

PolarBond™

"Enhancing fluid performance
in ANY type of system"



Canadian Energy
SERVICES L.P.

History

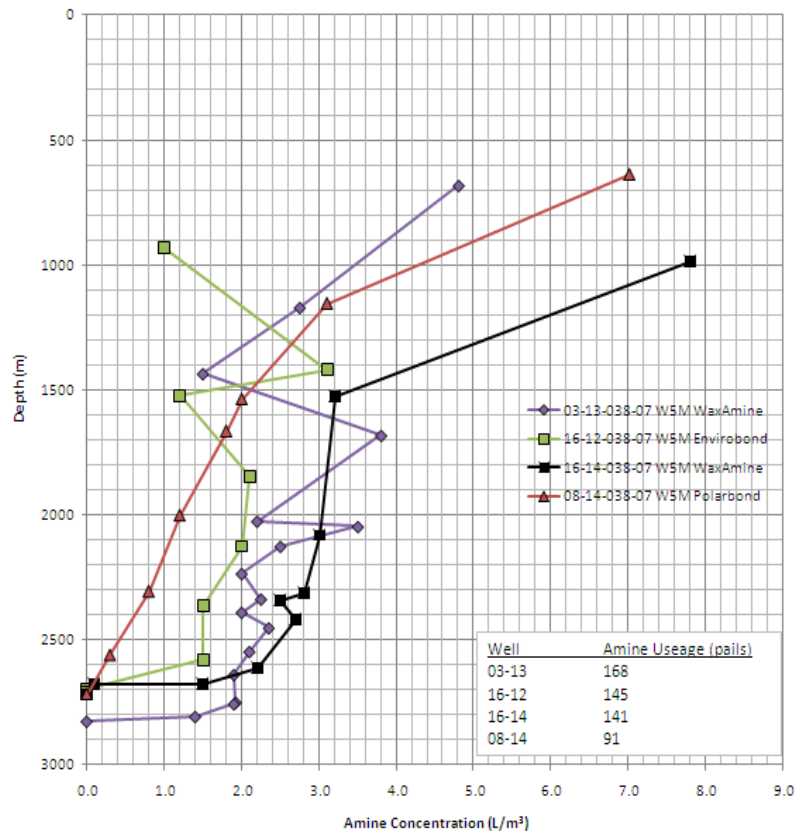
Seal-AX™, a patented proprietary product line, has been developed and implemented over the last four years. Originally Seal-AX™ was developed as a seepage loss reduction agent in oil based drilling fluids and has since been expanded as an inhibitor in water based fluids and a variety of lost circulation materials (LCM's). Since introducing the product, additional grades have been developed to encompass various drilling parameters and fluids.

The product line includes Seal-AX Regular, Seal-AX HT, Seal-PolarWhite, WhiteFury and CottonSeal™. Seal-AX Regular and Seal-AX HT are typically used in invert drilling fluids and as LCM additives. PolarWhite (anionically charged) and WhiteFury (micronized) are utilized to provide inhibition and increased wellbore integrity in water based fluids.

Technology / Application

PolarBond™ is a blend of WhiteFury (micronized) and Polar-White (polarized) waxes. This combination was designed to minimize seepage losses and provide inhibition. Through lab testing and industry applications not only has PolarBond™ proven to be effective in addressing the above issues, it has revealed numerous fringe benefits.

Amine Concentration vs. Depth



Case Studies

The caliper log and concentration graphs were taken from a case study performed using 4 similar wells all with Amine systems and one with PolarBond™. All wells were drilled within the same parameters and were within 2 miles of each other. The following conclusions were drawn:

