FREEPORT-McMoRan

FCX Department of Occupational Health and Safety	Policy #		FCX-20
	Revision #		1
	Supersedes		May 2014
Shovel Move Policy	**Task Risk**	X	**High**
			Medium
			Low
			NA
Approval Date: 6/25/14	**Original Date: 2/23/14**		

Contents

1.0 Purpose/Scope

Purpose	The purpose of this document is outline safe procedures for moving shovels up and down a ramp or any roadway where there is a grade.
Scope	This Policy shall be used by all Freeport-McMoRan (FCX) employees and contractors when moving shovels.

2.0 Policy

Prior to moving a shovel a pre-job review will take place to plan the route and look for any obstacles or conditions that may pose a hazard during the move.

Pre-task Review	Prior to any shovel move, all employees involved must review the planned route and discuss risks and critical controls to minimize the risks.
Energized Power Lines	If the shovel will be moving under energized power lines: • A surveyor, engineer or other qualified individual will verify the height and voltage of the line and minimum clearing distances for the equipment being moved and utilized in the move. • All employees involved in the move will ensure proper Lockout Tagout Tryout (LOTOTO) of power lines when the shovel may be within minimum clearing distance. **NOTE:** Refer to the FCX-Energy Control Policies for specific LOTOTO procedures and line clearance minimum distances.

2.1 Pre-move Preparation

Prior to the shovel being moved, key items must be evaluated.

Maintenance Check	Before a shovel move begins maintenance must ensure all shovel components are in good working order, particularly: • the propel and braking systems • track pins • lubrication systems
Brakes	Brake clearance and track adjustments must be checked. The hoist and crowd brakes must be set.
Cable	Ensure there is sufficient trailing cable (typically a minimum of 300-400 feet is necessary) for a continuous move.

Communication	Personnel involved in the move will utilize radios. For more complex moves, the site should evaluate if the use of ground personnel is needed to monitor through tight areas and improve communication during the move. A designated radio channel will be utilized for the move.
Ramp Grade	Prior to starting the move, verify the ramp grade through survey as road conditions can change over time. Generally, the maximum grade for a shovel is 15% up or downhill and 10% when traversing. However, this number may be different for different shovel models. Check with shovel manufacturer recommendations to verify limits for the make and model of shovel to be moved. Negotiate ramps in the straight on-facing direction of travel. Ensure the dipper is raised horizontal to the ground with dipper door open. When on a grade place the cab and dipper in the direction of travel.
Ground Personnel	Determine if it is necessary to use a ground person for situations where there will be other equipment or obstacles that will make the move tight. When ground personnel are utilized, ensure visibility of these persons at all times. Ground personnel must be experienced and qualified in the shovel move procedures.
Propel	Transfer shovel into propel and ease into propel gradually. Propel up or down the ramp depending on direction of travel.
Cuts on Ramps	Cuts on ramps will be performed using differential steering (using one controller) making cuts to the downhill side. This will reduce stress on the propel components.

2.2 General Requirements

These general requirements apply for all shovel moves.	
Route of Travel	Know the route the shovel will travel and evaluate obstacles that may be in the line of travel during the move.
Establishing Safe Zone	Establish a safe zone a minimum of 200 feet on the uphill side of the shovel while shovel is moving. No personnel or equipment shall be allowed on the downhill side of the shovel while in motion. When the shovel is in propel no person or vehicle will be to the side of the shovel to protect personnel from fly metal exposure. A safety watch shall be utilized to enforce the safety zone and communicate on behalf of the move. Establish and maintain the safe zone area throughout the move.
Safety Watch	Designate a safety watch to keep people out of the safety zone and to communicate with those moving the shovel should the safe zone be breached. The safety watch will be experienced and qualified in shovel movement.
Signage	Utilize signage such as, “shovel move in progress” to designate the move path. Signage shall be placed on roadways as well as on leading and trailing equipment. A sign or blockers at the top and bottom of the ramp shall be utilized to keep other traffic out during the move.
Special Precautions	In addition these are some general precautions for all shovel moves: • Drain the air compressor before moving up or down ramps • Keep eyes on path of travel • Watch ground personnel at all times • Follow directions of the move supervisor, the safety watch and/or the ground personnel • Perform visual inspection of all highwalls within the shovel move area and address any concerns
Move Supervisor	A mine operations supervisor shall be present during any move.
Dozer Operators	Dozer operators will be experienced and qualified in shovel movement.
Dipper Position	When the shovel is ready to move, the dipper shall: • Be hoisted up until the sticks are parallel to the ground • Be pointed in the direction of travel • Have the door open Have the hoist and swing brake set.
Releasing Swing Brake	If the swing brake needs to be released during the move: • The shovel move will cease • Shovel will set the propel brakes

