Example Company X

Edmonton, AB

Prepared For:

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DI-CORP
DOWN TO EARTH BUSINESS

Fast Track Fluids Tool

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Products and Functions:

TRU-BORE	Fast yielding high viscosity high gel strength HDD formulated Bentonite
SODA ASH	Used to increase pH for fast hydration and to treat out contaminant ions like Ca+.
STAFLO PAC	Tru-Bore extender and fluid loss control additive polymer. Also increases viscosity.
PRIMASEAL	Lost circulation material and bit sweep material.
POLYZAN	Long chain polymer for increaseing viscosity. Must mix slowly
TKPP	Powdered dispersant for treating sticky clays and mud rings. Will thin the mud.

Pilot Hole

Expected Geology:
Sand and clay till with possible gravel or boulders. Loose fill, unconsolidated soil.

Potential Challenges:

A Lost Circulation
B Water Flow
C Loose Sand/Gravel
D Mud Rings

Hydraulics

Rod Diameter OD:	127.0	mm
Rod Diameter ID:	98.0	mm
Bit/Reamer OD:	249.0	mm
Total Length:	2800.00	ft
Annular Volume:	109.8	L/10'
Total Annular Vol:	30753	L
Recommended Vel:	>30	m/min
Actual Ann Vel:	11.1	m/min
Empty Hole Vol:	41.5	m^3
Recom Pump Vol	0.4	m^3/min
Current Pump Vol	0.4	m^3/min

Challenge Remedies:

A If there are losses but no surface frac outs then the addition of LCM will be required to heal the loss zone. If losses are total and there is no return of fluid to the tank be sure that there is not a mud ring or blockage in the hole indicated by a pressure spike prior to the losses, a gradual increase in pressure prior to losses or other indications of clay or cuttings buildup in the wellbore. Work the string if possible to break up any cuttings beds while pumping at an idle before mixing LCM. If circulation is regained at this point do not add LCM. Consider Problem D an issue. If losses are legit then increase the visc of the system (or at least the clean mud tank) to 75+ sec/L with TRUBORE added at 2-3 mins/sx through the hopper. Once visc is increased ensure agitator is on in clean tank and mix 4 sx of PRIMASEAL MED into the tank at a point of agitation to ensure it gets incorporated. Pump this tank down as a pill, do not allow it to be diluted with mud from the Dirty side of the tank if only the clean tank was visced up. Pump at idle. Repeat if necessary and add water at the dirty end of the tank to maintain volume for suctions. Increase additions of PRIMASEAL and add equal amounts of SAWDUST on your second attempt if necessary. Once losses are healed maintain visc at 75+ in the system for a period of time to build cake on LCM.

B If water flow is contacted as indicated by constant volume increase or constant decreasing viscosity in the returns as compared to the clean mus discharge then maintain properties of viscosity with TRUBORE and PAC at 10:1

C Loose sand and gravel is best combated by increasing the viscosity of the fluid and minimizing physical contact with the zone that would cause it to slough. Increase visc with TRUBORE and POLYZAN at 10:1 to as high as 100+sec/L

D Clay that is over exposed to water can swell and stick to the pipe while drilling. Sweep the bit periodically with a bag of sawdust or 2 added into the Clean mud side of the reclaimer. A small addition of Chem Clean Green .5L into this sawdust, mud mix will also help keep the clay from sticking to the BHA. If the problem persists then the addition of TKPP may be the best alternative. Maintain mud viscosity a bit lower than normal 55-60sec/L with ONLY PAC as opposed to TRUBORE and slug the hole with rapid additions of 5kg of TKPP as close to the suction to the rig as possible.

Procedures and Properties:

MAXIMUM TANK VOLUME TO THE GRATES: 31m^3 or 8200 USGal
EFFECTIVE FULL VOLUME: ~28m^3

After filling the tanks or any time prior to mixing any product that you want to affect the entire reclaimer system and not just the clean mud tank ensure that:

1. Turn on agitators (trolling motors) and point safe (away from suctions)
2. Turn on shakers under Desander and Desilter cones.
3. Turn on pumps to Desander and Desilter
4. Close the hopper valve and turn on the hopper/precharge pump.

INITIAL WHOLE TANK MIXING:

For initial blend add 1/2sx (Bag) of SODA ASH to the circulating system through the hopper. Check pH it should be an 8+.
Begin adding TRU-BORE through the hopper at a rate of 3mins/sx Add 25 sx to start.
Add 1 sx of PAC (STAFLO REG) through the hopper at a rate of 30mins/sx, carefully manage this addition to ensure even adding.
Add 1 sx of POLYZAN @ 40mins/sx through hopper.
Check the viscosity after allowing to hydrate for 30mins. Check Viscosity for 55-65sec/L.
Adjust visc up with additions of TRU-BORE and PAC at a 10:1 ratio. mixing at rates above.

MAINTENANCE MIXING WHILE DRILLING FULL FLUID RETURNS:

Continual additions of water will be required to maintain volume as new hole is opened. For every 1m^3 of fresh water added to the system add 1sx of TRUBORE. For every 13m^3 (one water truck full) of water added mix 1sx of STAFLO over 30mins.

MAINTENANCE MIXING WHILE DRILLING IN CLAY WITH FULL RETURNS:

dilution volume and maintain visc at 40-45sec/L with STAFLO and POLYZAN at 3:1 ratio. Monitor visc regularly while mixing polymer as a small amount can make a big difference. stop mixing when visc is 3-4 sec/L short of where you want it and allow the polymer to fully hydrate. MIX SLOWLY.

Pull Back Rate

PUMP RATE L/MIN:	400
REAMER DIAMETER mm:	228.0
ROD DIAMETER mm:	127.0

MAXIMUM PULL BACK RATE m/min:

SAND / GRAVEL:	9.47
UNKNOWN NORMAL:	4.73
CLAY:	3.55

MAXIMUM PULL BACK RATE sec/m:

SAND / GRAVEL:	6
UNKNOWN NORMAL:	13
CLAY:	17

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