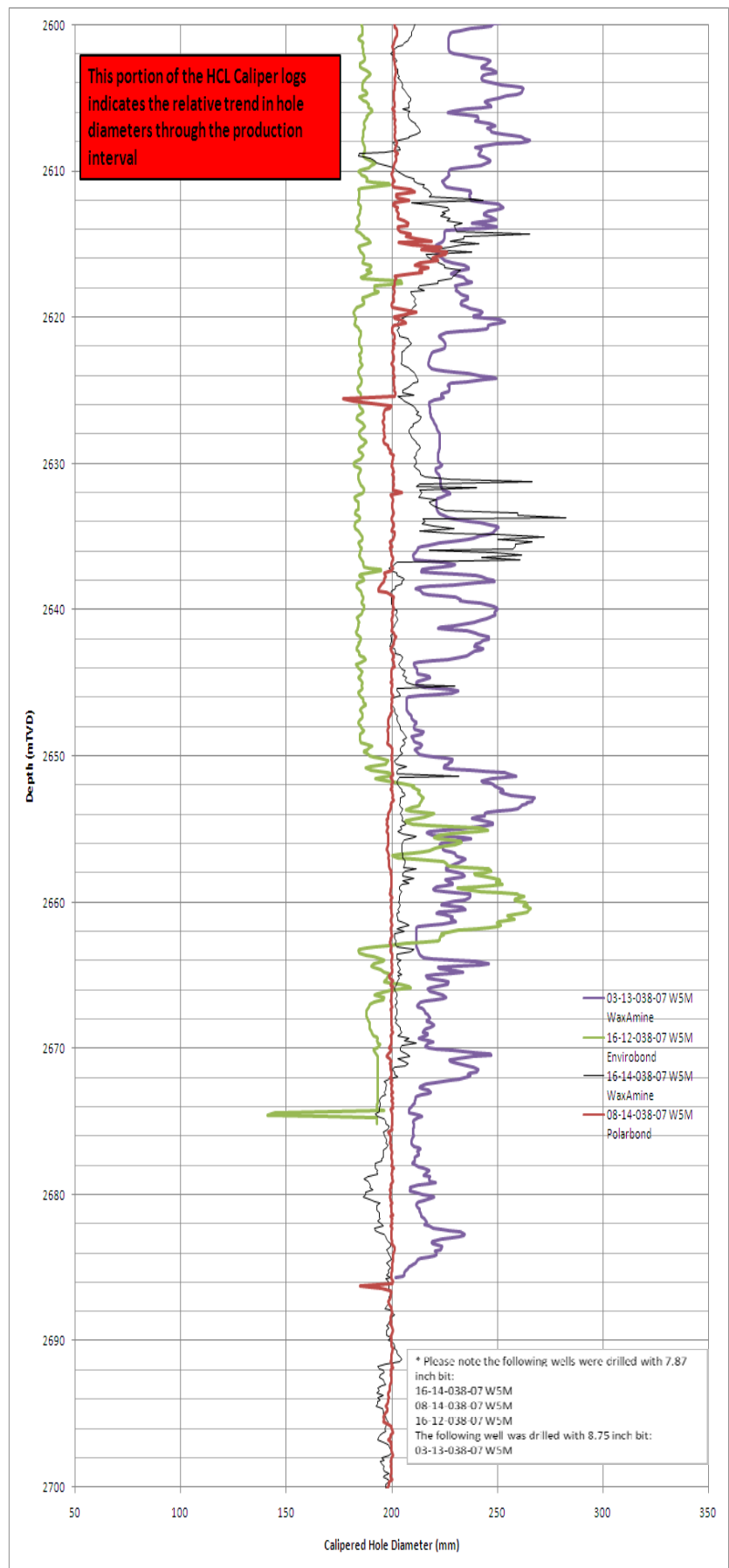
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Case Studies cont'd

- The PolarBond™ system compared with traditional amine systems, demonstrated the least amount of washout in our caliper log analysis. This also shows that the wellbore geometry through difficult shale and coal formations were maintained closest to gauge.
- From our cost analysis we were able to identify an average cost per depth and depth per day which allowed us to clearly identify the overall rig time savings experienced with the PolarBond™ system. PolarBond™ demonstrated a 14% increase in depth per day versus traditional systems.
- Our mud properties were indicative to an established system with PolarBond™. The synergy of technologies worked together to provide a system that easily outperformed the others, allowing less system maintenance and wellbore problems.
- PolarBond™ system clearly exhibits superior shale inhibition with less inhibitor usage.
- PolarBond™ system also exhibits less volatility in the consumption trend due to the wax additions, this is a direct correlation between inhibitor consumption and wax usage.

Benefits

- Provides a hydrophobic barrier between the wellbore and annulus reducing seepage losses to formation and thereby improving inhibition.
- PolarBond™ adheres to other particles as well as the wellbore wall thus reducing exposed particle surface area and reducing consumption.
- Compatible with all WBM systems
- Unlike conventional LCM PolarBond™ dramatically reduces friction allowing for better sliding and increased ROP's.
- PolarBond™ size and weight allow it to be unaffected by solids control.
- Increased wellbore integrity allowing for better production procedures and minimizing remedial cementing operations as well as reducing non-productive time.
- Field performance has demonstrated superior wellbore stability via less washout, increased stabilization of coal seams, and grouting of rubble zones.



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