	• Shovel operator will announce his intention to release the swing brake and which direction he will swing • The supervisor in charge will ensure personnel and equipment is clear and will then grant permission to shovel operator • The shovel operator will not hoist until permission is granted by the designated move supervisor.
Releasing Hoist Brake	If the hoist brake needs to be released during the move: • The shovel move will cease • Shovel operator will announce his intention to release the hoist brake and why • The designated move supervisor will ensure personnel and equipment is clear and will then grant permission to shovel operator **The shovel operator will not hoist until permission is granted by the designated move supervisor.**

2.3 Moving Shovel with Motivator

The procedures for using a motivator to move a shovel are as follows:

Motivator Placement

1	 While moving a shovel with a motivator the motivator should be placed in a location uphill of the shovel in such a position that in the event of unintended shovel travel the motivator will not be in the potential path of travel.
2	 When positioning the motivator for a shovel move, ensure there is at least 50 feet between the shovel dipper's footprint and the tail of the motivator. While still connected to power and using the spotter, walk the shovel over the cable (which is connected to the motivator).

3	 When needed for cable management, attach a temporary stinger to the front of shovel.
4	 Once in position, de-energize the shovel and perform LOTOTO. Disconnect trail cable and attach cable from motivator to shovel and front stinger.

5	 Proceed on grade with motivator safely positioned uphill of the shovel, regardless of the direction of travel. Spotters and other ground personnel shall be positioned 200 feet away to appropriately manage the move and avoid the potential hazard of fly metal generated by the shovel tracks. No one will be positioned to the sides or the downhill side of the shovel while in propel. **Note:** The stinger may not be needed for cable management in all cases.
6	Avoid loss of brake air pressure by not over pumping the brakes on any equipment that is being used to pull the motivator.
7	Designate a specific radio channel. The personnel involved with the move will communicate and ensure that this channel is cleared for shovel move communications only.
8	Since the motivator's power output is limited, the following is required: • Perform one motion at a time • Do not engage any motion to full capacity, except propel (ease into propel, then increase power to full capacity) • Do NOT use counter-rotation when powered by motivator • Perform each motion slowly and smoothly

Moving Downhill

When moving downhill is required, the motivator will be positioned uphill at the required safe distance, and power will be routed into the shovel's stinger. The shovel will position the cab and dipper to face the direction of travel.

2.4 Moving a Shovel with Brake Assist Style Braking System

In this process, the swing radius restricted access rule is not in affect. Correct positioning of the dozers is essential for a safe and efficient shovel move.

