



Safe Work Procedure #1 - Moving the drill
March 23, 2012

STEP	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	Using tractor-skidder	Pre-op check of equipment	Proper pre-op carried out, including cable
2.	Hooking cable (rigging)	Frayed cable	Proper cable inspection PPE Proper pre-op
3.	Move drill to laydown nearby	Power hazard Electrocution	Communication between operator and 2 driller signalman front and back, check for power line
		Pinch points Unknown hazards along path	Define roles of driller, helper before move Inspect path and new site before moving
		Dust	Use appropriate dust masks or goggles
		Hydraulic leaks Debris left behind	Visual inspection, Pre-op drill inspection focus on hydraulics (hoses connections etc.) Restore finished hole site before departure
4.	Capping the old hole	Tripping hazard	Identify "finished" hole location, place marker
5.	Using a float loading travelling	Review Take 5	
	a) Loading equipment onto float	Men struck by moving or falling equipment Cable breaks, pinch points Lack of communication	Keep out of line of fire
	b) Travelling with load	Shifting or falling load	Speed appropriate to conditions Workers stay clear at all times Secure
	c) Communicating a move	Long wide load, surprise factor	Call dispatch before travelling begins, confirm path of move to be taken obtain permission for the move Escort trucks before and behind
	d) Meeting other vehicles on road while travelling	Vehicle accidents	Speed appropriate to conditions



Safe Work Procedure #1 - Moving the equipment
March 23, 2012

		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	Using tractor-skidder	Pre-op check of equipment	Proper pre-op carried out, including cable
2.	Hooking cable (rigging)	Frayed cable	Proper cable inspection PPE Proper pre-op
3.	Move equipment to laydown nearby	Power hazard Electrocution	Communication between operator and 2 driller signalman front and back, check for power line
		Pinch points Unknown hazards along path	Define roles of driller, helper before move Inspect path and new site before moving
		Dust	Use appropriate dust masks or goggles
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	b) Travelling with load	Shifting or falling load	Speed appropriate to conditions Workers stay clear at all times Secure
	c) Communicating a move	Long wide load, surprise factor	Call dispatch before travelling begins, confirm path of move to be taken obtain permission for the move Escort trucks before and behind
	d) Meeting other vehicles on road while travelling	Vehicle accidents	Speed appropriate to conditions



Safe Work Procedure # 2 - Preparing for a move
March 23, 2012

STEP	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	When holes are terminated and rods are pulled...time to move		
2.	Mast to be pulled in and lowered into its cradle.	Pinch points, hoses squeezed	Awareness and continual visual checks
3.	Rod manipulator stored	Improperly stored, extensions catch overhead telephone lines etc. Failure to place roof covers to protect against fall of man	Manipulator properly tied down on roof of drill rig Correctly install roof covers before accessing roof
4.	Rod rack on roof folded and lowered onto roof	Fall of person while flipping comb rack back into place	Correctly install roof covers before accessing roof
5.	All cables and unsecured objects to be tied down inside shack	Objects catch on external materials (trees, etc.) during the move	Proper storage
6.	All tools stored in their proper places	Loss of tools, objects hanging from heights, walls	Proper storage
7.	All outside equipment properly stored, tied down in sloop: ladders, steps etc.	Equipment damage	Awareness



