

FCX Department of Occupational Health and Safety	SOP #	FCX-23
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Interaction with Heavy Mobile Equipment - Surface Road Design, Light Vehicles & Ground Personnel	Task Risk	X High
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		Low
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1.0 Policy

This document establishes the minimum requirements and procedures for the health and safety of Freeport-McMoRan employees and contract personnel where there could be interaction between heavy equipment and light vehicles or people.

Policy All Freeport-McMoRan (FCX) locations where heavy equipment is utilized will at a minimum adopt this policy and ensure that all site standard operating procedures are aligned with it.

Scope This policy covers all FCX employees and contractors that may interact with heavy mobile equipment.

Heavy mobile equipment shall include:

- Haul trucks
- Articulating trucks
- Loaders
- Track dozers/bulldozers
- Rubber tire dozer
- Motor grader/blades
- Trackhoes/backhoes
- Mobile cranes
- Shovels
- Water trucks
- Scrapers
- Drills
- Compactors
- Slag haulers
- Forklifts (20k lbs or greater)
- Other heavy mobile equipment that interact with smaller equipment and pedestrians

2.0 Responsibilities and Duties

2.1 Management

It is management's responsibility to ensure compliance with this policy, procedure and the expectations outlined below.

Maintain Equipment in Good Working Order

Ensure all equipment is in good working order and that regular preventative maintenance procedures are in place. Where a defect or equipment issue will not allow safe operation, ensure equipment is not operated until such repairs can be completed.

Ensure Proper Employee Training

Ensure that all personnel that may interact with heavy mobile equipment are properly trained per the requirements outlined within this document and with pertinent other regional, federal and state regulations. Ensure employees are competent and qualified to operate equipment.

Ensure Periodic Engineering Reviews are Conducted

Ensure periodic engineering reviews of mine roads, intersections, light vehicle access, tie-down areas (haul truck staging areas), and heavy traffic areas such as shops are conducted.

Review Contractor Requirements

Ensure that contractors working on FCX property are aware of these requirements and have been trained.

Provide Equipment and Resources

Provide all necessary equipment and resources needed to safely operate equipment.

Maintain Documents Control

Maintain all completed inspections, documentation and training records according to the FCX -Records Retention Policy.

Identify Critical Risks and Critical Controls

Ensure that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Ensure that leadership conducts periodic audits of these controls to verify use and effectiveness.

Perform Periodic Audits of Process

In conjunction with the Health and Safety department, conduct periodic audits of the overall interaction with heavy mobile equipment to ensure compliance.

Contractor Bidding and Selection

Ensure that contractor management is aware of this Policy and the appropriate language is included in contracts.

2.2 Health and Safety

It is the H&S Department's responsibility to support compliance with this policy, procedure and the expectations outlined below.

<p>Perform Periodic Audits</p>	<p>The H&S Department will periodically audit for compliance and risk of the interactions between mobile equipment, light vehicles and people to identify issues and work with management to develop solutions.</p> <p>Inspection of contractor mobile equipment brought on site to ensure it meets minimum standards.</p>
<p>Maintain Rescue Team Capabilities</p>	<p>The H&S Department in conjunction with site management will maintain adequate rescue capabilities (on-site team or 3rd party team), and ensure these teams are trained in accordance with the requirements outlined within this document. Significant incidents involving heavy equipment interactions with light vehicles and people risks should be evaluated for rescue capabilities. These drills shall consider all safety, environmental and business continuity aspects.</p> <p>Note: If a site must rely on third-party rescue, H&S and/or environmental personnel must audit training and rescue capability of the third party.</p>
<p>Contracts Selection and Bidding</p>	<p>Work with contracts management to review the requirements of this Policy with contractors during the bidding process.</p> <p>Review contractor safety plans to ensure elements of this Policy are included where applicable.</p>

2.3 Supervisors

It is the supervisor's responsibility to verify compliance with this policy, procedure and the expectations outlined below.

<p>Maintain Equipment in Good Working Order</p>	<p>Verify all equipment is in good working order and that regular preventative maintenance procedures are in place. Where a defect or equipment issue will not allow safe operation, ensure equipment is not operated until such repairs can be completed.</p>
<p>Verify Proper Employee Training</p>	<p>Verify that all personnel that may interact with heavy mobile equipment are properly trained per the requirements outlined within this document and with pertinent regional, federal and state regulations. Ensure employees are competent and qualified to operate equipment.</p>

Provide Equipment and Resources	Provide all necessary equipment and resources needed to safely operate equipment.
Maintain Documents Control	Maintain all completed inspections, documentation and training records according to the FCX -Records Retention Policy.
Identify Critical Risks and Critical Controls	<p>Verify that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Verify that employees are conducting a pre-task risk review.</p> <p>Evaluate area of responsibility for new risks or changes that could pose risk and ensure critical controls are in place to mitigate risk. Ensure that a risk review is completed for any new roads, changes in traffic patterns, or other changes which could impact safe interaction of heavy equipment with light vehicles or pedestrians to ensure that adequate controls are in place.</p> <p>Ensure that any new risks identified are passed on to incoming crews.</p> <p>Enlist help from engineering, health and safety or other resources as necessary to improve critical controls.</p>
Perform Periodic Audits of Process	In conjunction with the Health and Safety department, conduct periodic audits of the overall Interaction with Heavy Mobile Equipment to ensure compliance.
Contractor Compliance	Ensure contractors working in area of responsibility have received appropriate information and training on the area-specific hazards. Monitor contractors for compliance.

2.4 Contractors

It is a Contractor's responsibility to provide properly trained employees and to comply with this policy.

