloading procedures being followed?
Work Practices	– Have I reviewed the SDS and do I understand the information (e.g. safe handling requirements, emergency safety procedures)?
PPE	– Is proper PPE for the task / area being used or quickly available (e.g. escape respirators)?
Barriers and Segregation	– Are restricted areas clearly signed and demarcated?

Hazardous Substances—Chronic

Workplace exposure to substances that can cause lethal disease over time .

Critical Control	Am I Implementing the Control Effectively?
Hazardous Substances Chronic General	
Handling Requirements	– Do employees understand all of the chronic health hazards in the area? – Has the hazard been identified on a pre-task assessment or documented on the Workplace Exam? – Are physical controls (i.e. barriers) and signage in place to prevent unauthorized access? – Are personnel authorized to work in the area where the hazardous substance is present? – Is the lunchroom free of PPE and clean to help prevent the spread of contaminants?
PPE	– Are employees wearing the right level of respiratory protection for the work that is being performed? – Have employees ensured that the PPE is in good condition prior to use?
Engineering Controls	– Are break rooms or offices under positive pressure, sourced from clean air, and functioning properly?
Hazardous Substances Chronic Acid Mist	
Engineered Controls	– Are there adequate mist suppressant controls in place to help reduce exposures? – Do employees understand the operational conditions required to achieve acceptable mist levels? – Is mist suppressant being added at the correct dosage? – Have employees verified that ventilation is providing adequate airflow?
Hazardous Substances Chronic Silica & Heavy Metals	
Handling Requirements	– Are employees using vacuum systems or wet methods instead of shoveling, sweeping, or air lancing, where feasible?
Engineered Controls	– Do employees know what effective dust control looks like?
Hazardous Substances Chronic Metal Fumes	
Handling Requirements	– Does the employee know the type of material they are welding on? – Has the surface been cleaned or have contaminants been removed prior to welding or cutting?
Engineered Controls	– Have exposures to other employees in the area been controlled? – Are fumes effectively controlled using localized exhaust ventilation, downdraft tables, or natural ventilation to

Interaction with Aircraft

Manned

Interaction with manned, fixed and rotary wing aircraft.

Critical Control	Am I Implementing the Control Effectively?
Operator Competency	– Do all personnel have the required competency to operate this vehicle/equipment and perform this task (current operator license from appropriate aviation authority (FAA, TC, DGCA, etc.), Freeport-McMoRan training certificate, etc.)? – Are personnel fit for duty (compliant with drug and alcohol policy, well rested and free from fatigue, free from stressful work-related or personal concerns that could potentially distract me from working safely)? – Have personnel conducted a pre-operational inspection of the aircraft prior to use and taken action where critical (safety) items have been identified?
Aircraft Suitability & Maintenance	– Is the appropriate aircraft being used for the work purpose and flight conditions? – Have maintenance logs, weight and balance sheet, risk assessment, weather conditions, fuel status, and mission profile been reviewed, assessed, and ap-proved? – Has other mission-related equipment been inspected and verified current / suitable for mission execution? (sling, cargo nets, etc.) – Is emergency equipment readily available on-board aircraft? – Does the aircraft meet all maintenance and airworthiness requirements?
UAS/UAV Pre Mission Planning	– Has primary and alternate flight route planning been conducted? – Does mission plan account for emergency conditions or contingencies enroute? – Have all passengers received an aircraft safety orientation and flight briefing? – Can the flight be conducted within the limitations of the aircraft (e.g. weather conditions, etc.)? – Is a plan in place in the event of weather degradation?
Communication	– Are Flight Operations and Flight Following confirmed operational? – Are all inter-cockpit communication devices available and operational for passengers?

Interaction with Aircraft

Unmanned

Interaction with unmanned, fixed and rotary wing aircraft.

Critical Control	Am I Implementing the Control Effectively?
Operator Competency	– Do all personnel have the required competency to operate this vehicle/equipment and perform this task (current operator license from appropriate aviation authority (FAA, TC, DGCA, etc.), Freeport-McMoRan training certificate, etc.)? – Are personnel fit for duty (compliant with drug and alcohol policy, well rested and free from fatigue, free from stressful work-related or personal concerns that could potentially distract them from working safely)? – Has a pre-operational inspection of the drone been completed prior to use and action taken where critical (safety) items have been identified?
Aircraft Suitability & Maintenance	– Is the appropriate drone type being used for the work purpose and flight conditions? – Are replacement LiPo batteries being stored properly during transport to the field (certified storage box, etc.)? – Is a fire extinguisher readily available in the field? – Does the drone meet all maintenance and airworthiness requirements? – Is the drone registration number and paperwork readily available?
UAS/UAV Pre Mission Planning	– Are non-participants briefed and excluded from launch/ land/loiter areas? Note: all personnel in the flight path must be protected by structures or stationary vehicles. – Will line of sight be maintained throughout the flight where an injury could result from an accident? – In the event of a return to home contingency, will the flight path be clear of all obstacles and hazards, and can line of site be maintained? – Is a visual observer present if necessary? – Has the flight path been secured to ensure unauthorized people/equipment will not enter the flight path/ exclusion zone? – Are ground conditions adequate (stable, demarcated, approved pad, etc.) for aircraft in use? – Has a plan been developed to address inadequate conditions? Note: Consider improved/unimproved landing surface conditions. – Can the flight be conducted within the limitations of the drone (e.g. weather conditions, etc.)? – Is a plan in place in the event of weather degradation?
Communication	– Have all personnel confirmed that they are competent in the use of the positive communication devices available at the work/activity location? – Do all personnel have access to positive communication devices? – Is there an air traffic monitoring device in use? Note: a portable VHF receive only device is the only acceptable device for monitoring.

Lifting Operations

Exposure to loss of control of a load sus- pended by a crane (fixed or mobile), hoist, forklift, boom or other lifting equipment.

Critical Control	Am I Implementing the Control Effectively?
Pre-Shift Inspection	– Has a proper pre-shift inspection of the lifting equipment been completed?
Barriers & Segregation	– Are appropriate barricades erected around the lift to keep personnel out of the fall zone?
Communication	– Has a designated form of communication been established? – Have all personnel in a potential fall zone been notified?
Lifting Execution	– Has a critical lift plan and permit been completed and communicated, where required? – Has the weight, shape, and center of gravity of the load been verified and is it within the lifting capacity of the crane? – Are the appropriate lifting devices chosen and have they been inspected for the work environment/load?
Lifting Points	– Are lifting points in accordance with ASME or equivalent standards?
Pre-lift Meeting	– Has the lift team properly assessed the day of lift conditions? – Are tag lines, push/pull sticks available for use, where required?

Rail Collision

Locomotive, rolling stock, or other rail equipment colliding with or being hit by other vehicles, buildings, or equipment.

Critical Control	Am I Implementing the Control Effectively?
Access Control	– Have switches and derailers been inspected for proper operation? – Do personnel have the proper authorization to access the area(s)? – Are safe distances from the rail being adhered to? Reference site specific SOP's for appropriate safe distances. – Has communication been established with the railroad if outside personnel is working on or near the rail lines?
Fit for Duty & Fatigue Management	– Are all personnel fit for duty and has leadership completed fit for duty checks?
Operator Competency	– Are operators up to date on all pertinent competencies?
Communication	– Are established communication devices in good working order and do all personnel on the rail have means of communication? – Are employees aware/trained of what actions need to take place if communication system(s) are lost?
Scheduling, Segregation & Rail Movement Control	– Has communication of scheduled rail movements been established between all rail crews and verified with the dispatcher? – Are train horns being used during rail movement? – Are derailer/rail switches set properly? – Is all rail equipment properly secured if being moved/ pushed with another piece of equipment? – Are all adequate methods of stop controls implemented per the area requirements?
Access Control	– Have switches and derailers been inspected for proper operation? – Do personnel have the proper authorization to access the area(s)? – Are safe distances from the rail being adhered to? Reference site specific SOP's for appropriate safe distances. – Has communication been established with the railroad if outside personnel is working on or near the rail lines?

Rail Impact on Person

Locomotive, rolling stock, or other rail equipment coming into contact with a person.

Critical Control	Am I Implementing the Control Effectively?
Access Control	– Are all present personnel authorized to be in the area? – Have all segregation points been established? – Have all "on rail" vehicles and rolling stock been reported to controllers? – Are safe distances from the rail being adhered to? Reference site specific SOP's for appropriate safe distances. – Has communication been established with the railroad if outside personnel is working on or near the rail lines?
Fit for duty & Fatigue Management	– Are all personnel fit for duty and has leadership completed fit for duty checks? – Is the maintenance logbook for the equipment up to date? – Has a pre-operational inspection been completed and all equipment free of defects?
Operator Competency	– Are operators up to date on all pertinent competencies?
Communication	– Are established communication devices in good working order and do all personnel on the rail have means of communication? – Are employees aware/trained of what actions need to take place if communication system(s) are lost? – Has all personnel received training on communication procedures?
Scheduling, Segregation & Rail Movement Control	– Has communication of scheduled rail movements been established between all rail crews and verified with the dispatcher? – Are all adequate methods of stop controls implemented per the area requirements? – Are train horns being used during rail movement? – Are derailers / rail switches set properly? – Have the rail cars been secured properly? – Is the work area protected/secured by a derailer or other engineered control?
Signaling and Signage	– Are the required signals and signage in working order, legible and current with policies? – Are "clear" points visible and clearly demarcated?