Required Supervision	A mine operation supervisor and shovel mechanic shall be present during any move with crawler dozers.
Turning on a Ramp	The shovel shall be set so that the house is clear of the dozers when turns are to be negotiated. When the dozer positions itself on the track that will be propelling downhill, it will stay as close as possible to the track with the dozer blade low to the ground as the shovel propels. The second dozer will chock the track that is not in propel. The shovel should always propel downhill when turning. • Right turn uphill – Apply brake to left track and propel downhill with right track. • Right turn downhill – Apply brake to right track, propel downhill with left track. • Left turn uphill – Apply brake to right track and propel downhill with left track. • Left turn down hill – Apply brake to left track and propel downhill with right track. **NOTE:** If the shovel is on a ramp, dozers will chock both shovel tracks prior to shovel transferring from propel to hoist. **(This does not apply to 4100 or 2800 shovels, as they are too large for a dozer to chock.)** Dozer operators shall put dozer blade low to the ground and contact shovel track pad to chock it. If the dozer blade exceeds the ground clearance of the shovel house, then the blade will "chock" as above, but on the shovel counterweight instead of the tracks.
Moving Downhill	The shovel will position the cab and dipper to face the direction of travel, keeping the dipper as low as possible with the teeth pointed at the ground. The dozer will not escort the shovel down the hill, but remain safely uphill or if downhill they will move into an area outside of the safe zone and out of potential line of fire. **NOTE:** If the shovel is on a ramp, dozers will chock both shovel tracks prior to shovel transferring from propel to hoist. Dozer operators shall put dozer blade low to the ground and contact shovel track pad to chock it. If the dozer blade exceeds the ground clearance of the shovel house, the blade will chock but on the shovel counterweight instead of the tracks. In the event that the shovel will be stopped for a long period, the dozers will push up a berm to block the shovel and clear the area downhill of the shovel.

2.5 Moving Shovels Using Hard Power

When moving the shovel under hard power there is no limited range of motion.	
Fault Malfunction Procedures	This turns the shovel off without losing power. It may be possible to reset from the operators station and possibly restart and maneuver the shovel as needed (although resetting the shovel may take some time). It is possible to get an "Instantaneous Shut-Down" which will turn off the shovel and lock-up all brakes.
Loss of Power	A loss of power completely disables the shovel, making any attempts to secure the dipper impossible. (No motion control and braking automatically set-up)
Overriding the Safety System	Some shovels are equipped with specific safety systems (for example: P&H Centurion) that require if the brakes fail to set, the operator will **NOT** use the e-stop button as it will override the safety system and possibly cause a runaway or limit the machine's ability to set the brakes. Each site must check the specific manufacturer requirements.
Stopping and Shutting Down on a Ramp	**DO NOT** stop the shovel or shut it down on a ramp, unless absolutely necessary. If required, the following steps shall be taken: 1. Cut tracks on ramp to angle towards high-wall side 2. Transfer to hoist/crowd mode 3. Release hoist/crowd brakes 4. Lower dipper to ground with teeth pointed to ground in front of track 5. Release small amount of slack from hoist cables to take weight off boom 6. Set all brakes and press stop button leaving extended cooling system on

2.6 Moving Hydraulic Shovels

Hydraulic shovels shall be moved with a low-boy. When this cannot be accomplished, the following general safety requirements must be applied.

Route of Travel	Drive the route and check road conditions and for any obstacles that may hinder the move.
Establishing Safe Zone	No personnel shall be on the downhill side of the shovel during the move. Establish a safe zone a minimum of 200 feet on the uphill side of the shovel by utilizing a safety watch who will communicate on behalf of the move. Establish and maintain the safe zone area throughout the move.
Safety Watch	Designate a safety watch to keep people out of the safety zone and to communicate with those moving the shovel should the safe zone be breached.
Signage	Utilize signage such as, “shovel move in progress” to designate the move path. Signage shall be placed on roadways as well as on leading and trailing equipment.
Special Precautions	In addition these are some general precautions for all shovels moves: • Perform a maintenance and safety check before moving on continuous ramps • Keep eyes on path • Watch ground personnel at all times • Follow directions of move supervisor, the safety watch and ground personnel • Ensure overhead power lines are high enough to avoid striking during the move or properly lock them out before making the move
Temperature Monitoring	When moving a hydraulic shovel, the crew shall monitor the temperature of the shovel every 800-900 feet using a heat gun or other monitoring device. If the temperature reaches 180°F the move must stop to allow the shovel to cool before movement can commence. As a precaution, a water truck shall be utilized as part of the move to cool the shovel quickly and prevent fire, should overheating occur.

3.0 Exemptions

If any part of this procedure cannot be followed, an approved exemption is required (see Appendix A).