Meet FCX Policy Requirements	Any contractors working for FCX will meet or exceed the requirements of this policy and shall comply with the FCX Contractor Safety Manual while on FCX property and within company-owned facilities.
Identify Critical Risks and Critical Controls	Ensure that critical risks associated with interaction between heavy equipment, light vehicles, and people are identified and critical controls to reduce or mitigate those risks are in place. Ensure that contract leadership conducts periodic audits of these controls to verify use and effectiveness.
Perform Periodic Process Audits	Conduct periodic audits of the overall Interaction with heavy mobile equipment, light vehicles and people to ensure compliance.

2.5 Contractor Management

It is the responsibility of Contractor Management to ensure elements of this Policy are included in the contract language for contractor qualification, bidding and selection for work on FCX property.

Contractor Selection and Bidding	Ensure that contractors understand the requirements of this Policy and the training necessary to operate and interact with heavy mobile equipment.
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Contractor Equipment Requirements	<p>Ensure contractors receive minimum equipment requirements as well as requirements for inspections and maintenance for mobile equipment.</p> <p>Perform periodic audits of contractor maintenance records and procedures for mobile equipment inspection and maintenance.</p>
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2.6 Employees

It is the responsibility of FCX employees to complete proper training and comply with this Policy.

Communicate Hazardous Conditions	Employees are expected to correct or report to Supervisors and/or Health & Safety Representatives if hazardous conditions or actions arise which may cause injury to any employee before proceeding with further workplace activities.
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Maintain Training	<p>Training must be completed according to the training section and maintained through refreshers as specified in site training plan. Employees must not utilize a piece of mobile equipment or interact with heavy mobile equipment without the proper documented training.</p> <p>Employees will abide by all training and instruction given in In-pit Driver Training and other safety training received.</p>
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Perform Pre-task Risk Assessments	<p>Each individual is responsible to ensure that the critical controls are in place for the task they will perform prior to starting work. Critical controls should be identified using the appropriate tools (ex: pre-shift equipment inspection, work area inspection, job hazard analysis, job safety analysis.)</p> <p>Situational risks must also be evaluated to determine if something in the area creates any additional risks (ex., weather, other work in the area that poses new risk).</p>
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3.0 Program Elements & Requirements

Each site will ensure that site-specific procedures comply with this Policy. All employees will comply with site-specific procedures.

Use of Cell Phones and Other Electronic Devices	No one shall use cell phones or other personal electronic devices while operating equipment or vehicles. All sites shall comply with the FCX – Communication Policy.
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3.1 Separation of Heavy Equipment and Light Vehicles

Evaluation of areas where heavy equipment and light vehicles interact shall be conducted to look for opportunities to eliminate the interactions utilizing the checklist in the Appendix.

Light Vehicle Access Roads	<p>Sites will provide light vehicle access (LVA) to main shop and office areas that are physically separated from haul truck and heavy equipment traffic. Additional LVA roads will be established whenever possible in other areas where heavy equipment is operating.</p> <p>Where LVA roads are required to cross haul roads, the use of tunnels shall be evaluated.</p> <p>Haul trucks shall sound their horn when approaching vendor routes or designated LVA intersections on main haulage roads.</p>
Turnouts at Intersections	<p>Evaluate opportunities for installation of LVA turnouts (orejas) at intersections to separate light vehicles from haul trucks and provide better visibility.</p>
Heavy Equipment Crossings on Highways or other Non-mine Roads	<p>Evaluate re-routing or using other methods where feasible.</p> <p>Where significant interaction or anytime haul traffic crosses public roads:</p> <ul style="list-style-type: none"> • Evaluate the use of a tunnel for these crossings. Or a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment. • A flagger or crossing guard shall be present to manage the intersection for all public roadways. <p>Ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning and proper permits are acquired.</p>
Parking	<p>Small equipment shall not park in the blind spot of a haul truck or other large equipment without additional controls being in place. If light vehicles, such as mechanical trucks, need to park closer to the equipment, then proper lockout procedures must be followed prior to light vehicle parking within blind area.</p> <p>Heavy equipment shall utilize windrows, wheel ditches, chocks or other means to prevent equipment from movement based on the grade.</p>
Approaching Heavy Equipment	<p>Approach shall never be made from the blind area of the equipment. Positive radio contact shall be made before approaching heavy mobile equipment.</p>

When radio contact cannot be established, visual contact with the operator must be made prior to approaching. Visual contact must be maintained as approaching.

Operators of haul truck, loading units, water trucks (and other equipment as determined by site) are required to secure vehicle and be out of the operator's cab before others approach the equipment. Visual contact is to be maintained with those approaching.

Sites will establish procedures for non-routine situations (i.e., emergency or non-responsive operator).

3.2 Separation of Heavy Equipment and Pedestrians

Evaluation of areas where heavy equipment and pedestrians (people) interact shall be conducted to look for opportunities to eliminate the interactions.

Pedestrian Walkways or Paths

Sites will provide designated pedestrian walkways or paths wherever there is regular interaction with heavy equipment and pedestrians.

Pedestrian crossings will be provided where pedestrians need to regularly cross roads. Crossings must be well signed for both pedestrians and equipment. Adequate lighting will be provided where pedestrian walkways or paths exist.

Where possible a pedestrian crossing light (traffic signal) shall be provided.

Ground Crews (leaching, surveyors, cable crew)

All ground personnel shall wear PPE required for the area as well as a high visibility and reflective vest or reflective clothing. This clothing needs to be highly visible both day and night.

When there are ground personnel that will be working on or near mine roads, a pre-task risk evaluation must be conducted to identify critical controls that will be implemented to separate these individuals from interaction with heavy mobile equipment. Berms and safe distance requirements are potential controls.

Warning devices shall be utilized to communicate the presence of ground crews such as: signs, lights, radio announcement by Dispatch or Control Room.

Flaggers or Spotters

Flaggers or spotters shall be provided with a vehicle or shack. A radio must be provided for communications. A high visibility and reflective vest or reflective clothing will also be required.