Uncontrolled Release of Energy

Exposure to stored energy from pressure (e.g., pneumatic systems, steam, tires, etc.); Items under tension or compression (e.g., mooring lines, springs, counterweights, etc.).

Critical Control	Am I Implementing the Control Effectively?
Energy Isolation / LOTOTO	– Have all potential sources of energy been verified, isolated and de-energized? – Has a state of zero energy been confirmed for all identified isolation points? – Have all potential control points been locked out with a site ap- proved lock, employee identification tag and the system(s) tried out to verify that system has been de-energized? – Have all utilities (visible and concealed) been identified, demarcated and documented by using the sites approved process?
Barriers & Segregation	– Has the work area been adequately barricaded to keep all personnel out of harms way in the event that uncontrolled energy is released? – Have the barricades, barriers or guarding system(s) been inspected to ensure that the strength and integrity matches the potential hazards?
HDPE Handling	– Have all personnel involved with HDPE pipe handling received the required training? – Has all HDPE pipe been stored according to the HDPE Pipe Handling Policy and Guidelines? – Has the equipment being used to maneuver the pipe been verified for adequate lifting and pulling capacities? – Are all personnel maintaining a minimum distance of 50' from the HDPE pipe while it is being moved?
Pressure Vessels & Relief Valves (PRV's)	– Has the pressure vessel(s) undergone a thorough inspection and been certified by a competent individual? – Is there any visible damage to the pressure vessel(s) or the supporting structure? – Are the relief valve(s) arranged so that, in the event that the valve(s) opens, personnel will not be in the line of fire? – Has the relief valve(s) undergone a thorough inspection and been certified by a competent individual? – Are all pressure gauges in working order and displaying pressures within permitted limits? – Do in-field instrumentation readings match the information displayed on computer monitoring/operating programs?
Mechanical Integrity of Hoses, Pipes & Equipment	– Have the piping, hoses and equipment connections been inspected for overall condition and mechanical integrity?
Tire Handling	– Has the wheel and tire assembly been inspected for any damage? – Has the tire been deflated to the correct pressure prior to any work commencing? – Is there an approved safety barrier/tire cage being used? – Is a serviceable inflation/deflation instrument being used and is the instrument properly calibrated? – Are tires inflated with a remote inflation line? – Are there risk management signs and/or JSA/JRA forms for outside personnel to review and sign off on prior to entering the area?
Tensioned Line Management	– Have tensioned lines been inspected prior to use for overall condition? – Does the tensioned line have the necessary strength/capacity rating?

Personnel Hoisting

Contact with, exposure to, or unintended consequences related to the movement of people or equipment via hoisting or aerial tramways.

Critical Control	Am I Implementing the Control Effectively?
Pre-Shift Inspection	– Has the basket and all rigging been inspected for any damage? – Has a pre-op inspection of the crane been performed? – Has a unoccupied trial lift been performed (at 125 % – of rated capacity) with the basket and rigging?
Barriers and Segregation	– Has the work area been barricaded or flagged off to prevent non-authorized entry?
Lifting Execution	– Has a lifting plan and/or pre lift meeting taken place to review the planned lift? – Has the man basket/personnel hoisting form been completed? – Are proper tie off procedures being used by personnel?

Vehicle Collision or Rollover

Collision with another vehicle or fixed/ moving object; Driving over an edge; Rolling over.

Critical Control	Am I Implementing the Control Effectively?
Pre-Operational Check	– Have any issues identified on the pre-shift inspection been addressed and is the equipment/vehicle safe to operate? – Has the work area been inspected to identify any hazardous conditions and controls implemented where necessary? – Is the equipment functioning properly and being – operated within design limits?
Human Factors	– Is the operator fit for duty? – Are seatbelts being worn properly?
Operator Competency	– Is the operator authorized to be working in the area? – Is the operator of the equipment/vehicle driving to the current and expected environmental conditions? – Are proper parking procedures being adhered to?
Road Design and Condition	– Are travel ways in good condition to safely operate equipment/vehicles? – Are equipment and light vehicle segregation protocols well defined and in use?
Communication	– Are clear communication processes established and being used properly? – Is signage visible and are hazards clearly marked?

Vehicle Impact on Person

Person struck by vehicle/mobile equipment.

Critical Control	Am I Implementing the Control Effectively?
Pre-Shift Inspection	– Have any issues identified on the pre-shift inspection been addressed and is the equipment/vehicle safe to operate? – Is the equipment functioning properly and being operated within design limits?
Human Factors	– Is the operator fit for duty?
Operator Competency	– Is the operator of the equipment/vehicle driving to the current and expected environmental conditions?
Road Design and Condition	– Are segregation protocols between equipment/vehicles and round personnel well defined and in use? – Is sufficient lighting available in congested areas?
Communication	– Is positive communication taking place to make people aware of tasks taking place that could create hazards?
Ground Personnel	– Are ground personnel using the designated walkways (if provided) as designed? – Are ground personnel wearing proper PPE (reflective vest) when working around equipment? – Are ground personnel in a position that could be impacted by a vehicle that loses control? E.g. Line of fire.

Workplace Examination – Miami Operations

FREEPORT-McMoRan

Follow SOPs and Policies, make safe choices, and use consequence thinking to ensure you go home safely!

A competent person shall examine each working place at least once each shift for conditions, which may adversely affect safety and health. Conditions that present imminent danger shall be brought to the attention of supervision and all persons shall withdraw from the affected area. This form is to be completed and any deficiencies shall be addressed or corrected within 2 hours of the start of every shift. Completed Forms will be kept on file for 12 months from date performed.

Location: Bluebird Training Center	Date:	Time:	Shift:
Location is meant to indicate the overall site-"Mine", "Smelter", "Rod Plant", etc.		Exam shall be preformed for each shift.	

Competent Person(s): Payroll #:	Working Place(s):
The competent person who performed this exam must be identified.	The phrase "Working place" means where work is being performed

Check "OK" if no Concerns, Check "NC" for Non-Conforming or requires corrective action. Check "N/A" if does not apply.

General:	OK	NC	N/A
Housekeeping (general cleanliness)			
Signage			
Chemical Storage			
Container Labels (correct contents & legible)			
Spills			
Illumination (light is adequate)			
Lunchroom Clean (fridge, microwave, etc.)			
Restroom (clean, stocked, graffiti, etc.)			
Utility Location (power, gas, sewer, etc.)			
Slope/High Walls/Ground conditions			
Noise			

Walkways/Stairways/Travel ways:	OK	NC	N/A
Un-obstructed			
Exits Posted			
Floor Grating (loose, missing, etc.)			
Handrails (damage, wear, missing, etc.)			
Under footing (rock, dirt, mud, transitions, etc.)			
Trip/Slip/Fall Hazards (hoses, boxes, cords, etc.)			
Floor Openings (identified, barricaded, etc.)			
Stairway (clean, safety cleats, banister, etc.)			
Traffic (direction, volume, type, etc.)			
Weather (Dust, Rain, Snow, etc.)			
Berms (height, construction, guardrail, etc.)			

Machines and Guarding:	OK	NC	N/A
Loose parts or guards			
Missing parts or guards			
Lights (start-up, warning, alarm, etc.)			
Alarms (start-up, warning, backup, etc.)			
Connivances (pulleys, idlers, safety cables)			
Grinder (shield, gap, wheel condition, etc.)			
Emergency Stop Switch			
Whip checks			

Emergency Equipment	OK	NC	N/A
Eyewash/Safety shower			
Evacuation alarms			
Evacuation routes and location signs			
Emergency lighting			

Fire Prevention	OK	NC	N/A
Restricted area equipment (tap gate, fuel island)			
Fire Extinguisher (charged, pin, keeper, tags)			
Fuel sources segregation			
Flammable cabinets (separation, vents, SDS,)			
Flammable/Combustible liquid cans (lid, leaks)			

Electrical:	OK	NC	N/A
Access to Disconnect (36" min.)			
Hand tools (grounded, insulated, condition)			
Cords (condition, grounded, temporary)			
Receptacles and fixtures			
Labeling on electric gear			
Condition of boxes (mount, latch, knockout)			

Waste Management:	OK	NC	N/A
Container labels (correct, legible, attached)			
Container covers in place and secure			
Quantity/Condition of containers			
Waste Segregation (metal, welding rod, municipal, industrial, hazardous, etc.)			
Aerosol evacuation barrel #LB-01			

	OK	NC	N/A

Miscellaneous:	OK	NC	N/A
High-pressure cylinders (caps, separation, etc.)			
Oxygen station (leak, damage, shutoff, etc.)			
Air compressor ON for evacuation alarm			

Corrective Action Required, Comments, Work Order#_____

Acknowledgement & Commitment to Safety: ***I am responsible for my safety and my co-workers safety. I am obligated to stop unsafe work.***

Payroll #:	Name:	Company:	Initials:

Supervisor:	Payroll #:	Contact #:	Date:

Job Safety Analysis (JSA) – Miami Operations

FREEPORT-McMoRan

Follow SOPs and Policies, make safe choices, and use consequence thinking to ensure you go home safely!

