



**PROEXCEL**  
EXTREME LUBRICANTS

# OFFSHORE DRILLING LUBRICATION TECHNOLOGY

Positively Charged Molecular Technology



# ABOUT PRO-ONE

Based in **Orange County, CA**, ProOne Inc. has developed proprietary lubrication technology which reduces friction better than anything else on the market, with over 50 times the film strength of conventional lubricants.

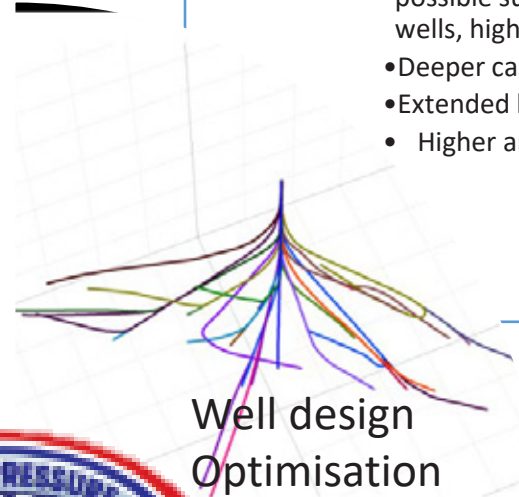


# Why use XPL+ Lubrication Technology?

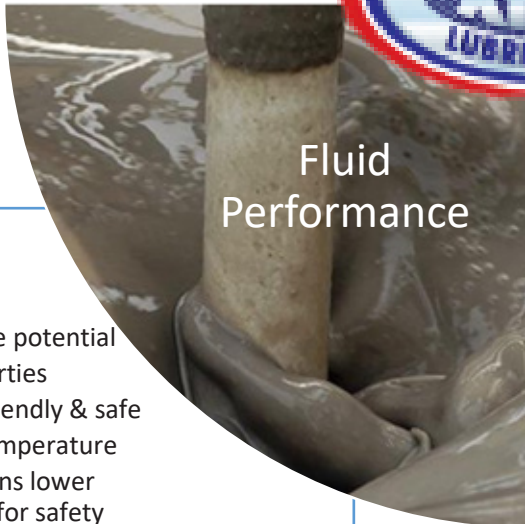
- Reduced wear & tear on rig equipment – mud pumps, agitators
- Less vibration damage to downhole tools
- Less casing wear
- Less drill pipe hard banding wear
- Reduced hookload/torque – less fuel
- Reduced corrosion



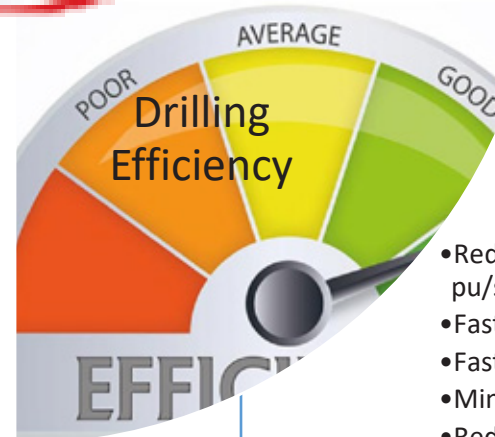
- More challenging well designs possible such as higher angle wells, higher stepouts MD/TVD
- Deeper casing runs
- Extended bit performance
- Higher angle wells