Shops

When moving large equipment in and out of the shop, spotters will be utilized.

Emergency Protocol	Each site shall evaluate and establish emergency procedures for heavy equipment incidents. These procedures shall include safe retrieval of personnel and traffic management protocol.
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Personal Protective Equipment	Employees and contractors on the ground around heavy equipment or light vehicles shall wear a reflective safety vest or reflective clothing except in designated areas such as shops, parking lots for personal vehicles, secured perimeters and other designated areas.
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3.3 Tie-down (Q-points)

Each tie-down area will be evaluated to ensure proper controls are in place, with a focus on eliminating interactions between heavy equipment, light vehicles and pedestrians.

Separation between Haul Trucks and Light Vehicles	Tie-down areas shall be designed to provide a physical barrier (such as a berm) between haul trucks and light vehicles. Example photo provided in Appendix.
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Minimum Requirements	<p>These minimum requirements will be applied to all tie down areas.</p> <ul style="list-style-type: none"> • Support equipment shall be separated from haul trucks in designated areas (Note: loading equipment may be parked with matched haul trucks) • Wheel ditch for equipment • Forward travel only for exiting equipment (note: ok to back into the parking ditch) • Restricted from small equipment not involved in shift change Supervisor vehicles are allowed in this area during shift change when necessary. • There shall be a minimum of 15 feet between haul trucks when parked side-by-side; additional clearance will be needed for “in-line” parking based on size of equipment • Slots shall be provided in berms for personnel to enter and exit • Equipment shall go to the forward most parking position or from right to left as facing the equipment whichever applies • Spare trucks left on the tie-down will be moved to the right (as facing the equipment) after shift change is over, properly secured and shutdown. • Risk assessments shall be completed by all sites to determine the need for additional requirements.
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Shift Change Procedures	<p>Employee transport vehicles shall contact mine dispatch on the radio prior to entering the pit and after exiting the tie-down area.</p> <p>Haul trucks will not enter or leave the tie-down area until the employee transport vehicle leaves the tie-down area. Other activities away from Tie-down area may proceed as normal.</p>
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Each site will develop procedures for non-routine situations where there is a stray driver or heavy equipment that was not at the tie-down area at the appropriate time.

3.4 Roads and Intersections

All roads and intersections will be evaluated for proper controls to ensure that all authorized equipment can travel safely.

Haul Road Construction

Haul roads shall be constructed and maintained to ensure safe operation. Where conditions do not allow safe passage, additional controls shall be applied or roads shall be closed until maintenance occurs.

Surface haul roads should be 3.5 times as wide as the largest vehicle on the road. For a 793 this is 85 feet between the berms (96 feet for 930Es).

Haul roads should be constructed at 10% grades or lower where specific safety considerations determine lower grade design requirements. Grades steeper than 10% should be minimized and shall not exceed 15%. Utilize the equipment manufacturer's recommendations for the maximum grades of articulating trucks used on site.

Haul roads should be designed to minimize the use of sharp turns. If sharp turns are required, the road shall be widened to more than 4-4.5 truck widths and employ super elevations to help the trucks turn. Sharp turns at intersections will not be allowed.

Berms shall be constructed to a minimum mid-axle height of the largest vehicle to travel on that road. At the base of steep ramps or where significant drop-offs exist, a review will be conducted to determine if larger berms shall be constructed to prevent equipment from going through the berm. Wider, rather than taller, berms are preferred in order to maximize visibility. Consideration for visibility for light vehicles shall be included in the evaluation.

Where road requirements above cannot be met, other controls must be put in place to address the risk.

Intersections

An intersection refers to anywhere multiple heavy equipment roads intersect or where light vehicle roads meet a road used by heavy equipment. Light vehicle support equipment access to haulage roads, and other heavy equipment roads, must have consideration for adequate line of sight to heavy equipment.

Intersections shall be clearly signed for heavy and light vehicles.

Intersections need to be carefully located and constructed to ensure adequate visibility.

- For intersections on grades, 300 feet of sight distance is needed to allow a fully loaded haul truck to come to a stop.
- For intersections on flat ground, 175 feet of sight distance is needed to allow a fully loaded haul truck to come to a stop.
- Intersections should be avoided on the inside of curves and on the crests of hills due to the limited visibility in those areas.
- All intersections should be constructed as right angle intersections. “T” intersections should be encouraged while “Y” intersections should be avoided.

If adequate sight distance is not available, then additional controls must be applied.

Intersections shall be regularly audited to ensure there are no objects that restrict visibility. These objects include but are not limited to; vegetation, signs, utilities, power poles, buildings, berms.

Center berms or other separating traffic control devices should be utilized at intersections and on sharp curves to separate two-way traffic and prevent traffic from taking a shortcut through an intersection.

Light vehicles should be physically separated from haul trucks at intersections whenever possible to minimize haul truck / light vehicle interaction. Light vehicle entry points onto haul roads should be minimized and separated from major intersections.

If possible, intersections should be illuminated at night and the lights should be directed so they do not obscure the vision of either light vehicle or haul truck operators.

The right-of-ways should be adequately signed and included in training. The following vehicles have right-of-way over light vehicles:

- Larger equipment
- Loaded haul trucks
- Trucks to the blind side of larger equipment
- Emergency vehicles
- Vehicles carrying explosives

When in doubt, stop and communicate.

Speed Limits

Speed limits shall be based on equipment manufacturer recommendations but with haul road speed limits being no more than 35 mph and shop area speed limits at 5-15 mph depending on pedestrian and light vehicle traffic in the area.

Speeds should be reduced based on the physical conditions of the road such as width, surface conditions, intersections, visibility, and presence of ground crews as well as for weather conditions.

Haul Road Operations

Left hand traffic for surface mines shall be utilized within the mine areas or wherever there may be interaction with haul trucks and large water trucks. Adequate signage and crossovers also need to be provided.