Identify and evaluate potential energy, exposure and hazards, then mitigate them through the hierarchy of controls.

Complete this form at the job site with all involved employees. If/When, conditions change STOP work and review/update with all involved.

Equipment #:	**Work Area:**	**Date:**

Job Description:

☐ Routine ☐ Non-Routine

Work Order#:	**Is there an SOP for this Job? YES ☐ NO ☐**	**Was the SOP Reviewed? YES ☐ NO ☐**
Job Step:	**Hazard:**	**Control:**
1.		
2.		
3.		
4.		
5.		

Utilize the backside of this document to note any additional information (i.e. additional hazards, controls, tools, etc.)

Fatal Risk Management

 ☐ Yes ☐ No Vehicle Collision or Rollover	 ☐ Yes ☐ No Vehicle Impact on Person	 ☐ Yes ☐ No Fall from Heights	 ☐ Yes ☐ No Confined Space	 ☐ Yes ☐ No Contact with Electricity	 ☐ Yes ☐ No Uncontrolled Release of Energy	 ☐ Yes ☐ No Entanglement and Crushing	 ☐ Yes ☐ No Aircraft Operation	 ☐ Yes ☐ No Falling Objects
 ☐ Yes ☐ No Exposure-Acute	 ☐ Yes ☐ No Exposure-Chronic	 ☐ Yes ☐ No Ground Failure	 ☐ Yes ☐ No Drowning	 ☐ Yes ☐ No Fire	 ☐ Yes ☐ No Molten Material	 ☐ Yes ☐ No Lifting Operation	 ☐ Yes ☐ No Rail-Person	 ☐ Yes ☐ No Rail-Collision

Additional Hazard Identification

Work Environment:
☐ Illumination ☐ Visibility
☐ Engulfment ☐ Weather
☐ High wall/Slope ☐ Water
☐ Wildlife/Insects ☐ Dust
☐ Atmosphere ☐ Spill Kit
☐ Trash/Recycle ☐ Noise
Other_____

Energy Source:
☐ Electricity ☐ Hydraulic
☐ Mechanical ☐ Thermal
☐ Pneumatic (Air) ☐ Gravity
☐ Chemical ☐ Corrosive
☐ Radiation ☐ Explosive
☐ Stored/Under Pressure
Other_____

Line Of Fire:
☐ Overhead Work ☐ Power Lines/Cables
☐ Material Handling ☐ Trenching/Excavating
☐ Tooling Failure ☐ Constricted Work Area
☐ Fly Metal ☐ Arc Flash/Blast
☐ Objects in Motion ☐ Pipe Handling
☐ Mobile Equipment ☐ Clearances
☐ Congestion/Traffic
Other _____

Personal/Behavior:
☐ Communication ☐ Strain/Sprain
☐ Slips/Trips/Falls ☐ Housekeeping
☐ Pinch Points ☐ Ergonomics
☐ Fatigue ☐ Hydration
☐ Footing/Uneven Ground
☐ Training/Qualified/Competent
☐ Ascending/Descending
☐ Interaction with Equipment
Other _____

Controls (Stop work if missing or insufficient)

Elimination
Substitution
Engineering
Administrative
PPE

☐ Lock Out Tag Out Try Out (LOTOTO) ☐ Blocking/Isolation
☐ Access Control/Barriers ☐ Flagging/Signage
☐ Fire Suppression System ☐ Lights/Signals
☐ Equipment/Tooling ☐ Rest/Breaks
☐ Spotter/Signal Person ☐ Vehicle Safety Devices
☐ Standard Operating Procedure (SOP) ☐ Process

Permit/Form:
☐ Hot Work ☐ Blue Stake
☐ Critical Lift ☐ HDPE
☐ Work Area Examination
☐ Confined Space
Other:_____

Behavior:
☐ Inspect tools/equipment
☐ Consequence Thinking
☐ Fit For Duty
☐ Hand/Body Positioning
☐ Communication

PPE Beyond Minimum Required

☐ Fall Protection ☐ Respirator ☐ Arc Flash Clothing ☐ Acid Suit ☐ Welding Gear ☐ Face Shield
☐ Gloves ☐ Coveralls ☐ Flame Retardant Hood ☐ Ear Plugs/Muffs ☐ Goggles ☐ Aluminized Jacket
☐ Spats ☐ Knee Pads ☐ UV Eye Protection ☐ Life Vest ☐ Other:_____

Acknowledgement & Commitment to Safety I am responsible for my safety and my co-workers safety. I am obligated to stop unsafe work.

Payroll # (and contractor co.)	Initials	Payroll # (and contractor co.)	Initials	Payroll # (and contractor co.)	Initials

Supervisor: Payroll #: Contact #: Date

I/We have identified all hazards. ☐Yes ☐ No	**I/We have evaluated all risk.** ☐Yes ☐No	**I/We have all controls in place.** ☐Yes ☐No

Miami Operations Property Entry Requirements
Revision 3/4/2019

1. Purpose and Scope

The purpose of this property entry document is to provide guidance regarding the minimum training, personal protective equipment (PPE), and vehicle/equipment operation requirements when entering and traveling within the Freeport-McMoRan Miami Operations property. This guidance document applies to all employees, contractors, and others working/visiting this property.

2. Definitions

Contractor (Independent) An independent contractor is "any person, partnership, corporation, subsidiary of A corporation, firm, association or other organization that contracts to perform services or construction at a mine." A sub-contractor is also considered an independent contractor. An independent contractor will be referred to as contractor throughout this document.

An independent contractor performing work in the MSHA regulated areas of the Miami Operations, or with contracts to perform any of the nine types of services or construction projects in the MSHA regulated areas listed below, are required by MSHA to have identification numbers:

- Mine development, including shaft and slope sinking;
- Construction or reconstruction of mine facilities; including building or rebuilding preparation plants and mining equipment, and building additions to existing facilities;
- Demolition of mine facilities;
- Construction of dams;
- Excavation or earthmoving activities involving mobile equipment;
- Equipment installation, such as crushers and mills;
- Equipment service or repair of equipment on mine property for a period exceeding five consecutive days at a particular mine;
- Material handling within mine property; including haulage of coal, ore, refuse, etc., unless for the sole purpose of direct removal from or delivery to mine property; and
- Drilling and blasting.

Control Points-Any point of entry into Miami Operations property.
Grade-An obvious change in elevation.

3. Responsibilities

It is the responsibility of every person entering Miami mine property to understand and comply with the requirements set forth.

Note: (All) denotes requirement for entire property, (M) for mine/ Hydromet area, (S) for smelter area, and (R) for rod plant area of the property

4. Procedures

A. Training Requirements for Persons Entering Property (All)

Site-specific “Hazard Recognition Training” is required for everyone traveling beyond access control points and entering the mine or process areas and annually thereafter. Miami Operations New Miner Training, Miami Operations Experienced Miner Training or Miami Operations Annual Refresher Training is required for all Miami Operations employees before work can begin and annually thereafter. Hazard training exceptions to personnel required to have hazard training are:

- Employees of equipment manufacturers and/or manufacturer’s representatives whose job assignment does not expose the worker to mining hazards and is not expected to work at the mine for frequent or extended periods. An experienced miner shall accompany these persons.
- Labor, Management or Governmental Officials visiting the mine site are not required to have hazard training. However, an experienced miner shall accompany these persons.
- Customers and delivery persons who are briefly on mine property to pick up mined materials or who deliver supplies, do not perform maintenance or service work, and are not exposed to mine hazards.
- Students on field trips and other short-term visitors (one day or less) are not required to have Part 48 training, which includes hazard training. However, experienced miners shall accompany them.

All contractors are required to have comprehensive MSHA compliant training when they are to perform work on the property under MSHA jurisdiction. All contractors under OSHA jurisdiction shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to their work environment to control or eliminate any hazards or other exposure to illness or injury prior to beginning any work. This instruction shall be documented.

- All contract personnel scheduled to perform work activities on surface mine properties are required to have current MSHA training as specified by 30 CFR Part 48.22(b) or 48.22(c) prior to beginning work under MSHA jurisdiction.
- All contract personnel will be required to have site-specific hazard training and contractor orientation training initially and annually thereafter. This training will consist of a review of the site hazard video and/or training materials and sessions. Contractor employees will receive this training prior to performing any work
- Upon completion of the hazard, training the contract personnel will receive a Hazard Training card, which the contract personnel will have in his or her possession at all, times while on the property. Upon completion of the contractor orientation, the contract personnel will receive a Contractor Access Card, which the contract personnel will have in his or her possession at all, times while on the property. Security will also keep a log of contract personnel on site.

Corporate personnel who intend to work or travel unescorted in areas under MSHA jurisdiction at the FCX Miami Operations must maintain comprehensive MSHA compliant training.

B. Signing In and Signing Out with Security (All)

All employees bringing approved Vendors/Visitors on to site are required to register the visitor into the VISITOR MANAGEMENT SYSTEM prior to arrival.
(https://accessmanagement.apps.fmi.com/visit). All visitors, vendors, and contractors will sign in/badge in and out with Security.
Appointments will be confirmed by Security before an individual will be allowed to enter the property.
Prior to entering parts of Miami Operations under MSHA jurisdiction, personnel are required to show current proof that they have completed MSHA part 48 training, as applicable.