**Safe work procedure #3 - Setting up following a move
March 23, 2012**

STEPS	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	Drill must be leveled & all pertaining equipment e.g.: sloops, fuel tankers etc.	Heavy equipment in immediate area, tripping hazards	Stay clear of equipment stay visible to operator Pick up or move any tripping hazards out of way(travel ways)
2.	Put plywood 4x8x3/4" on roof to eliminate falls into drill Raise rod rack and pin it	Fall into drill shack pinch point while pinning rack	Stay clear of rack while raising of rack, protective floor on roof ,properly installed
3.	Pull out mast and raise to desired degree	Hydraulic hose could catch objects on way up pinch points coming out of cradle, hanging cables	A constant visual of lift by both runner and helper
4.	Installation of stabilizer legs and apply mattings to all hydraulic sources and under engine	Burst of hydraulic hose could cause mast to come down, leaks from hoses, heat from engine	Full lock out and tagging of drill till legs installed, and mattings in place
5.	Floors in place, steps, ladders tied and secured	Tripping hazards, falling from ladder	Pay attention to task at hand
6.	Fuel secondary confinements in place and grounding rods installed	Spillage, electrical energy	Pay attention to task at hand
7.	Organizing of sloop e.g.: drilling muds, rod grease, etc.	Slipping on rods, strains due to heavy lifting.	Awareness, proper lifting techniques
8.	Safety chains with 'Restricted access' message installed between rig entrance and sloop at all times	Strangers and stragglers venture into drill	Only authorized personal allowed entering the drill



Safe Work Procedure #4 - Working off the top of the drill
March 23, 2012

STEP	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	Walk around, visual check from the ground, all barricades in place, undamaged	Winter conditions, looking up while walking, tripping hazard	Eyes on task, attention to ground conditions
2.	Install roof panels from inside the drill	Panels improperly secured	Verbal communication between crew members, proper installation of panels
3.	Check condition of roof access ladder	Ladder damaged or unstable	Check rungs, struts, ice accumulation on rungs, heels (feet)
4.	Install ladder	Ladder improperly installed, slip fall	Ensure contact brackets are in their slots, feet well dug in ground
5.	Climb Ladder to drill roof	Slip-fall due to lack of attention	Three point climb position
6.		Slip fall due to hands carrying tools	Tools passed up from partner after roof accessed
7.	Task: check Rod Manipulator	Manipulator start up	Total lock out isolation procedure in effect prior to setting up ladder to access roof
8.	Remove ‘stiff leg’ support pins	Working under suspended load: line of fire Both cylinders fail, tower descends	Total lock out isolation procedure in effect prior to setting up ladder to access roof Hundred year unlikely scenario



Safe work Procedure #5 – Working with propane heating in the pump shack
March 23, 2012

STEPS	DESCRIPTION OF STEP	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Pre-op, 5 Point Safety System Card and Take 5 must be completed prior to this procedure	
1.	Ensure quality of the heating system (heating coil and burner)	Inferior products: danger of explosion, fire when working with propane	Ensure that heating coil system is from a competent supplier-manufacturer Ensure that burner system is from a competent supplier-manufacturer
2.	Remove all flammable materials in drill shack prior to lighting	Personal injury burns, Equipment damage – fire	Ensure area is clear of all potential fire hazards before lighting, and that a fire extinguisher is nearby
3.	Remove unnecessary fuel source	Personal injury burns, Equipment damage – fire	Place fuel tank for diesel motor outside the pump shack
4.	Guard against buildup of propane in shack if flame goes out	Personal injury burns, Equipment damage – fire	Automatic Shut-off valve on burner system is key safety feature Test valve function at installation and periodically
5.	Ensure propane circulation system is secure	Personal injury burns, Equipment damage – fire	All hoses properly fastened away from lines of fire; certified hoses only
6.	Guard against buildup of propane in shack if hose bursts due to kinking or contact with sharp surfaces	Propane shut off system fails when flame goes out	Test propane shut-off system when installing propane for first time and with each move
7.	Lighting the system - Turn on main valve at propane tank when hoses have all been tested; Ensure pilot light system is working; light pilot light with welder's lighter; turn on main propane distribution system	Failure to follow proper sequence results in dangerous propane buildup; if system fails to light, failure to shut off main propane valve results in dangerous propane buildup.	Pilot light system properly functioning; Follow proper sequence described in first column at left; shut off main distribution point at tank if pilot light fails to work, OR if lit pilot light fails to light main heater