Roads should be adequately watered to control dust and ensure visibility for haul truck operators and light vehicle operators. Water truck operators need to spot-water and not over-water to ensure adequate traction for all vehicles.

Permanently closed roadways shall be bermed off. Haul truck tires may be used to temporarily restrict access to haul trucks and large water trucks.

Where haul trucks are hauling loaded downhill additional controls shall be implemented to minimize the risk (Ex., straddle berms, run-away ramp, signage for lower gear/speeds, RAMP Tech monitoring.)

Signs should be utilized on all roads to indicate speed limits. Use of signage shall be evaluated on all roadways to warn for hazardous conditions and placed at appropriate locations. Examples of signs that may be needed: intersection, narrow roadway, obstructed view, road damage, indication of right-of-way, personnel working, etc. Signs shall be regularly maintained and readable.

During adverse weather conditions, speed limits will be reduced and traffic should be limited to only necessary travel. If weather conditions prevent safe operation, traffic shall be stopped until weather clears. In areas where fog or snow are frequent, guideposts shall be used to delineate edge of road.

One-way traffic signs will be utilized to define direction of traffic flow.

In left hand traffic areas, haul trucks and large water trucks will not make U-turns without confirmation that the right side of the vehicle is clear of other equipment or pedestrians.

3.5 Passing Procedures

All sites will establish safe passing procedures for equipment and light vehicles.

Haul trucks

Prior to passing haul trucks, radio contact must be made with the operators. The light vehicle operator must tell the haul truck operator his equipment call number. Once direct contact is made, the haul truck operator must respond with the same equipment call number and acknowledge it is clear to pass. Note that the light vehicle operator is responsible for making sure the road is clear of oncoming traffic. If contact cannot be made, passing will not occur.

Passing haul trucks on the left side in left-hand traffic areas shall not be permitted.

Only one vehicle at a time may pass a haul truck or other piece of large equipment. While passing, the light vehicle should remain far enough to the right to avoid hazards associated with spillage and tire blowouts.

Where radio communication is not available, passing shall be prohibited without an approved variance (see FCX – Global Significant Risk Variance Process).

Other large equipment

When passing other large equipment, radio contact shall be made. If radio contact cannot be made, passing will be prohibited.

When radio contact cannot be made with a stopped or downed piece of equipment, then visual contact with the operator in conjunction with hand signals may be used.

3.6 Light Vehicle Requirements

Light vehicles traveling into the mine shall meet minimum requirements and be kept in good working order.

Periodic maintenance and inspection requirements

All light vehicles used to transport personnel shall be inspected before being operated. Light vehicles shall be regularly maintained at intervals not to exceed every 3 months or 3000 miles. (Time and duration should be based on conditions.) Inspections shall consist of:

- Steering Components
- Brake Components
- Drive Lines and U Joints
- Lights
- Gauges
- Equipment Numbers
- Tires/Rims/Lugs
- Suspensions
- Frame for Cracks
- Seatbelts
- Glass/Wipers
- Fluid Levels
- Buggy whip/light

Worn components will be replaced before the vehicle is released for operation. Any safety items (*) marked on pre-use inspections checklists as “bad order” or not functional will be repaired before the equipment is released.

Minimum requirements for pit entry

All vehicles entering the mine must have a two-way radio and buggy whip with some form of working light at all times. Areas where buggy whips are required will be identified with signage. Buggy whips must be a minimum of 12 feet; measured from ground level to the top of the light.

Lights shall be used to indicate types of equipment and to make them more visible:

- Blue is reserved for support equipment as needed to restrict passing
- Amber for visibility as needed
- Red for emergency and blasting
- Flashing strobe lights on transport vehicles (buses and man vans) in a color that can be seen in various weather conditions

Haul trucks shall have numbering with LED lights or a minimum reflective tape and be large enough to be seen by other vehicles.

Light vehicles will have numbering a minimum size of 4 inch lettering on each side with one on the rear when possible. Lettering color will be distinguishable compared to the vehicle color. Number series/sequence should be simplistic and well organized for easy identification.

All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted or have working amber strobe light when operating on mine haul roads.

3.7 Perimeter Security and Lockout Tagout Tryout of Equipment

Lockout, tagout, tryout of equipment will be in accordance with the FCX – lockout Tagout Tryout Policy. Perimeter security shall be utilized when LOTOTO is not required but there is a need to communicate the equipment is in control of an operator.

Pre-use inspections and Ground Breaks

When an employee leaves the cab of the truck and it must remain running (during pre-shift inspections and ground breaks for example) the operator must signify that the equipment is in use and ensure that control of the energy source is maintained. Perimeter security must be utilized to communicate to others that the truck is under control of an operator that is currently on the ground. Examples include but are not limited to: locks and tags on ladder gates, cable with a clamp with a lock and tag, signs and flags, etc. Use of park brake light indication for haul trucks should be evaluated for additional communication that the truck park brake is set.

Large loading equipment, water trucks, drills also shall have a perimeter security procedure established.

Maintenance and Fueling (Lockout Tagout Tryout)

When maintenance is being performed lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under, or work on the heavy mobile equipment.

The following minimum standards must be in place when fueling:

- Equipment secured
- Pedestrian walkways defined

- LOTOTO and/or perimeter procedures must be followed by all in the area

4.0 Equipment – Technology

As various forms of technology become available that introduce improved controls to reduce risk, each site will install these technologies as feasible or as required. Sites should work with the FCX Technology Center - Mining to evaluate new and existing equipment technologies.

In-cab Fatigue Monitoring System (Drivers State Sensing – DSS)

All sites will install and maintain the in-cab fatigue monitoring systems for surface haul trucks and other equipment where feasible. Maintenance programs will be established to keep units operational.