C. Personal Vehicles (All)

Personal vehicles entering Miami Operations property must have, at a minimum, the following properly functioning equipment:
headlights, rear lights, brakes, rear brake lights, and seat belts. (Note: Seat belts must be worn at all times when on company property regardless whether driving in a company vehicle or a private vehicle.)

D. Motorcycle ATV UTV (All)

ATV (M) operators shall wear DOT approved headgear and safety glasses
UTV (S) operators at minimum shall wear a hard hat and safety glasses.
Personal UTVs must follow current Arizona State registration and insurance laws and operators/ passengers must follow Arizona State helmet/ safety glasses regulations.
Motorcycle (All) operators must wear DOT approved headgear and glasses.
Note: DOT approved meets the FMVSS 218 Federal standard.

E. Slag Hauler Road (S) Entry Requirements (Authorized Personnel Only)

2-way radio tuned to the Smelter Operations channel
12’ Lighted buggy ship with an orange flag
Headlights on at all times
Authorization from the Slag hauler operator or the Smelter control room (928-473-7036)
No Buggies allowed

F. Left Hand Traffic (M) “Only authorized personal may enter left hand traffic”

Large haul trucks utilized in the mine areas have an extremely large “blind area” to the front and right side of their vehicle. Placing these haulage trucks on the left side of the road, not only separates the operator’s cabs, it places the driver on the edge of the road where there is better visibility. Left hand traffic is required on all sites in the mine areas. This requirement is optional in other parts of the property (i.e., processing areas) depended upon interaction with mine traffic.

G. Pit Driver Training (M)

Pit driver training is required at all areas of Miami Operations for all unescorted visitors, vendors, contractors, and employees when their travel is such that they may operate their vehicle in left hand traffic.

H. Passing Procedure (M)

The person wanting to pass a vehicle/equipment must decide if it is clear and safe to pass.
Establish radio contact by calling out the equipment number and

informing the driver that you want to pass. ("SA-3 to 105 permission pass on your right")
Do not pass until you get approval from driver. Driver confirms by saying ("105 to SA-3 your clear to pass on the right")
Vehicle passing must then respond back by saying ("10-4 SA-3 passing 105 on the right"). This will verify that they heard each other and eliminate confusion if trucks in different areas are being passed at the same time.

I. Escort Required for Vendors/Contractors (All)

An escort will be required for persons untrained in pit driving and/or hazard recognition and for vehicles not properly equipped. An escort may also be required in smelter or rod plant areas depending on the destination.

J. Properly Equipped Vehicle for Pit Driving (M)

Vehicles entering into left hand traffic must be properly equipped with a radio tuned to the appropriate In-Pit channel.
A lighted buggy whip.
Head lights on at all times.
Letter/number identification located on the back of the equipment/vehicle that visible with the contrast sharply in color with the background on which the letters are placed and be readily legible, during daylight hours, from a distance of 150 feet while the vehicle is stationary.

K. Buggy Whips (M)

Lighted buggy whips shall be a minimum of 12 feet in height measured from the ground and are required on all light vehicles that travel in left hand traffic. They must have a brightly colored (orange with reflective stripes) flag. Lights and whips will be made available at the gates for contractors and vendors that enter the mine areas.
Some sites may require buggy whips in the processing areas if large equipment interacts with small vehicle traffic. Exemptions to the use of a lighted buggy whip will be considered on a case-by-case basis by Miami Operations Safety Department for larger equipment such as acid trucks and fuel trucks operating with a semi-trailer.

L. Flashing Lights for Pit Entry (M)

FCX properties have adopted the following color assignments for flashing lights on vehicles:
Blue – do not pass without direct verbal permission to do so.
Amber – caution used for disabled equipment. This is also required for man vans.
Red – do not pass at any time. This applies to blasting and emergency vehicles.

M. Wheel Chocks (All)

Mobile equipment shall not be left unattended unless the controls are placed in the park position and the parking brake, if provided, is set. When parked on a grade, the wheels or tracks of mobile equipment will be either chocked with appropriate sized chocks, turned into a bank/berm or parked in a parking ditch. Vehicles rated at one ton and above will have the wheels chocked and the brake set any time they are parked. Ditches or windrows may be used in lieu of wheel chocks.

N. Horn Signals for Movement of Equipment (All)

All company vehicles and equipment will be equipped with a backup alarm and will use the horn to signals when starting up, moving forward, or reversing as follows:
One blast – start
Two blast – move forward
Three blast – move in reverse
Blasting patterns may be exempt due to the congested but controlled environment.

O. Headlight Usage (M)

Vehicles will be operated with their headlights on at all times.

P. Cell Phone (All)

The use of cell phones and hand free devices while operating any vehicle or equipment on site is strictly forbidden when on company property.
Note: This does include personal vehicles.

Q. Personal Protective Equipment (PPE) (All)

GENERAL INFORMATION
The Freeport-McMoRan Copper & Gold Miami operations requires ""…PPE must be worn at all times as required in all shop, mine, and operational Areas--including company vehicles, equipment, tailings dam, and smelter areas..." "Personnel are not required to wear PPE while in offices, lunchrooms, meeting Rooms etc."

PROCEDURES – REQUIRED

Hard hats

All personnel who work in areas where falling objects may be a hazard are required to wear an American National Standards Institute (ANSI) hard hat. All Personal operating open cab equipment (i.e. dozers, backhoes, rollers, UTV's and excavators) shall wear a (ANSI) approved hardhat.
All Personal operating light vehicles, and large off-road vehicles with enclosed cabs (i.e., dozers, haul & water trucks, RTDs, shovels, drills, blade and loaders) are not required to wear head protection. Departures from the enclosed cab will require the use of PPE as otherwise required (i.e. active mining areas, etc.).

Safety Glasses

Wherever safety glasses are required, they must be ANSI Z87.1-2010 approved and equipped with side shields. This requirement also applies to prescription safety glasses.
Additional safety protection glasses may be required depending on area (i.e., goggles in Smelter area) and/or task (welding, grinding).
Safety glasses are required in all operational areas of Miami Operations, including all vehicles and mobile equipment, with the exception of personal vehicles when traveling to and from your normal place of business.
Safety glasses will not be required to be worn while operating a company vehicle off site on a paved road or where a personal vehicle can be operated on site (main road, designated parking locations, etc.)
Dark tinted lenses shall not be worn indoors, at night or in any other low light areas or situations.

Footwear

All Miami personnel, except operators of large off-road equipment in left hand traffic areas, shall wear ANSI approved Personal Protective Footwear at least 6 inches tall with metatarsal guards and a well-defined heel, unless the specific job task requires a different type of footwear and is approved by the area Manager and area Safety.
Operators of large off-road equipment in left hand traffic areasshall wear ANSI approved safety toe Footwear. Personal Protective Footwear is defined as appropriate for the job with a hard protective toe, at least 6" tall and has a well-defined heel.
For tour groups and visitors accompanied by Miami personnel, a minimum of closed-toed shoes is required.

Reflective Vests (M)

Reflective vests or outerwear must be worn by all personnel in (i.e. mine areas, etc.) or as designated by the Business Unit Manager
All Personal operating light vehicles and large off-road vehicles with enclosed cabs (i.e., dozers, haul & water trucks, RTDs, shovels, drills, blade and loaders) are not required to wear reflective vest. Departures from the enclosed cab will require the use of PPE as otherwise required (i.e. mine areas, etc.).

R. Records

MSHA Form 5000-23
Certificate of Hazard Training
Pit Driver Training Certificate or alternate record of completion
Contractor Access Card

S. Designated Office Areas

- Main Smelter office area MIDC office area
- Pinal Creek office Environmental office Information Services office Administration office Human Resources office Training Center
- Health Center Respirator Center
- Rod Mill offices and conference center Rod mill QA laboratory
- Rod mill change room(s)
- Refinery offices and conference room
- Mine Administration Offices (Including Mine Engineering Office) Land Office
- EW Office SX Office Safety Office
- Process Automation Office Tech Services
- Analytical Lab

MIAMI OPERATIONS RESPIRATORY PROTECTION PROGRAM

I.**INTRODUCTION**

This respiratory protection program applies to all Miami Operations employees. Toxins in various forms may enter our respiratory systems when we breathe and cause damage to our respiratory system. Toxins may also enter the bloodstream through our lungs and be transported to other body organs and cause damage there. The primary means of preventing exposures at Miami Operations is through engineering control measures such as ventilation and containment. Respiratory protection will be used in work areas when engineering controls in place are not effective enough to reduce the potential for harm to an employee to inhalation hazards. This program outlines the required procedures for the use of respiratory protection. This purpose of this written program is to identify responsibilities, establish accountability and comply with 29 CFR 1910.134 and 30 CFR 56.5005. This program will be updated on a bi-annual basis at a minimum and more frequently when needed to ensure its effectiveness.