Safe work procedure #6 - Drilling
March 23, 2012

STEP	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		Take 5 risk evaluation required before this activity takes place	
1.	Rotation guard opened by helper	Ergonomics	Proper lifting techniques
2.	Attach water swivel to rod, raise rod and swivel with cable hoist and lower through head.	Suspended drive rod, poorly attached falls, strikes helper	Ensure water swivel is firmly attached to rod, keep out of line of fire
3.	Helper guides drive rod as it is raised then lowered	Pinch points Rod slides down through head clamp	Interlock guard, no rotation
4.	Preparing to screw and tighten rod onto core barrel or casing	Poor ergonomics	Runner adjusts head and rod to a comfortable position for helper
5.	Screwing bit onto outer tube or casing	Ergonomics, slipping wrench	Interlock guard, inspection of hooks and heel on pipe wrench
6.	Runner and helper use pipe wrenches to place and tighten bit	Ergonomics, slipping wrench	Interlock guard, inspection of hooks and heel on pipe wrench
7.	Adding rods to attain the bottom of the hole		
a	Water swivel attached to each new rod, rod hoisted up	Suspended drive rod, poorly attached falls, strikes helper	Ensure water swivel is firmly attached to rod, keep out of line of fire
		Pinch points	Helper uses hose line to guide
b	Rod string lowered by cable to appropriate position for adding new rod	Rod string slides down	Foot clamp in closed position plus hoist cable
c	Water swivel removed with help of pipe wrench, by helper	Ergonomics	Interlock guard, inspection of hooks and heels on pipe wrench

8	A, B, and C above (Step 10) are repeated until rod string reaches bottom of casing hole		
9.	Rotation guard returned to position when casing depth is reached, prepare to begin drilling	Ergonomics	Proper lifting techniques



Safe work procedure #7 - Uses of pipe wrenches
March 23, 2012

STEPS	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
1.	Breaking the water swivel using pipe wrench		
	a.) Runner places rod-swivel at proper height for the helper to manually break the water swivel. Helper opens safety cage.	Ergonomics: strain	Proper level placement
	b.) Helper prepares to break water swivel from drive rod	Ergonomics: strain	Interlock guard, inspect condition of pipe wrench
	c.) Helper applies pipe wrench to rod string below the water swivel, 'breaks' connection	Ergonomics: strain	Interlock guard, inspect condition of pipe wrench
2.	Installing or removing the bit, either for casing drive rod or drill drive rod, using the pipe wrench	Ergonomics: strain	Interlock guard, inspect condition of pipe wrench
	a.) Runner places bit rod at proper height for the helper to break the bit. Helper attaches water swivel to top of outer tube, runner hoists rod through head clamp.	Core barrel slides back through, head clamp strikes worker	Cable serves as second control against barrel descending, in addition to head clamp
	b.) Helper prepares to install or remove bit	Ergonomics :strain	Interlock guard, inspect condition of pipe wrench
	c.) Helper uses pipe wrench to tighten or remove bit	Ergonomics: strain	Proper level placement, use appropriate length pipe wrench

3.	Correcting pip cross-threading when adding rods	Ergonomics: strain	
	a.) Helper uses pipe wrench to correct the cross-thread	Ergonomics: strain Pipe wrench slips	Proper level placement, use appropriate length pipe wrench; check condition of pipe wrench grips



Safe work Procedure #8 - Using the rod manipulator
March 23, 2012

STEP	DESCRIPTION OF STEPS	HAZARDS WITHIN THIS STEP	HAZARD CONTROL
		<p>Pre-op, 5 Point Safety System Card must be done previously. "Take 5" must be completed prior to this procedure when done for the first time in the shift</p>	
1.	Conduct rod manipulator pre-op check with ladder	Ladder improperly installed, fall from ladder, work done from ladder	Ladder must be verified before use, properly installed, three point contact utilized, ladder held by partner while other is on the ladder
3.	Check both hydraulic fittings for tightness on cylinders	Ladder improperly installed, fall from ladder, work done from ladder	Ladder must be verified before use, properly installed ,three point contact utilized, ladder held by partner while other on ladder
4.	Check tightness of hydraulic motors and condition of rollers	Ladder improperly installed, fall from ladder, work done from ladder	Ladder must be verified before use, properly installed ,three point contact utilized, ladder held by partner while other on ladder