Each site is required to maintain a fatigue management program that includes: communication, training, fit-for-duty and supervisor interaction.

Other Technology

As other technology becomes available (such as proximity detection, light vehicle monitoring, etc.) and is found through testing to be a viable option, sites will implement on a case-by-case basis with the assistance of the FCX Technology Center.

5.0 Training

All training will be documented and records maintained.

Visitor Awareness Training (Hazard Awareness)

Must be provided to all visitors who have or may have the potential to be present in areas where heavy equipment will be operated. This training shall include an overview of the hazards of the area.

In-Pit Driver

All employees, or contract employees, that will drive in the pit, as specifically defined by each property, will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver's license, sticker or some sort of identification will be used to limit access into these areas.

This driver training will only be provided to those that request and receive mine area management approval for the training.

If an individual does not have in-pit driver certifications, they will need to be escorted into the pit.

Driving in the pit at night introduces additional hazards and should be addressed in the training materials and practice.

Note: In-pit driving training is not the left-hand driving training done in annual refresher. It is a specific task training requirement to authorize drivers for pit access.

Light Vehicle Only Access or Left-Hand Drive Training

Employees, or contract employees, that will only utilize Light Vehicle Access routes will receive training in safe operation of these routes (could also be known as “left-hand” driving training.) Having this training will not qualify a driver to drive on mine haul roads.

GSR Refresher

Annual GSR refresher training must be provided to affected employees, and contractors who are authorized, competent or qualified to perform tasks in areas where interaction with heavy equipment occurs. It must include a review of existing policies and regulations and shall review any new or existing hazards and mitigations.

6.0 Audits

Periodic unannounced audits and scheduled audits are expected to ensure compliance with the policy and safety of personnel. All audits are to be documented, an action plan developed to address any identified gaps, and actions assigned and tracked to completion. Documents will be retained per the FCX Corporate Record Retention Policy.

Monthly

Each site to develop an audit schedule for area leaders and employees to audit selected elements of this policy at a frequency appropriate to the frequency of light vehicle and personnel exposure to heavy mobile equipment.

Quarterly

Quarterly Gap Analysis will be performed by a site cross-functional team such that by the end of a 12 month period, the entire Gap Analysis has been completed internally. Action items will be generated, as needed, and tracked to completion.

Annual

An annual audit will be scheduled at each site and will be conducted by a Freeport-McMoRan cross-functional team.

Audits will include review of compliance with FCX policies, training, site SOPs, and field practices. Follow-up audits may be conducted more frequently depending on site performance.

A standard format will be used for the annual site audits.

7.0 Variance

If any part of this policy cannot be followed, an approved variance is required. The FCX Variance Policy will be followed. GSR Variance Process.pdf. Seek assistance from site Health & Safety as needed.

8.0 Definitions

Definitions	
Blind Area or Blind Spot	A blind area, or blind spot, is the area around a vehicle or piece of heavy equipment that is not visible to the operator, either by direct line-of-site or indirectly by use of internal and external mirrors.
Critical Controls	A device, system, or process implemented to eliminate or reduce the risk for a task/job, but if missing or overlooked has the potential to lead to catastrophic outcomes such as serious injury or death.
Critical Risks	A risk that if not controlled has the potential to lead to catastrophic outcomes such as serious injury or death.
Grade (Gradient)	The degree of inclination or rate of descent or ascent in a roadway.
Heavy Mobile Equipment	Large equipment used in mining and construction as defined in Section 1.0 of this document.
Intersection	A place where two or more roadways meet, especially when one is a major road.
Light Vehicle	Smaller single or multi-passenger vehicles and equipment typically less than one-ton. This can include cars, pick-up trucks, vans, buses, UTVs and ATVs, and small equipment such as forklifts or bobcats.
Positive Radio Contact	As used in this document, defines the radio communication between two persons identifying themselves and responding one to the other to establish an understanding of the action each is about to take with relation to approaching or passing heavy mobile equipment.
RAMP Tech	Remote Access Monitoring Process Technician
Right-of-Way	The right to proceed with precedence over other vehicles in a particular situation. For this document at an intersection or along a road.
Tie-downs (Q-point)	The place where heavy mobile equipment is parked or staged such as a ready line.

Turnouts (Orejas) An area provided along a mining road that allows the driver to turn in and square up with road to allow better sight of other vehicles before turning. See Appendix for example.

9.0 References

Throughout this Policy other policies and procedures are referenced.

Reference Documents	FCX – Lockout Tagout Tryout Policy FCX – Records and Retention Policy FCX – Bus Policy FCX – Variance Process
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10.0 Records

The following records must be retained according to the FCX Records Retention Policy	<ul style="list-style-type: none"> • Employee Training Records • Annual program review • Equipment inspection records • Variance Documents • Management of Change forms • Others as described in FCX Records Retention Policy
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11.0 Revision History

2015 NEW	Initial Release	
Dec 2016	Rev. 1	Adoption of FCX Standard GSR format - 2016
Dec 2016	Rev. 1	Replaced various occurrences of segregation with separation
Dec 2016	2.3 Roles & Resp. – Supervisors – Identify Critical Risks & Critical Controls	Modified the sentence: <i>“Ensure that a risk review is completed for any new roads, changes in traffic patterns, or other mine changes to ensure that controls are in place.”</i> To read “... or other changes which could impact safe interaction of heavy equipment with light vehicles or pedestrians to ensure that controls are in place.”
Dec 2016	2.6 Roles & Resp. – Employees – Communicate Hazardous Conditions	Revised the sentence: <i>“Supervisors and/or Health and Safety Representatives must be immediately contracted if hazardous conditions or actions arise which may cause injury to any employee before proceeding with further workplace activities.”</i>

To read: “Employees are expected to correct or report to Supervisors and/or Health & Safety Representatives if hazardous conditions or actions arise”

