

PROVIDING COST-EFFECTIVE DRILLING PERFORMANCE IN THE MOST DEMANDING DOWNHOLE ENVIRONMENTS

The FluidControl POLYTRAXX water-based drilling fluid system provides the operator with the drilling performance required for demanding drilling environments such as the unconventional shale plays. The POLYTRAXX system achieves superior results without the environmental limitations and increased disposal cost typically associated with non-aqueous fluids.

The POLYTRAXX system offers a field-proven alternative to oil-based drilling fluids, delivering the drilling rates that match or exceed those of oil-based drilling fluids without the environmental and economic limitations. The POLYTRAXX system provides the best of both worlds without sacrificing drilling performance while enhancing environmental acceptability which helps reduce overall project costs.

The POLYTRAXX system is a unique and versatile water-based system that can be designed and formulated to meet the individual challenges of drilling anywhere in the different regions of the world. The POLYTRAXX system is designed with consideration of different lithology, the background of the field, mechanical condition of the well, costs and the optimal performance when drilling.

The POLYTRAXX system can be used on land or offshore. This system maximizes the stability of the open hole in highly reactive clay formations and can help avoid clay/gumbo accretion and bit balling. This system was designed to have a high tolerance to contaminants as well as a lower consumption of non-renewable resources such as water. It also minimizes the friction coefficient factor. The POLYTRAXX system can be designed as a freshwater system as well as a brine water system and is easy to mix, maintain and recycle. POLYTRAXX fluids are thermally stable and may be used in applications up to 350°F.



The POLYTRAXX system is highly inhibitive to reactive clays due to the unique primary component of the system the patented TRAXX-TC. The TRAXX-TC additive chemically bonds to the clay particle preventing hydration. This process also creates a very thin coating of a thickness of only 16 angstroms and coats the solids, filter cake, and drilling assembly reducing torque and drag. A repelling force of particles is created by the charge carried with the thin coating preventing “balling” of clay particles and at the same time stabilizing flow properties of the drilling fluid.

The POLYTRAXX system exhibits superb lubricity characteristics for enhanced penetration rates, particularly in directional well paths, while delivering a stable wellbore. The POLYTRAXX system has stable properties and is environmentally friendly. In addition, POLYTRAXX fluids require less equipment, manpower, and secondary processing as compared other drilling fluid systems. POLYTRAXX system performance, in general is similar to if not better than that of traditional oil-based invert system fluids without the well-known challenges associated with diesel.

The operational costs of POLYTRAXX fluids are substantially lower than those of diesel based drilling systems. **Figure A** illustrates the economic advantages of the POLYTRAXX system over traditional inverts when all associated costs are accounted for. In the Eagle Ford Shale an Operator drilled 244 wells using the POLYTRAXX system and estimated a cost savings of \$300,000 per well for a total savings of 73.2 million dollars.