GENERAL REQUIREMENTS

All Miami Operations employees required to wear respiratory protection must be given a medical evaluation, fitted for a respirator and be trained how to use the respirator properly prior to their assignment to work in an area requiring the use of a respirator. The medical evaluation is given to detect health problems that may be exacerbated by wearing a respirator. The medical evaluation procedures are contained in Appendix A. Fit testing is performed to ensure that the respirator provided to each employee, fits properly. This will prevent contaminants from bypassing the respirator due to a bad mask to face seal. The procedures for respiratory fit testing are contained in Appendix B. All personnel (Freeport and non-Freeport employees) are to be clean shaven in accordance with the Miami Operations clean shaven policy whenever they may be working in areas that require the use of a respirator. This includes all personal entering the smelter or acid plant areas.

RESPONSIBILITIES

The Industrial Hygienist is the program administrator. The program administrator is responsible for:

- Making modifications to this written program as changes in workplace conditions occur and at a minimum on a biannual basis
- Assessing the effectiveness of respirator fit testing, respirator selection and respirator maintenance
- Providing and updating information to the respirator center to make sure that the appropriate forms of respiratory protection and cartridges are issued to employees
- Ensuring that refresher training is provided for all employees at least on an annual basis
- Auditing the PLHCP to ensure they are providing appropriate support to comply with OSHA/MSHA standards.
- Physician or Licensed Health Care Provider
- Comply with OSHA/MSHA regulations for testing and record-keeping
- Ensure designees are adequately trained to industry accepted consensus standards

The Superintendents or Senior Supervisor of each division are responsible for:

- Performing periodic inspections of the workplace to ensure that the correct respirators are worn properly in areas designated as respirator required
- Ensuring that all employees working in regulated areas are clean shaven (as described above) each day they are required to work in an area where they may require respiratory protection.
- Ensure that their employees have received proper training on the use of escape devices required in their work area.

Each Contract Administrator is responsible to:

- Make contractors working under them aware of this policy
- Comply with this policy or follow a Written respiratory Protection Program which meets or exceeds this policy

Each employee is responsible for the following:

- Ensuring that they wear respiratory protection only after they have been given clearance by a licensed health care provider and are fitted for that respirator
- Ensuring that they wear only the respirator make and size for which they have been fitted. In addition they will wear and store their respirator(s) properly according to training received and manufacturer's recommendations
- Receiving a respiratory fit test on a respirator prior to using it in a voluntary manner where none is required.
- Complying with instructions from the PLHCP or designee during OSHA/MSHA mandated testing
- Coming to work clean shaven in accordance with this policy.

SELECTION OF RESPIRATORY PROTECTION

The Respirator Center will issue respiratory protection to employees according to the information contained in Appendix C. A copy of appendix C will be posted at the respirator center for attendants to use as a reference. A copy of Appendix C will also be provided to each physician performing medical evaluations required in this program. Employees shall only use a respirator of model and size for which they have been fit tested. If an employee loses their respirator fit card or forgets what size and make of respirator they were fitted for, they are to contact the Health Center to get the information needed prior to obtaining a respirator.

Appendix C contains descriptions of work areas and tasks at Miami Operations for which respiratory protection has been evaluated and is required at Miami Operations. Employees working in regulated areas who are not able to wear a negative pressure respirator due to personal medical conditions are provided powered air purifying units upon approval from the Physician or Licensed Health Care Professional (PLHCP). Powered air purifying units are also used in areas requiring additional levels of protection.

TRAINING

MSHA/OSHA training for all newly hired Miami Operations employees contains respiratory protection training. Annual refresher training given each year to all employees also contains a section on respiratory protection training. Employees will be trained how to wear their respirator properly at the time of their fit test. At any time when air quality evaluations indicate that respiratory protection is required in an area or for a task, employees will be provided respiratory protection training prior to the use of respiratory protection in that area. The training will review at a minimum the following topics:

- Medical Clearance (from Health Center)
- Fit Test (Quantitative and wear the size fitted for)
- Which area of the face facial hair is not permitted
- Respirator Strap must be worn under Helmet (NIOSH certification voided if not)
- Positive and Negative Pressure Test prior to each use
- Inspection prior to each use of Face piece and purpose
- Valve inspection and purpose
- Storage of Respirators
- Cartridge Change out (breakthrough for gases)
- Cartridge Selection
- Washing face and Barrier Cream application if applicable (EW Tank house)
- Respirator Cleaning procedures
- Limitations of use
- Change out schedule
- Do not wear anyone else's respirator

- Limitations (Limited oxygen, no fire-fighting or chemical use…Chemical use requires selecting cartridge type for chemical being used)
- Emergency Situations for specific area
- Signs and symptoms of cardiovascular abnormalities
- Overview of MSHA and OSHA standards

Retraining of employees will take place when changes in the workplace render previous training obsolete or if an employee demonstrates through their behaviors that they have not retained the knowledge presented to them in previous training. At the end of each training session employees will be questioned at least in a group setting to verify their understanding of the information presented. Any misunderstandings or points that were unclear will be repeated at that time.

V. **USE OF RESPIRATORY PROTECTION**

ROUTINE USE

Work areas and tasks that have been evaluated for air quality and found to require respiratory protection are listed in Appendix C. Exposure levels have been determined and the level of protection for contaminants in those areas has been assigned. Only NIOSH certified respirators and cartridges are used at Miami Operations. Cartridges used for particulate matter other than nuisance dust will be only of the P-100 designation or better. The make of respirators approved for routine use are listed in appendix G, Approved Respiratory Protection Devices.

NON-ROUTINE USE

Areas and tasks requiring protection factors higher than 20, are also identified in Appendix C. A Powered Air Purifying Respirator (PAPR) or supplied air Respirator must be used in these cases. Approved PAPR and Supplied Air Respirators are found in Appendix G.

A powered air-purifying respirator (PAPR) may also be provided for routine use if the PLHCP's medical evaluation finds that the employee cannot use an air-purifying respirator (APR) but can use a PAPR. Supplied air sources are used for specific tasks contained in Appendix C. Sources of supplied air will be monitored for carbon monoxide. These monitors are calibrated prior to each use and the effectiveness of the audible alarms is verified. Copies of calibration records for these systems are maintained by the Respirator Center staff.

EMERGENCY AND IDLH USE

Fire Fighting is contracted to Tri City Fire Department. Other emergency use of respiratory protection is provided to Miami Operations First Responders and/or Security EMTs during their training sessions. SCBAs are inspected on a monthly basis. All SCBA cylinders are inspected and are maintained according to DOT specifications. Only trained personnel are allowed to use SCBAs during emergency events.

Escape respirators may be used in areas where there is a potential hazard of an airborne contaminant that will prevent a person from escaping in an emergency. A risk assessment will be done to determine the type of escape device; either air purifying or supplied air. These devices are for ESCAPE ONLY, and may not be used for any other task then leaving the area immediately in an emergency. All personal working in an area where an escape device has been determined to be needed shall be provided training on its use. Approved air purifying escape respirators and Escape Breathing Apparatuses (EscBA) are found in appendix G. All EscBAs shall be inspected monthly at a minimum, and shall be checked during equipment pre shift inspections or work place inspections where they are placed.

Training for entry into IDLH atmospheres is provided for First Responders. This training contains the procedures for maintaining communication, the use of the buddy system and other site specific information. The minimum service life of 30 minutes is required for all SCBAs used at Miami Operations for emergency use. All SCBAs used are NIOSH certified. Maintenance or replacement work performed on SCBA units is completed using replacement parts certified by NIOSH. The maintenance or repair of valves and regulators is completed only by personnel trained by the manufacturer to perform such work. Emergency respirators are stored in compartments or in covers that are clearly marked as emergency respirators and are accessible only by trained personnel. Documentation of inspection of the SCBAs is stored at the SCBA storage location.

OTHER USE

Any time a reasonable estimate of concentrations of air contaminants cannot be determined, supplied air respiratory protection will be used in the area or for the task identified. Respirators are required to be "on the person" but not necessarily worn in the areas designated in Map #1 in Appendix E. Respirators are required to be readily accessible within the shaded area of Map #2. In both cases, the respirator will have p100 and acid gas protection. These areas are designated to ensure that employees have respiratory protection available to them in the event of upset conditions. This does not permit employees to enter regulated areas contained in the shaded regions without donning respiratory protection.

Site visitors may be given N-95 respirators with nuisance acid gas capabilities to prevent irritation when within designated areas in Appendix E Map #2. They will also be given an escape respirator, with appropriate training when going within these areas to comply with the above paragraph.

VIII. RESPIRATOR MAINTENANCE, CLEANING & DISINFECTING

The procedures for the maintenance, cleaning and disinfecting of respirators are contained in appendix D of this program. No employee will be allowed to use the respirator of another employee without the respirator being cleaned and disinfected as described in Appendix D. If damaged or heavily contaminated, respirators are required to be taken to the respirator center for maintenance, cleaning and disinfecting.

Employees working in areas where they are allowed to keep their respirator for more than one shift are to clean their respirator with disposable wipes provided for them in their work area.

IX. VOLUNTARY USE

Employees are permitted to use on a voluntary basis N-95 filtering face pieces (dust masks) when a determination has been made that the filtering face piece will not in itself create a hazard and that the contaminant of concern poses no health risk and is considered a "nuisance dust". Employees desiring to use fitted respiratory protection on a voluntary basis in non-regulated areas must follow the procedures outlined in Section II of this program.