Dec 2016	2.6 Roles & Resp.- Employees – Perform Pre-task Risk Assessments	<p>Replaced the sentence: <i>A pre-task risk assessment should include critical controls identified for this specific risk (Ex., job hazard analysis, job safety analysis).</i></p> <p>To read: “Critical controls should be identified using the appropriate tools (ex: pre-shift equipment inspection, work area inspection, job hazard analysis, job safety analysis.)”</p>
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles – Light Vehicle Access Roads	<p>Modified various occurrences of “LVAs” to “LVA roads”.</p> <p>Removed the sentence “Sites shall evaluate where this is appropriate based on the amount of traffic on the haul road (i.e., if haul trucks enter periodically this can serve as a reminder to LVAs that haul trucks are in the area).”</p>
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles – Heavy Equipment Crossings on Highways or other Non-mine Roads	<p>Restructured the following text:</p> <p><i>“For long term projects sites shall evaluate the use of a tunnel for these crossings. At a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment.</i></p> <p><i>“A flagger or crossing guard shall be present to manage the intersection for all public roadways.</i></p> <p><i>“Where applicable, ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning.”</i></p> <p>To read:</p> <p>“Where significant interaction or anytime haul traffic crosses public roads:</p> <ul style="list-style-type: none"> • Evaluate the use of a tunnel for these crossings. Or at a minimum, signal lights and/or signs and crossing gates shall be used to control interaction between light vehicles and heavy equipment. • A flagger or crossing guard shall be present to manage the intersection for all public roadways. <p>Ensure that Department of Transportation or other regulatory agencies are involved in the evaluation and planning and proper permits are acquired.”</p>
Dec 2016	3.1 Separation of Heavy Equipment and Light Vehicles –	<p>Modified the sentence: <i>“The operator is required to be out of the cab before others approach the equipment and are out of the operator’s line of site.”</i></p>

	Approaching Heavy Equipment	To read: “Operators of haul trucks, loading units, water trucks (and other equipment as determined by site) are required to secure the vehicle and be out of the operator’s cab before others approach the equipment. Visual contact is to be maintained with those approaching.”
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Ground Crews (leaching, surveyors, cable crew)	<p>Modified first paragraph: “All ground personnel shall wear PPE required for the area as well as a high visibility reflective vest.”</p> <p>To read: “All ground personnel shall wear PPE required for the area as well as a high visibility and reflective vest or reflective clothing. This clothing needs to be highly visible both day and night.”</p> <p>Modified last paragraph by adding the words: “or Control Room at the end of the sentence.</p>
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Flaggers or Spotters	Modified the last sentence by adding the underlined: A high visibility and reflective vest <u>or reflective clothing</u> will also be required.
Dec 2016	3.2 Separation of Heavy Equipment and Pedestrians – Personal Protective Equipment	Modified the last sentence by adding the underlined: Employees and contractors on the ground around heavy equipment or light vehicles shall wear a reflective safety vest <u>or reflective clothing</u> except in designated areas such as shops, parking lots for personal vehicles, secured perimeters and other designated areas.
Dec 2016	3.3 Tie-down (Q-points) – Minimum Requirements	<p>Added the following to the first bullet: (Note: loading equipment may be parked with matched haul trucks)</p> <p>Modified the following bullet with text underlined and a clarification point in parenthesis:</p> <ul style="list-style-type: none"> • Forward travel only for <u>exiting equipment</u> (note: ok to back into parking ditch) <p>Modified the following bullet replacing the minimum distance from 20 feet to 15 feet</p> <ul style="list-style-type: none"> • There shall be a minimum of <u>15 feet</u> between haul trucks when parked side-by-side; additional clearance will be needed for “in-line” parking based on size of equipment <p>Replaced the word driver to read personnel in the bullet below:</p> <ul style="list-style-type: none"> • Slots shall be provided in berms for <u>personnel</u> to enter and exit

Dec 2016 3.3 Tie-down (Q-points) – Shift Change Procedures

Modified the sentence *“Haul trucks will not leave the tie-down area until the employee transport vehicle leaves the area.”*

To read: “Haul trucks will not enter or leave the tie-down area until the employee transport vehicle leaves the tie-down area. Other activities away from Tie-down area may proceed as normal.

Modified last paragraph *“Each site will develop procedures for non-routine situations where there is a stray driver or truck that was not at the tie-down area at the appropriate time, unless directed to do so by dispatch or supervisor. The shift supervisor shall direct this effort and conduct a follow-up to determine actions to prevent a reoccurrence.”*

To read

“Each site will develop procedures for non-routine situations where there is a stray driver or heavy equipment that was not at the tie-down area at the appropriate time.”

Dec 2016 3.4 Roads & Intersections – Haul Road Construction

Deleted the following bullets:

- Haul roads should be constructed with a substantial base of rock or other material to prevent rutting, pot-holing, and the development of soft spots in the road.
- Haul roads will have a surface layer of crushed rock or other suitable road building material to ensure a smooth surface.
- All roads should be regularly bladed to ensure a smooth surface.

Modified the paragraph *“Haul roads should be constructed at 10% grades or lower. Grades steeper than 10% should be minimized and shall not exceed 15%. Grades may need to be less than 10% due to safety considerations. Utilize the manufacturer’s recommendations for the maximum grades of articulating trucks used on site.”*

To read:

“Haul roads should be constructed at 10% grades or lower where specific safety considerations determine lower grade design requirements. Grades steeper than 10% should be minimized and shall not exceed 15%. Utilize the equipment manufacturer’s recommendations for the maximum grades of articulating trucks used on site.”