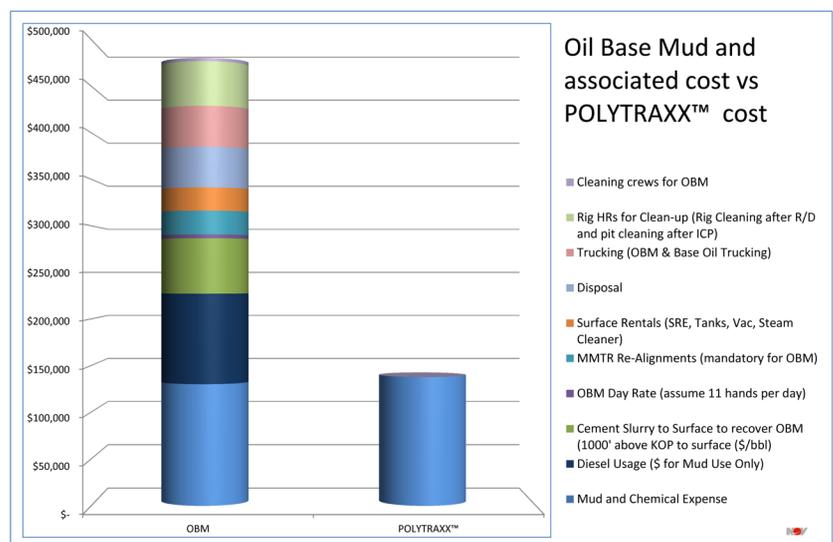


Figure A

POLYTRAXX™ High Performance Aqueous Drilling Fluid System

Features

- Patented primary shale inhibitor
- Low-toxicity formulation
- Stable fluid rheology
- Low coefficient of friction
- Minimal dilution requirement
- Excellent HSE profile
- Resists contaminants
- Reduced water consumption
- Minimized pressure spikes
- Anti-accretion characteristics
- Flexibility and versatility
- Re-usable system

Benefits

- Highly inhibitive
- Promotes wellbore stability
- Eliminates gumbo accretion
- Minimizes bit balling
- Lowers torque & drag
- Increases ROP
- Lower operational costs
- Reduces waste disposal volume
- Better environmental footprint
- Simple mixing, maintenance
- Reduced dilution requirements
- Chloride free

The POLYTRAXX system performance is field-proven to equal, and in some cases surpass, that of traditional oil based systems, as illustrated in **Figure B**, which compares average measured depth versus days data collected from over 240 wells drilled with POLYTRAXX fluids and over 240 wells using a diesel invert system from FluidControl. Data was collected from spudding to cementing casing on bottom of wells drilled using the same operator, rig, and rig equipment in the Eagle Ford shale of South Texas. The selection of POLYTRAXX wells averaged 15,152' in 16.9 days where the selection of OBM wells averaged 14,734' in 18.3 days.

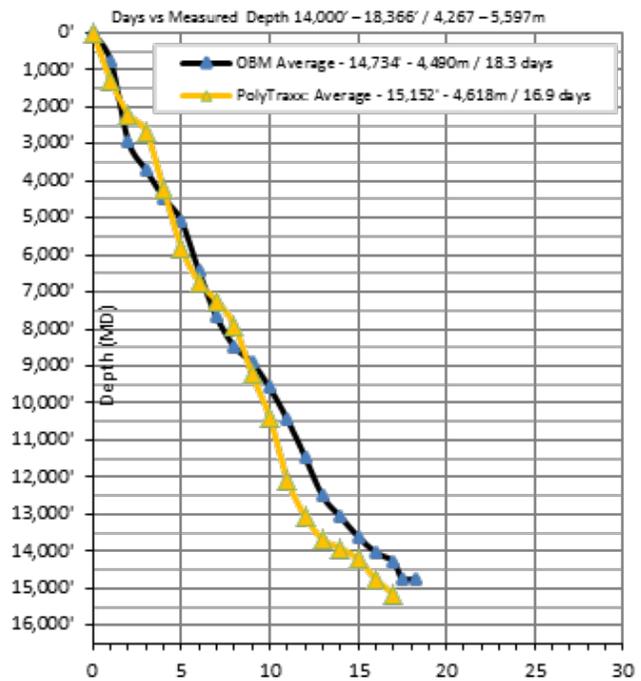


Figure B

NOV FluidControl provides a comprehensive portfolio of high performance, environmentally friendly drilling and completion fluid systems and additives, each engineered to optimize drilling efficiency, reduce non-productive time (NPT), maximize production and enhance the overall value of your asset. Our aqueous and invert emulsion drilling fluid systems in tandem with our talented and highly experienced fluid specialists ensure the delivery of cost-effective solutions for your most demanding offshore and onshore applications.

What separates NOV FluidControl from the rest is the unequalled, solutions-driven technical expertise we bring to each project. Throughout the process, our specialists work closely with the client to define well objectives and ensure those goals are met. To that end, we rely on a wide range of services that include well planning and analysis, unmatched wellsite monitoring of fluid properties, office-based technical support, as well as supplementary technologies such as offshore mud coolers and non-damaging reservoir drill-in fluids.

To learn more about the extremely versatile POLYTRAXX drilling fluid system and how it can help meet all your drilling environmental and economic objectives contact your nearest NOV FluidControl representative.