Note: An N-95 filtering face piece is a respirator and does require fit-testing where it is required to be worn.

X. RECORD KEEPING

A written copy of the current respirator program will be maintained by the Health and Safety Department. Medical evaluation records are kept in each employee's file at the Health Center. Fit Test records are also maintained in each employee's medical file at the Health Center. Emergency respiratory use medical evaluations are also maintained in the employee's files. Copies of SCBA inspections are maintained at the site of storage.

APPENDIX A

MEDICAL EVALUATION FOR RESPIRATOR USE

Prior to using a fitted respirator all employees will be evaluated by a Physician or Licensed Health Care Professional (PLHCP). As part of the evaluation process each employee will fill out the questionnaire in this Appendix. The questionnaire will be reviewed by the physician as part of the evaluation process. Follow up medical evaluations will be conducted for employees having positive responses to any of the items contained in the questionnaire. The questionnaire will be administered confidentially between the licensed health care professional and

the employee. Each employee will be given an opportunity to discuss the questionnaire and examination results with the PLHCP.
The Health Center staff will provide the PLHCP the following:
The type and weight of the respirator to be used by employee
The duration and frequency of respirator use
The expected physical work effort
Additional protective clothing and equipment to be worn
Temperature and humidity expected in work areas
A written copy of this program
A written recommendation regarding employee's ability to use a respirator which has been obtained from the PLHCP will contain the following:
Whether an employee is medically able to use a respirator
Any limitations on respirator use related to medical or workplace conditions
The need for follow-up (if required) and a statement that the PLHCP has provided the employee with a copy of written recommendation

Additional medical evaluations will be provided for the employees when:
An employee reports medical signs or symptoms related to the ability to use a respirator
A PLHCP, supervisor, or the program administrator informs employer that employee needs to be reevaluated
Information from observations during fit-testing and/or program evaluation indicate need
A change occurs in workplace conditions that may result in increased physiological burden

APPENDIX B

FIT TESTING PROCEDURES

TRAINING
Employees will receive training at the time of the fit test to include:
Proper chin placement
Proper strap tension
Proper fit across nose bridge span distance from nose to chin
The slipping tendency of respirators
Self-observation using a mirror
The proper seal check using a positive and negative pressure test
Shown how to put on, position and set strap tension of respirator and how to determine acceptable fit.

SELECTION OF MASK
The mirror at the Health Center is available to assist employee in evaluating fit and for positioning. Employees will be informed that they should select the respirator that provides the most acceptable fit. Employees will be instructed to hold chosen face pieces up to the face and eliminate those that are obviously a poor fit.

III. FIT TESTING PROCEDURES
The Porta-Count fit test device is used for fit testing at FCX. The Porta-Count fit tester is a Quantitative Negative Pressure device. This instrument is operated and maintained according to the manufactures specifications. The employee will be given five minutes to wear the respirator during which a short description of the fit test exercises will be communicated. The exercises below are performed during a fit test with the Porta-Count. The employee will be instructed to stand during each test and breathe normally during each test segment unless otherwise stated.

1. Normal breathing
2. Deep breathing
3. Turning head side to side
4. Moving head up and down
5. Talking
6. Grimace
7. Bending Over
8. Normal breathing

If employee exhibits difficulty in breathing during the test, the employee will be referred to a PLHCP. A fit test will be deemed a failure if the fit factor is below 100 for a half mask APR or below 500 for a full face mask. Fit-testing of tight-fitting ASR or tight-fitting PAPR is performed in a negative pressure mode.
Employees passing a fit test will be given a card and/or hard hat decal indicating the make, size and date of their successful fit test. Each test exercise will be performed for one minute except for the grimace which shall be performed for 15 seconds. Each employee will be asked about the comfort of the respirator upon completion of testing. Records of the fit test will be printed and entered into the employees file at the Health Center and maintained at least for the duration of their employment.

IV. PORTA-COUNT MAINTENANCE
The Porta-Count fit tester will be kept clean and serviced according to the manufacturer's recommendations. The Porta-Count will be serviced immediately if determined to be not functioning properly.

REFITTING OF RESPIRATORS
Fit-tests will be conducted at least annually for all employees wearing respiratory protection. Employees will be instructed at the time of their fit test to contact the health center to be re-fitted if they gain or lose 20 pounds, undergo cosmetic surgery, sustain a severe laceration to the face where the sealing surface of the respirator contacts the face, loose teeth or get dentures. In addition if an employee believes his/her respirator type isn't fitting correctly they may request to have another fit test performed.

APPENDIX C
RESPIRATORY PROTECTION REQUIRED FOR SPECIFIC AREAS AND TASKS

Area	Hazard	Type of Respirator	Cartridge Required	Conditions Requiring Use
Refinery Slimes Area	Arsenic and Lead Containing Dusts	Suspended until Miami Operations Refinery resumes operations		
Track 5 / Bedding Plant	Dusts containing copper, Lead, Cadmium and Arsenic	Half Face air purifying respirator	P-100/acid gas	Unloading Rail Cars or work generating dust in the bedding plant
Converter Maintenance	Removing material from Dust Boxes / Tube Bundles – dust containing Cu, As, Cd, Pb	Full Face Supplied Air Respirators or PAPR	P100/Acid Gas Supplied Air filtered, with calibrated CO monitor in line	Entry into dust boxes / tube bundles to remove build up

Converter Maintenance	Tube Bundle Demo / Repair – dust containing Cu, As, Cd, Pb	Full Face Supplied Air Respirators or PAPR	P100/Acid Gas Supplied Air filtered, with calibrated CO monitor in line	Entry into tube bundles to demolish and repair tubes
Resource Recycling	Dusts containing copper, Lead, Cadmium and Arsenic	Half Face Air Purifying Respirator	Acid Gas/P-100 Combination	Unloading Scrap Copper, Collecting scrap samples, weighing samples, melting samples.
APS Solids Handling	Dusts containing lead, arsenic, cadmium and mercury. Mercury Vapor (To be sampled at time of handling)	Half Face air purifying	P-100 Mercury Vapor Cartridge	Loading and moving unretorted APS to Track 5.
Anode Plant Refiner	Arsenic dust/fume	Half Face air purifying	p-100/Acid Gas	

APPENDIX D

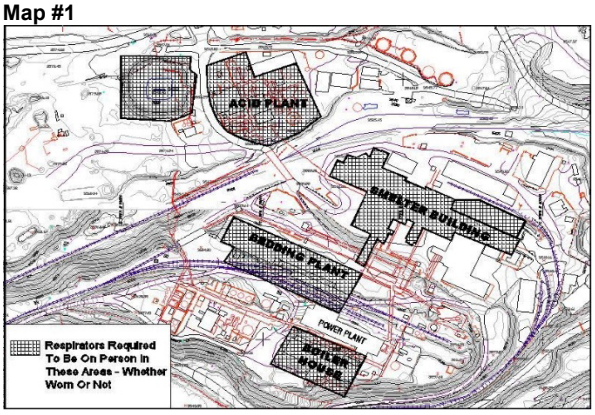
MAINTENANCE, CLEANING AND DISINFECTION PROCEDURES

SMELTER RESPIRATORS
Employees should replace a respirator with a new one if their current one has become damaged or contaminated. If the cartridges are in working condition they should be removed and replaced on the new respirator. Other than their initial request for a respirator, employees requesting another respirator will be required to exchange their used one for a new one.
EMERGENCY USE RESPIRATORS
Emergency respirators are cleaned and disinfected after each use by the First Responder using the SCBA.
OTHER
Respirators provided to employees other than smelter employees are cleaned and disinfected on a schedule determined by their department. Respirators issued for the exclusive use of an employee are to be cleaned and disinfected as often as necessary to be maintained in a sanitary condition. All respirators returned to the Respirator Center are considered “multiple use” respirators and are inspected, maintained, cleaned and disinfected prior to being reissued according to the procedures in section IV of this appendix.

IV. CLEANING PROCEDURES
All cartridges are removed by employees dropping off respirators for cleaning. The cartridges are disposed of. There are two methods used to clean respirators in the Miami Respirator Center.
Method 1. Respirators are loaded into RW100 Respirator Washer. 1 Cup of Maxima 256 cleaner/disinfectant is added to the washer. A full cycle takes approximately 45 minutes and is followed by a final inspection an wipe down.
Method 2. The respirators are Straps and yolks are removed and washed in one washing machine. The face pieces are washed a total of 3 complete cycles using the heavy wash 15-18 minute cycles. The temperature setting is set for hot water wash and a cold water rinse. The first 2 wash cycles are completed using two cups of Tide detergent and ¾ cup of Ultra bleach. The third wash is done using 1 cup of white vinegar. The respirator then goes through a final inspection and wipe down.
Inspection and wipe down. The respirators are then taken to a clean work area, disassembled and allowed to dry. Hoses and full-face face pieces are hung in drying cabinets and allowed to dry. All disassembled pieces are then individually inspected and hand wiped using MSA towel-lets. Each face piece is examined for wear, punctures, tears or other faults. Faulty face pieces are discarded. An examination of all parts including but not limited to hoses, gaskets, valves, straps, lenses, valve seats and clamps is conducted. Faulty components are discarded. Face pieces are then reassembled and placed into a sealed clean plastic bag with two new P-100, OV, Acid gas combination cartridges. The respirator is then placed into a bin for distribution to employees. Employees perform positive and negative pressure tests each time a respirator is donned to detect the presence of cracks or breaks in seals that may not have been detected in the cleaning, and maintenance process.

