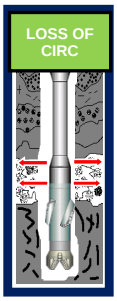
DARK WARRIOR Resources Ltd.

Mud Master Drilling Fluid Services

Monobore Horizontal

Dwarrior HZ Hayter 3-29-39-1 W4

Formations	mSS m	MD m	TVD m	H_2S %
Formation Tops and Estimated Depths				
SURFACE CASING		**140m**	**140m**	
Lea Park		238m	238m	
KOP		**358m**	**358m**	
Colorado		412m	412m	
Second White Spks		528m	519m	
Base Fish Scales		579m	560m	
Viking Sand		643m	603m	
Mud Up		**675m**		
Mannville		746m	650m	
McLaren Channel Sand *		820m	663m	
Heel Point		838m	664m	
Total Depth HZ		**1333m**	**663m**	



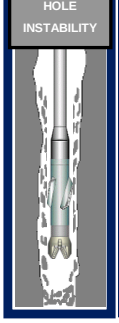
LOSS OF CIRCULATION:

Lost circulation can be defined as moderate, high and total losses. The healing or treatment of losses depends on severity, type, formation, production zone and field set. Losses are commonly encountered in porous and permeable sands and gravel, vugular formations such as lime stone and natural fractures. Natural fractures can be encountered in any type of rock formation. In some cases losses may be induced by hydrostatic pressure, mud rings and sudden density increase. If losses occur please contact Mud Master for immediate assistance.

HOLE DEVIATION:

Deviation problems may be experienced while drilling rocks, boulders, sand, gravel and coal. Controlled drilling may be required in some instances. In the case of a directional or horizontal well bore profile the use of mechanical or liquid torque and drag reducers may be required. See procedures for torque and drag instructions if applicable.

Mix Radiagreen (or M&D Lube) , Sun Burst DP or Walnut Shells if hole drag or torque gets excessive. Consult with drilling foreman prior to mixing.



SLOUGHING HOLE:

Several types of formations can eventually slough into the well bore, causing the pipe to become stuck. Some of the causes for sloughing are fractured shales, poorly or unconsolidated sand, overpressure formations and hydratable/swelling shale. Sloughing can be detected by an increase of cuttings or cavings on the shaker(s) or increased pump presure. Ensure fluid properties such as density, fluid loss and viscosity are adequate. In some cases a density increase may be required to stabilize the sloughing.

HOLE Interval	FLUID PROPERTIES	Comments and Suggestions
SURFACE HOLE	**0 - ±140 m**	**311 mm**
Mud System:	***Gel Chem Slurry***	
Density	Low as possible	• If gravel is encountered raise Vis as req'd with Gel to clean the hole properly.
Vis (Drilling)	As Needed	
Vis (Case)	55 - 65 s/L	• If lost circulation occurs, raise Vis 65+ and slug with Sawdust/Prima Seal at a 10:1 ratio.
PV	Low as possible	
YP	As Needed	• Use Soap Sticks & Sawdust as necessary to control mud rings.
Gels	As Needed	
TOP HOLE	**140 - ±675m TMD**	**200mm**
Mud System:	***Floc Water - OP-T-Con CS-3001***	
Density	1000 - 1010 kg/m³	• Dump all surface mud and clean tanks thoroughly.
Vis	28 - 29 s/L	• Drill out shoe with water, reducing excess cement ph with Sulphamic acid if needed.
Calcium	400-600 mg/L	
Inhibition	2.0 L/m3	• Maintain Ca++ ion@ >400 mg/L with Envirofloc & Gypsum.
Sweeps	As Needed	• Flocculate solids with Hyperdrill AF 204 required.
		• As necessary, trickle in approximately 2.0 L/m3 of OP-T-Con CS-3001 as offsetting wells show the upper formations can be susceptible to clays and shale.
BUILD SECTION	**±675- 838 TMD Heel**	**200 mm**
Mud System:	***Clay Free Polymer***	Mud up at ±675 mMD.
Density	1040 - 1120 kg/m³	• Initial mud up will be with Millzan and StarDril as required at a 1:1 ratio.
Vis (Drilling)	50 - 60 s/L	
PV	10 - 20 mPa.s	• If necessary maintain OP-T-Con CS-3001 concentrations for mud section @ 2.0 L/m3 for effective shale mitigation.
YP	3 - 18 Pa	
Gels	2 - 6 / 4 - 12	• Run solids control equipment as req'd.
pH	8.5 - 9.0	• Control fluid loss at < 6.0 cm³ with additions of . StarDril, Lignite and UltraPac in a 1:2:1 ratio
Fluid Loss	< 6.0 cm³	
Inhibition	If Necessary	• Use Millzan as required for improved hole cleaning in the build section and to assist in raising Vis/YP to ensure good hole cleaning.
		• Maintain pH @ 8.5 - 9.0 with Caustic Soda (orpHix 14) and lignite.
		• Once Intermediate Casing is set at 838 m run drilling mud thru all solids control equipment to lower Density as low as possible to save on fluid costs..
HORIZONTAL SECTION	**±838 - 1333 m TMD (TD)**	**159 mm**
Mud System:	*Clay Free Polymer*	• Continue with Clay Free Polymer system.
Density	1040 - 1120 kg/m³	• Control density as low as possible while drilling the HZ section to help prevent torque and drag.
Vis (Drilling)	45 - 55 s/L	
PV	10 - 20 mPa.s	• Maintain Vis as required with Millzan and Stardril.
YP	3 - 18 Pa	• Maintain fluid loss at < 5.0 cm³.
Gels	2 - 6 / 4 - 12	• Maintain pH at 8.5 - 9.0 with Caustic Soda (or pHix 14)
pH	8.5 - 9.0	
Fluid Loss	< 5.0 cm³	• If torque and drag become a problem, mix Lubricant Sun Burst DP / Radiagreen EBL as required. Consult with drilling foreman prior to mixing.
Inhibition	If Necessary	
		• Maintain a turbulent flow rate on horizontal section for maximum hole cleaning.
		• Isolate the approximate amount of mud for addition of 2% Chembreak ECA to displace to well.

Mud Master	Warehouse and Trucking (24hrs)
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