Safe work procedure #9 – Master switch lock out
March 23, 2012

STEPS	DESCRIPTION OF STEPS	HAZARDS WITHIN THE STEPS	HAZARD CONTROLS
		Pre-op, 5 Point Safety System Card must be done previously. "Take 5" must be completed prior to this procedure when done for the first time in the shift	
	Multiple Isolation Lock out		
1.	Decision is made to conduct multiple lock-out	Failure to perform multiple lockout	Awareness of the operations requiring full lock out: mechanical or maintenance work on drill fueling up the drill, oil change, worker repairing hose or other reason to work beyond the rotation guard; pre-op for mechanical rod handler
2.	Runner notifies co-workers	Poor communication	Runner personally informs helper and other interested personnel (maintenance mechanic etc.) of his intentions
3.	Runner applies red lock to lock-out master switch	Wrong lock, wrong switch	Runner should not be color blind. Awareness that switch is located on diesel engine.
4.	Runner tries bump test	Bump test overlooked, stray current causes unexpected engine startup. Following bump test, runner places red lock on key ignition as extra precaution	Assurance lock out is complete...and tested
5.	Runner places red lock key in isolation box	Lack of control causes confusion	Team approach, helper aware of procedure
6.	Runner and worker(s) to attach personal green locks to isolation box	Lack of control causes confusion	Team approach communication, each worker carries green lock on person at all times

7.	Work completed	Unexpected departure, lock remains	Each removes personal lock, no unexpected departure
8.	Then runner informs when work completed and all each remove personal green lock		
9.	Runner advises when all isolation devices removed		
10.	Red locks- keys returned to isolation box	Loss of key lock and key causes delays: no lock-out permitted	Runner takes responsibility personally does not allow this to happen.



Safe work procedure #10 – Chainsaw operations
March 23, 2012

STEPS	DESCRIPTION OF STEPS	HAZARDS WITHIN THE STEPS	HAZARD CONTROLS
		Pre-op, 5 Point Safety System Card must be done previously. "Take 5" must be completed prior to this procedure when done for the first time in the shift	
1.	Pre op on equipment	Hand injury	Wear all PPE Chain saw boots, chaps, hard hat with muffs and face shield, safety glasses, and armoured gloves. Inspect all safety components of the saw i.e. chain brake, chain guard, throttle lock, Top up gas and chain oil. Follow the manufacturer recommendation Proper training
2.	Take saw to place where you will be cutting	Body injury	While walking with the saw insure chain guard is on and saw is not running and use proper lifting procedure
3.	Survey surrounding trees and path of fall be extra vigilant of Chicots	Body injury Fatality	Ensure clear way to retreat and warn any fellow workers.
4.	To start chain saw insure brake is on Turn on/ off switch pull choke Set it on level ground put boot toe in hand guard area grasp pull cord and pull	Body injury permanent disability	Ensure brake is on while starting
5.	Let saw run till it idle nicely	Body injury	Do not operate till saw is warm up
6.	Grab saw by the handle with left hand and right hand goes to	Body injury	Make cut following chain saw booklet

6.	Grab saw by the handle with left hand and right hand goes to throttle line up to make the cut keep left arm lock to help in kick back situation	Body injury	Make cut following chain saw booklet
7.	Clear yourself an escape route away from falling tree	Body injury	Do not over reach ,and stand off to the left side of the saw
8.	Line up saw to make notch in direction of fall	Body injury Back injury	Good posture for cutting be aware of your surrounding at all time
9.	Make your back cut 1 inch higher than the notch	Tree comes back your way Body injury	Make sure notch is higher, have a wedge handy if needed to help in the fall.
10.	Let the tree falls	Body injury	Stand back and out of way as tree could spring back .
11.	When cutting day is over clean saw	Hand injury	Wear gloves