APPENDIX E

Map #1



Map #2

*- Respirator not required for pedestrian traffic to/from smelter lower parking lot, or for normal vehicle traffic on the main roadway north of the acid plant and through the slag hauler crossing.

APPENDIX F

SHAVING POLICY

The Miami Operations Respiratory Protection Program (RPP) describes the requirements for safe use of respirators at all Miami Operations locations. This memo supplements that program with a clarified definition of the term "clean-shaven". This supplement

takes effect at all Smelter locations immediately, and will remain effective until a revision is made.
All employees are to be clean-shaven whenever they are wearing respiratory protection. This is defined as a moustache that is less than the inner width of the sealing surface of the respirator mask, and does not extend below the level of the chin line. No facial hair is allowed on the lower lip or chin. Refer to the following diagram:

Appendix G
Approved Respiratory Protection

The following respiratory protection devices are approved for use at all Miami operations in areas where respiratory protection is required:

Escape Only Air Purifying Respirators
NH15

Escape Self Contained Breathing Apparatuses (ESCBA)
MSA Custom Air V
Scott ELSA
Sperian/Honeywell EBA

N-95 Respirators (for use in areas determined to have contaminate below the OEL)
N95 Respirators will only be used in areas where airborne levels are below the OEL for any airborne contaminants for the purpose of employee comfort and/or to prevent substances from entering the nose and mouth.

½ mask Air Purifying respirators
MSA Comfo Classic
MSA Advantage 420
3M 7500 Series
3M 6500 Series
North 7700 Series

Full Face Air Purifying Respirators
MSA Ultra-TWIN
MSA Ultra-VUE
MSA Duo-TWIN
3M 6000 Series
3M 7800 Series

Powered Air Purifying Respirator
3M AdFlo
3M VersaFlo

Supplied Air Systems
3m Portable Compressed Air Filter and Regulator Panel with approved tight fitting facepiece or loose fitting facepiece or helmet

Self-Contained Breathing Apparatus
See Rope Rescue Team documentation.

FREEPORT-MCMORAN

MIAMI OPERATION SMELTER DEPARTMENT

SUBJECTS: **DARK LENS SAFETY GLASSES/ FAMILY MEMBERS ACCESS TO PROPERTY**

Historically, dark lens safety glasses have been acceptable eye protection to wear throughout the Smelter day or night, regardless of the task. There is no Smelter Policy regarding the general use of dark safety glasses unless specific for a particular task. In recent observations, dark safety glass have become part of the "Normal" PPE at the Smelter. This is creating a potential hazard and high risk for injury.

Mitigating hazards and reducing risks, the use of dark safety glasses will not be allowed in the Smelter unless there used as a direct requirement for a particular task, as defined in the training programs. Failure to follow the above procedure could result in disciplinary action up to and including termination.

Dark lens safety glasses will only be worn in the following situations,

1. Working outside during daylight hours.
2. Working in production areas when open metal steams are present
3. Tapping of furnaces
4. Skimming Converters/Anode Barrels
5. Pouring anodes at Anode Plant
6. Looking into hot Furnaces

All other times, clear lenses shall be worn.

Spouses or children will not be allow on FMI property past the Main Gate entrance for the safety and liability reasons. Employees will need to arrange transportation to their work site without spouse or children inside the vehicle pass the Main Gate entrances. In addition, Spouses will not be allowed to deliver lunches, trade vehicles, etc. past the Main Gate entrance. If approved by immediate Supervisor, employees can meet their spouses at the Main Gate to obtain their items or trade vehicles.

Thank you,

Smelter Management

FREEPORT-McMoRan COPPER & GOLD

Miami Operations

Communication-Portable Electronic Device Policy

POLICY

All personnel utilizing portable electronic devices (PED) in Freeport-McMoRan Miami Operations (FMMO) must comply with all federal and local requirements, and Freeport-McMoRan personnel conduct polices.

SCOPE

This policy shall be used by all Freeport-McMoRan Miami Operations (FMMO) personnel, contractors and vendors. This policy includes the use of cell phones, Blackberries, iPods/MP3's, two-way radios, scanners and other similar communication devices.

PURPOSE

The purpose of this policy is to standardize the use of PEDs and ensure compliance with appropriate guidelines.

PERSONAL PEDS

- The use of personal cell phones, Blackberries, iPods/MP3s, two-way radios, scanners and other similar PEDs are **prohibited** in the workplace.
- The use of cell phones, Blackberries, and other PEDs while operating personal vehicles on company property is prohibited, including the use of such communication devices in "hands free" mode.
- FMMO employees and contractors who bring personal cell phones on the property are expected to leave their cell phones either in their desk, their locker, or in their personal vehicle in the parking lot, whichever is applicable. Personnel cell phones, Blackberries, iPods/MP3s, two-way radios, scanners and other similar PEDs cause a disruption in the work environment and will not be allowed.
- A list of contact personnel and phone numbers will be given to employees in the event someone from outside the property has the need to contact an employee in an emergency situation.
- If an emergency situation arises, employees can be contacted at work ie: through their supervisor, etc and a message will be relayed to them.

COMPANY-ISSUED CELLULAR PHONES AND BLACKBERRIES

- No employee is entitled to Freeport-McMoRan technology services; such service is a privilege that, if abused, is revocable at management's discretion.
- Employees are responsible for operating vehicles and equipment and working within the production area in a safe and prudent manner at all times.
- Text messaging, picture messaging and other features that would distract an individual from their task will not be allowed.
- It is against company policy to take photographs or videos while on company property.
- The use of cell phones, Blackberries, and other PEDs while operating company vehicles, or equipment, at all times is prohibited, including the use of such communication devices in "hands-free" mode.
- Never discuss confidential or sensitive information on a cell phone.
- A company-provided cell phone or Blackberry is a company asset governed by this and other Freeport-McMoRan personnel conduct policies. Company cell phones and Blackberries are for business purposes.

EMERGENCY USE

- In the event of an emergency, a land-line phone should be used to call for assistance, as this provides emergency responders with detailed location information and ensures the confidentiality of the call. If a land-line is not available, the cell phone or Blackberry may be used.
    a) Give the exact location of the incident.
    b) Stay on the line to provide additional details.
    c) Never give/transmit the name or identification/equipment number of personnel involved in the incident over a cell phone or Blackberry.

RESPONSIBILITY

Employees

- All employees are expected to understand and comply with all requirements of this policy.

Supervisors

- Area supervision and FMMO leadership is responsible for ensuring thorough communication and compliance of this policy.

Violations of the Freeport-McMoRan Miami Operations Communication/Portable Electronic Device Policy could warrant disciplinary action up to and including discharge.

INFORMATION HANDOUT FMI DEMOLITION POLICY

Title: **Demolition Policy and Procedure**
Area: Site Wide
Responsible Individuals: All Employees
Issue Date: April 10, 2015
Revision Date: April 8, 2015

Purpose:

To establish a process with requirements for Demolition/Deconstruction activities to eliminate and/or minimize the risk for injuries, equipment damage and harm to the environment while executing this work.

The intent is **NOT TO PROCEED** with work until all steps of this policy have been met and a **PERMIT** has been issued.

This policy does not apply to Facility reoccurring tasks supported by SOP's or disassembly of equipment that is outlined in a Manufacture Specification.

This policy is to be applied in conjunction with all applicable FCX Safety Policies and Procedures and relies on their individual policy requirements to eliminate hazards and manage risks identified in this procedure.

Scope:

This policy applies to all FCX Project Managers, Employees and Contractors working at FCX Operation sites.

The manner of preparing for Demolition work will require three key steps that are supported by four essential documents in this procedure. Management and preparation of these documents is the responsibility of the Project Manager, Construction Manager, Engineer or any Facilities Authorized Employee to perform demolition work.

Demolition Work Plan: The beginning of any work activities requires a plan, the Demolition Work Plan document is provided to support the initial steps in planning the Demolition activity. This document is required as it will provide a detailed description of the work to be performed and includes an Execution Plan this work that can provide the necessary details to the policy approvers for review. The Execution portion of this document can be supplemented with the Project Scope of Work (SOW) or the Contractors Execution Plan for the work.

Demolition Plan Map: A work sheet to be used to prepare a layout of the affected area(s) for the Demolition work that identifies energy sources that must be addressed and managed during the deconstruction. This work sheet can also be used to identify materials in the Environmental management portion of the plan.

Demolition Checklist: Documentation and capture of all the work activities, inspections, verifications, surveys and reviews required to ensure all hazards have been identified and the proper measures have been taken to eliminate or minimize risk. This checklist is the preparation work of the Demolition Procedure and is the next step of activities that must occur to meet the requirements for approval. The Checklist must have all listed Subject Matter Experts (SME) signatures of approval and verification completed prior to issuance of the Demolition Permit.