Exemptions	Periodically there may be special circumstances due to the type of shovel or the specific move that will take place that do not allow all aspects of this procedure to be completely followed. If any part of this procedure cannot be followed an exemption must be completed by the area supervisor or employees planning to make the shovel move. An engineer or other qualified individual must review the move, provide justification for not following the procedure and give alternate safety controls to minimize or eliminate the risk. The division or area manager must then approve the exemption before the work can be completed. Where this policy cannot be followed, for both routine and non-routine work, an exemption form (see ***Appendix A***) must be completed, approved and kept on file with an SOP or other work procedure established for future work.

4.0 Training

Task-specific training will be provided for all employees and contractors who will perform shovel moves. All training shall be documented and contain the key elements listed below.

Specialized Training	Task-specific training will be given for each individual, based on their role of the shovel move. Employees will be qualified in each task before being allowed to perform the work, according to site-specific and regulatory training requirements.
Qualified Individuals	An individual who, through combined education, training, experience, and process knowledge, has demonstrated that he/she is capable of recognizing, evaluating, and effectively identifying controls.

5.0 References

	FCX – Electrical Procedures

6.0 Revision History

Feb 2014 **Rev 0**	Initial Release
May 2014 **Rev 1**	1. Added clarification around use of dozers – no use for 4100 and 2800 shovels 2. Changed language to require dipper to face direction of travel 3. Changed requirement no personnel or equipment on the downhill side of shovel
June 2014 **Rev 2**	1. Removed statements that were redundant 2. Removed seatbelt requirement due to requirement stand during move to see the tracks and cable

Appendix A-Exemptions

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Shovel Move Exemption Request Form

When any portion of this policy cannot be met, an exemption must be completed. Complete this form with a detailed description of the area and reason for an exemption request. A task review by an engineer or other qualified individual to consider other controls must be completed prior to submitting to the division manager. Approval from the division manager or higher is required prior to proceeding with the shovel move.

Date:	**Time:**	**Division Manager:**
Location of Activity:		
Purpose of Activity:		
Description of Request:		
Justification:		
Control Measures:		
Signature of Requestor:		
Signature of Division Manager or Delegate:		

*When completed give a copy of all related documentation to the division record keeper for filling purposes.

Significant Risk Assessment – Surface Blasting Policy

Potentially Fatal Risk	Critical Controls to Reduce or Eliminate
Electrical Storm	Lightning Detection System
	Removal of personnel per the DSST Policy
	Communication System (radios)
	Critical Behaviors – Disregard of the alerts
No Blockers in Place	Unauthorized access to blast site
	Critical Behaviors – Disregard of Blockers and signage
No Blast Warning/Notification	Communication System (radios)
	Adherence to procedure
	Zero Tolerance Policy
	Critical Behaviors – Adherence to procedure, Follow-through from personnel if no warning
Sparking Device in Unauthorized Area	Restricted Area (Area is locked)
	No Smoking Area
	Critical Behaviors – No access by unauthorized personnel, explosives removed from magazine, no personnel smoking or using cell phones
Misfire	Restricted access
	BSST Policy requiring spotters
	BSST Policy blocking access to a misfire area
	Possible misfires are marked on CASE

	SOPs for Misfires
	Critical Behaviors -
Incorrect loading/stemming resulting in fly rock issues	Loading according to Plan
	Supervision on pattern
	Pre-loading inspection of blasting
	Critical Behaviors – Adhering to the plan, auditing stemming height, proper timing

Red Flags – Indicate potential unsafe behavior or lack of controls
Access not marked
Blast site is not coned off
Lack of training by blasting personnel
Lack of Supervision
No pre-inspection reports
Field inventory sheets for accessories not filled out or incomplete
No organization on the pattern
No berms around the pattern
Free access to pattern
No pre-blast meeting documentation
No clearance map
Blocking positions not designated or marked
Non-exempt employee acting as the Responsible FCX Employee
No communication of blast
Improper procedure observed with the dongle