Deleted the paragraph *“Haul roads should be built using a consistent linear grade to reduce haul truck transmission shifts and to reduce spillage onto roads. Where grade changes are necessary, they should be as smooth as possible to avoid racking the haul truck frame.”*

Dec 2016	3.4 Roads & Intersections – Intersections	<p>Modified the paragraph <i>“An intersection refers to anywhere multiple haul roads intersect or light vehicle roads meet a haul road. Light vehicle support equipment access to haulage roads must have consideration for adequate line of sight for haulage traffic.”</i></p> <p>To read: <i>“An intersection refers to anywhere multiple heavy equipment roads intersect or where light vehicle roads meet a road used by heavy equipment. Light vehicle support equipment access to haulage roads, and other heavy equipment roads, must have consideration for adequate line of sight to heavy equipment.”</i></p> <p>Modified the sentence <i>“The right-of-ways (ROWs) should be adequately signed and included in training. The following vehicles have ROW:”</i></p> <p>To read: <i>“The right-of-ways should be adequately signed and included in training. The following vehicles have right-of-way over light vehicles.”</i></p>
Dec 2016		<p>Modified the paragraph <i>“Speed limits shall be set based on equipment manufacturer recommendations with haul roads being no more than 35 mph and shops areas in the 10-15 mph range depending on pedestrian and light vehicle traffic in the area.”</i></p> <p>To read: <i>“Speed limits shall be based on equipment manufacturer recommendations but with haul road speed limits being no more than 35 mph and shop area speed limits at 5-15 mph depending on pedestrian and light vehicle traffic in the area.”</i></p>
Dec 2016	3.4 Roads & Intersections – Haul Road Operations	<p>Modified the paragraph: <i>“Permanently closed roadways need to be bermed off. Haul truck tires can be used to temporarily restrict access to haul trucks and large water trucks.”</i></p> <p>To read: <i>“Permanently closed roadways shall be bermed off. Haul truck tires may be used to temporarily restrict access to haul trucks and large water trucks.”</i></p>
Dec 2016	3.5 Passing Procedures – Haul trucks	<p>Modified the sentence: <i>“Passing haul trucks or other equipment on the left side in left-hand traffic areas shall not be permitted.”</i></p> <p>To read: Passing haul trucks on the left side in left-hand traffic areas shall not be permitted.</p>
Dec 2016	3.6 Light Vehicle Requirements – Minimum requirements for pit entry	<p>Modified the sentence: <i>“Light vehicles will have numbering with a minimum size of 4 inch lettering on each front quarter panel, and one on the rear when available.”</i></p>

To read: “Light vehicles will have numbering with a minimum size of 4 inch lettering on each side of the vehicle, with one on the rear when possible.”

Modified the sentence: “All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted when operating on mine haul roads.”

To read: “All-terrain Vehicles (ATVs), Utility Terrain Vehicles (UTVs) and slow-moving small equipment must be escorted or have working amber strobe light when operating on mine haul roads.”

Dec 2016	3.7 Perimeter Security and Lockout tagout Tryout of Equipment – Pre-use inspections and Ground Breaks	<p>Modified the sentence: “Other heavy mobile equipment will use established procedures to signify that the equipment is under the possession of an operator that is on the ground.”</p> <p>To read: “Large loading equipment, water trucks, and drills also shall have a perimeter security procedure established.”</p>
Dec 2016	3.7 Perimeter Security and Lockout tagout Tryout of Equipment – Maintenance and Fueling	<p>Replaced the following text: “When maintenance is being performed and when the truck is being fueled, lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under or work on the heavy mobile equipment.”</p> <p>To read: “When maintenance is being performed on any piece of equipment, lockout tagout tryout procedures according to the FCX – Lockout Tagout Tryout Policy must be followed for anyone that will get on, under, or work on the heavy mobile equipment.”</p>
Dec 2016	4.0 Equipment – Technology - Cameras	<p>Deleted the section: “As other technology becomes available sites should evaluate the implementation of backup cameras on all heavy equipment that has a large blind spot to the rear of the vehicle.”</p>
Dec 2016	5.0 Training – Visitor Awareness Training (Hazard Awareness)	<p>Added this sub-section to the Training section: “Must be provided to all visitors who have or may have the potential to be present in areas where heavy equipment will be operated. This training shall include an overview of the hazards of the area.”</p>
Dec 2016	5.0 Training – In-pit Driver	<p>Modified the paragraph: “All employees that will drive in the pit will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver’s license, sticker or other means of identification will be used to limit access into these areas.”</p> <p>To read: “All employees, or contract employees, that will drive in the pit, as specifically defined by each property, will receive in-pit driving safety training prior to being allowed to drive on mine haul roads. A certificate, driver’s license, sticker or some</p>

sort of identification will be used to limit access into these areas.”

Modified the sentence: *“This driver training will only be provided to those that request and receive management permission for the training.”*

To read: *“This driver training will only be provided to those that request and receive mine area management approval for the training.”*

Added the following text: *“Note: In-pit driving training is not the left-hand driving training done in annual refresher. It is a specific task training requirement to authorize drivers for pit access.”*

Dec 2016	5.0 Training – Light Vehicle Only Access	<p>Modified the text: <i>“Employees that will utilize Light Vehicle Access routes will receive training in safe operation of these routes. Having this training will not qualify a driver to drive on mine haul roads.”</i></p> <p>To read: <i>“Employees, or contract employees, that will only utilize Light Vehicle Access routes will receive training in safe operation of these routes (could also be known as “left-hand” driving training.) Having this training will not qualify a driver to drive on mine haul roads.”</i></p>
Dec 2016	5.0 Training – Personnel Transport Driver Training	<p>Modified the text: <i>“For personnel carriers (vans) drivers must have a minimum of two years of experience operating equipment before driving personnel transports. They must also have received training and information on the Q-point procedures.”</i></p> <p>To read: <i>“For personnel carriers (vans), drivers must have a minimum of two years of experience in their respective environment before driving personnel transports. Those personnel van drivers who will enter into mine Q-point areas, must also have received training and information on the Q-point procedures; this training is to be documented.”</i></p>
Dec 2016	5.0 Training – GSR Refresher	<p>Added this sub-section to the Training section: Annual GSR refresher training must be provided to affected employees, and contractors who are authorized, competent or qualified to perform tasks in areas where interaction with heavy equipment occurs. It must include a review of existing policies and regulations and shall review any new or existing hazards and mitigations.</p>
Dec 2016	6.0 Audits	<p>Added audit requirements for Monthly, Quarterly and Annual periods.</p>