Demolition Permit: Last step in preparation for demolition work the Demolition Permit is completed by the Project Manager, Construction Manager, Engineer or Facility authorized employee. This form is submitted for approval to the Facility Manager and Safety along with presenting the Demolition Work Plan, Demolition Plan Map and Demolition Checklist as evidence that all the required steps for approval have been adequately completed. A final walk through with the Facility Manager and Safety is required prior to their signatures of approval and authorization.

The Demolition Permit shall be posted at the work site during all deconstruction work activities.

Definitions:

Air Gap: A physical separation between the energy or power source supply and the receiving network, building or structure.

To be an air gap approved by the department, an identifiable separation of potential power source or supply must be accomplished. Air Gapping is preparation to Demolition/Deconstruction work.

Authorized Employee: An employee designated or assigned by supervision/management to perform demolition work.

Communication System: A network for communication that has a power source to support the system network and communication activities such as radio, telephone, Gaitronics, computer, fiber or satellite.

Demolition/Deconstruction: The tearing down, destruction, breakup, razing or removal of the whole or part of a building or structure, or of free standing machinery or equipment that is directly related to the function of the structure.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, human behavior or other energy.

Hazardous Material Abatement: Procedures to control hazardous materials in a building/structure or to remove them entirely, including removal, encapsulation, repair, enclosure, encasement, and operations and maintenance programs.

Job Safety Analysis (JSA): A written document analyzing job tasks, hazards related to the tasks and controls in place to reduce the risk associated with the hazards.

NESHAP: Acronym for National Emission Standards for Hazardous Air Pollutants, is a permit required prior to commencement of any demolition activities.

Subject Matter Expert (SME): Is a person who is an authority in a particular area or topic.

Additional Requirements:

Where necessary-colored tags will be applied to energy sources to identify the following: Type of Energy Source. Current status of Energy Source 'Live' or 'Isolated'. Location of cut or Air Gapping of the source identified.

It shall be the responsibility of SME's to determine the need to seek and contract a Third Party when professional assessment of a particular discipline is required.

Demolition Work Plan

Purpose: Due to the high level of risk during deconstruction activities such as utility removal, structural deconstruction and excavation, this Work Plan is prepared to eliminate and or minimize the risk for injuries, equipment damage and harm to the environment while executing this work.

Addendum to the Corporate Control of Hazardous Energy Sources

(FCX-HS04)

- All energy isolation (LOTOTO) locks will be **colored plastic bodied** safety locks. Other locks are not acceptable for energy isolation with no exception. These locks shall not be used for any purpose other than LOTOTO. **A single lock or keyed alike locks will have only one key**. This key is to be kept in the possession of the affected individual. Spare keys will be destroyed.

    - Lock colors by department:
        - Operations: **GREEN**
        - Maintenance: **RED**
        - Admin: **PURPLE**
        - Electrical: **YELLOW**
        - ECC: **ORANGE**

- Tags shall be pre-printed with a clear warning of the hazard and type (Personal or ECC). A **legible printed name of the employee and the date the lock-out was performed** must be featured on the personal tag.

- **When a lock box is used, an Energy Isolation Inventory Form must be completed**. The form will be kept at the lock box unless being transferred.

    - During a shift or personnel change, the initial ECC will consult with the employee designated as the ECC for the personnel that will continue the work involved with the lockout to insure that the integrity of the lockout is maintained.

- **Out-of-Service locks shall be accompanied with a tag**. The tag must include why the equipment is out of service, or other issues pertaining to the equipment. They will not be used during service or maintenance of equipment (i.e. LOTOTO applications).

- For LOTOTO applications that must be performed that cannot adhere to this program in its entirety, a Variance Request form must be completed.

FREEPORT-McMoRan COPPER & GOLD

MIAMI OPERATIONS

Miami Smelter Attendance & PFE Feedback Form

Department: Crew: PFE Topic: FATAL Event Advisory-Fall

1. Prior to distribution to crews, safety pro and superintendents review PFE to identify cause(s) of incident, and relate to our work area, list below:

- In 2014 a similar event happened here at Miami & thankfully the man survived. The work location of this incident is much the same as the areas we work in every day (See picture).
- We no longer get onto/walk on cable trays here at Miami and scaffolding/man lifts **MUST** be used (communicate to new hires and contractors). If it is not a designed walkway, do not get onto it, we have structural engineers on staff & onsite.
- The company does not employ us to take risks, they employ us to do our work safely so we can go home each day. It doesn't matter where an incident happens; here, a nearby town, or halfway around the world, any life lost is a tragedy.
- During our recent turn around, there was a lot of misuse of 6-foot shock absorbing lanyards. Management & Safety have made the decision to remove 6-foot shock absorbing lanyards from our operation & are looking into alternatives.
- Was the supervisor trying to help the crew with the project, now exposing himself to the hazard, instead of standing back to critique the situation, did he think of the consequences?

2. Supervisor gets feedback from crew, WHAT ARE THE CONTROLS THAT WE HAVE IN PLACE TO PREVENT A SIMILAR INCIDENT FROM HAPPENING AT OUR SITE? WHAT ARE THE BEHAVIORS THAT WE RELY ON TO PREVENT THESE TYPES OF INCIDENTS?

3. Supervisor gets feedback from crew, WHAT ARE THE CONTROLS THAT WE SHOULD CONSIDER IMPLEMENTING TO PREVENT A SIMILAR INCIDENT FROM HAPPENING AT OUR SITE? ARE THERE BEHAVIORS THAT WE NEED TO IMPROVE TO PREVENT THIS TYPE OF INCIDENT?

4. Sr. Supervisor review feedback from the crews and coach as needed to improve understanding of behaviors and controls surrounding this incident. Clarify any items that require leadership follow up.

Signed: _____
(Sr. Supervisor)

5. Action or review required by leadership team? _____Yes (admin add to AIP list) _____No
6. Administrative assistant retains for appropriate feedback tracking and filing

“Whether you think you can, or you think you can't – you're right,”

Henry Ford

SFTMIA1000E

FREEPORT-McMoRan

Name:_____ **Employee ID:**_____**Date:**_____

Miami Acid Plant – PSM_L1 Safety & HazReq Video Test

1. What is Process Safety Management? Circle the correct answer(s).

    a. OSHA program pertaining to controlling chemical risk.
    b. The management of highly hazardous chemicals.
    c. A tool to prevent the release of harmful substances defined by OSHA.
    d. A required method to prevent a catastrophic chemical occurrence.

2. What is the control room contact number? _____.

3. Where in the Acid Plant is a respirator required to be carried? _____.

4. Why do you have to wear a MVP100 cartridge respirator at the solar pad? _____.

5. What color is SO3? _____. What color is NOx? _____.

6. Circle all process equipment where you could come in contact with NOX at the Acid Plant?

    a. 202, 204, 208 Heat Exchangers
    b. Effluent system
    c. Cold gas blowers
    d. Drying, Final, and Intermediate Absorption tower.
    e. NOx drain lines

7. Caustic contact can cause redness, irritation, and burns? True or False

8. Caustic and acid should not be mixed or cross-contaminated? True or False

9. Where are the evacuation muster areas for the Acid Plant?

_____ & _____.

10. What color are the chains that identify strong acid & caustic areas, respectively?

_____&_____.

11. Number of wind socks at the Acid plant? ____. What are they used for? _____.

12. The blue lights mark the location of what in the Acid Plant, and should be the first thing inspected? _____.

13. How long should you rinse off in a safety shower if exposed to acid? _____.

14. What is a Standard Operating Procedure? _____.

15. What is a Safety Data Sheet? _____.

MIAMI TECHNICAL TRAINING

REGULATED AREA VIDEO QUIZ

Name: **Date**: Click or tap to enter a date.

1. What are the regulated areas on Miami Property? (Select all that apply)
    a. Blending/Bedding Plant
    b. ISA/ELF 2nd floor and above
    c. Matte end tap deck
    d. Converter's 3rd floor and above
2. What is the minimum additional PPE required in a regulated area?
    a. Hard hat and safety vest
    b. Coveralls and hardhat
    c. Half face respirator and coveralls
    d. Full face respirator and coveralls
3. It is okay to use air to clean concentrate or smelter dust off surfaces or clothing.
    a. True
    b. False
4. Eating, drinking, smoking, chewing tobacco, applying cosmetics is prohibited in regulated areas.
    a. True
    b. False
5. Showering is required at the end of your shift if working in regulated areas.
    a. True
    b. False
6. Some Materials that contain hazardous substances are? (Select all that apply)
    a. Copper concentrate
    b. Zinky dust
    c. Acid plant solids
    d. Smelter dust
7. What are some tasks with exposures to arsenic, cadmium, and lead? (Select all that apply)
    a. Tapping
    b. Dumping zinky dust
    c. Cleaning matte end launder
    d. Operating coiling machine
8. Lead exposure can cause? (Select all that apply)
    a. Miscarriage
    b. Stillbirths
    c. Infertility in both men and women
    d. Developmental effects
9. How can you protect yourself from exposure to hazardous substances? (Select all that apply)
    a. Wear PPE
    b. Be clean shaven
    c. Good personal hygiene
    d. Make sure controls are working properly