Appendix A Examples and Forms

Haul Road Safety Audit Form

Date		Haul Road, Pit or Area					
Auditor(s)							
General Design Considerations				YES	NO	NA	COMMENTS / ACTIONS
Is the road free of potholes, rutting, or soft spots?							
Is the road's top surface graded and smooth?							
Is the road wider than 3.5 haul trucks (793-85', 930E-96')?							
Is the maximum sustained grade at or below 10%?							
Is the road grade as smooth as possible to minimize gear shifting?							
Are there smooth transitions between grade changes?							
Are sharp curves widened & provided with adequate supers?							
Are there objects in the line of sight (berms, vehicles, shrubs, buildings) which restrict visibility?							
Are speeds reduced in areas where vertical or horizontal curves reduce visibility?							
Drainage and Dust Control				YES	NO	NA	COMMENTS / ACTIONS
Is the road configured with adequate drainage and is it maintained?							
Does the road have adequate cross-fall for drainage?							
Are culverts located at low points & intersections which are capable of retaining water?							
Is there adequate dust-control to ensure visibility?							
Is water applied appropriately by water trucks by spotting and not over-watering?							
Berms and barriers				YES	NO	NA	COMMENTS / ACTIONS
Are berms at least mid-axle height?							
Are berms near the base of steep ramps or significant drop offs higher and wider than normal?							
Are berms de-rocked?							
Are center berms installed at sharp curves, critical intersections and areas of increased speeds/risk?							
Are closed sections of roads properly restricted from entry?							

Safety Enhancements	YES	NO	NA	COMMENTS / ACTIONS
Are there signs indicating the proper speed and/or grade for the road?				
Are there signs indicating intersections, narrow spots, rough sections, or other pertinent information?				
Are the signs in good shape and readable to the operators of large haul trucks?				
Are there guideposts on the side of the road?				
Are there rock slots available for storing spillage?				
Is pedestrian access prohibited? If not, are pedestrian walkways physically separated from haul truck traffic?				
Is light vehicle traffic physically separated from haul truck traffic?				
Are there run-away truck ramps for downhill loaded sections?				
Intersections	YES	NO	NA	COMMENTS / ACTIONS
Are the speed limits approaching the intersection appropriate?				
Is at least 300ft of sight distance available at intersections located on grades in excess of 6%?				
Is at least 175ft of sight distance provided at intersections located on flat terrain?				
Are intersections located on straight and flat terrain as much as possible?				
Are intersections configured as right angle intersections?				
Is lighting appropriate for the intersection? Is lighting needed at night? Is it directed away from the operator's line of sight?				
Are there objects in the line of sight (berms, vehicles, shrubs, buildings) which restrict visibility?				
Are there any powerlines, pipelines or other utilities near the intersection?				
Is there a queue point near the interchange?				
Is light vehicle traffic physically separated from haul truck traffic as much as possible?				
Are special accommodations made for light vehicles? (e.g. turnouts or orejas "ears", special turn lanes, elevated roadways)				
Is pedestrian access prohibited? If not, are pedestrian walkways physically separated from haul truck traffic?				
What controls are in place to control vehicles? (e.g. traffic lights, stop signs, yield signs, physical controls)				
Are center berms in place or needed to direct light vehicles and haul trucks into the appropriate lanes?				

Are there drainage controls in place to keep the intersection dewatered?				
Has the intersection been planned? Is it built according to the design?				

General COMMENTS / ACTIONS about Haul Road:

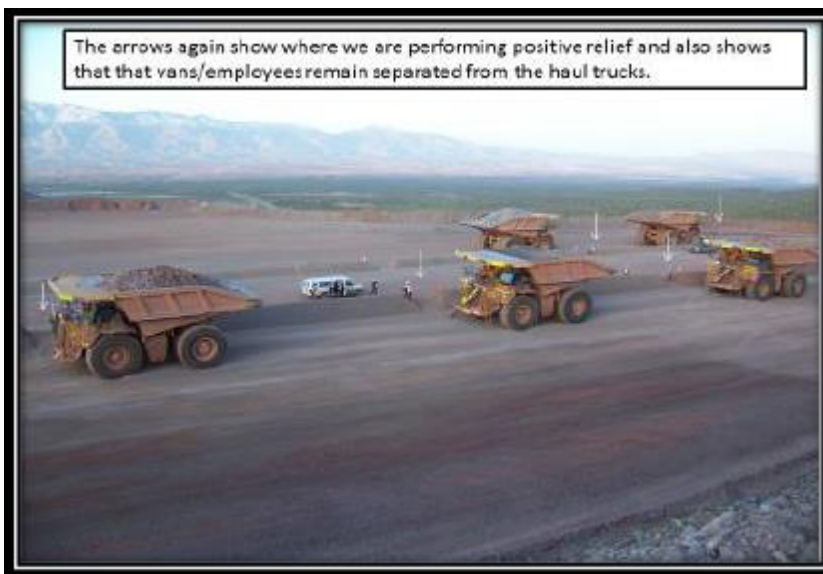
Diagram / Drawing:

Safford Mine Tie Down Example

Photo 1



Photo 2



Cerro Verde Turnouts (Orejas)

Photo 1



Photo 2