Fluid Performance



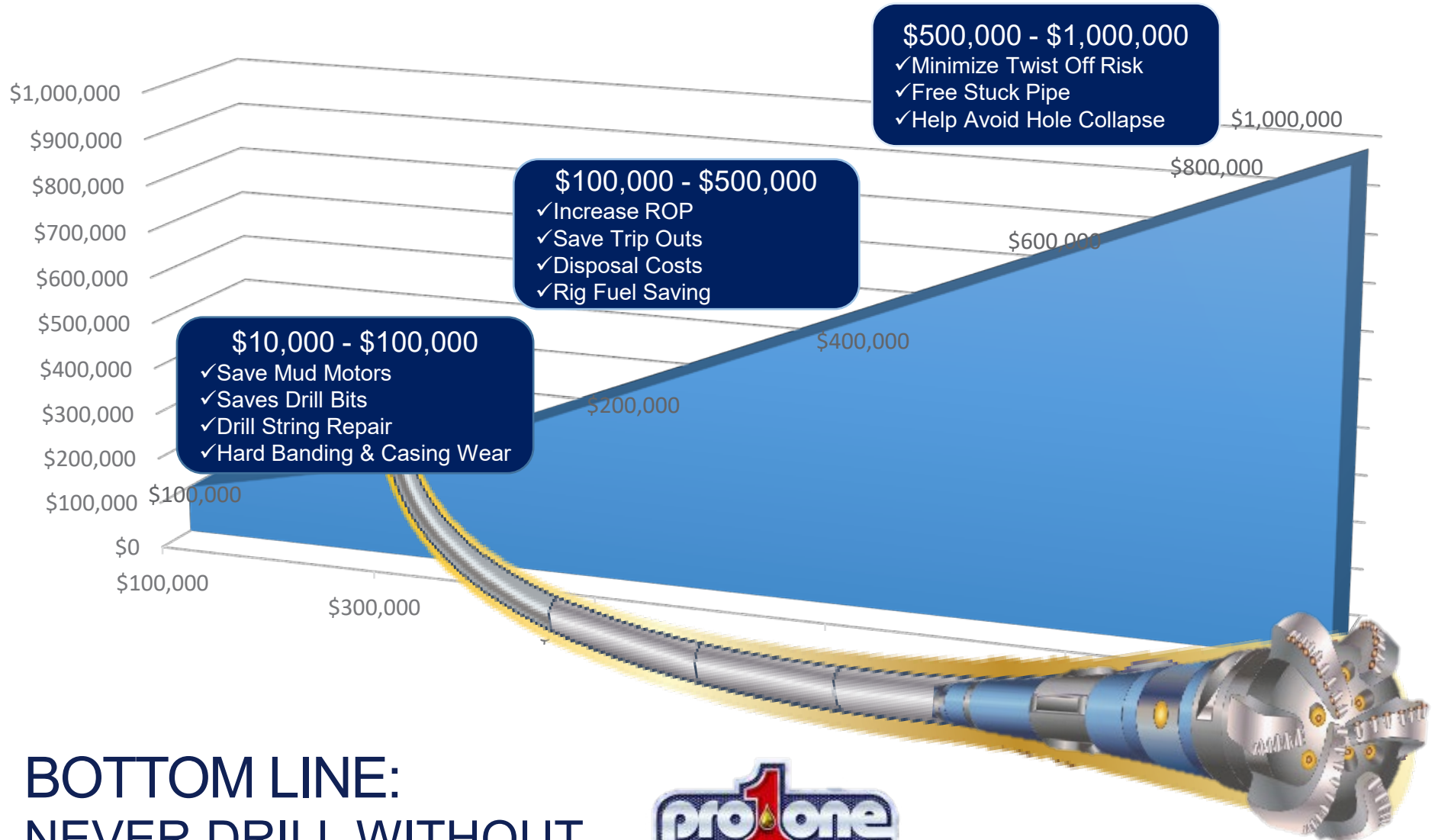
- Reduced stuck-pipe potential
- Stable fluids properties
- Environmentally friendly & safe
- Effective in high temperature
- Lower friction means lower surface mud temp for safety
- Potential to replace SBM with WBM on certain wells



- Reduced T&D/Improved pu/so/hook load
- Faster tripping speeds
- Faster ROP & Sliding Capability
- Minimise twist off
- Reduced trips
- Longer bit runs

# TYPICAL SAVINGS

With today's oil prices, saving money is extremely critical. ProOne's time proven lubrication technology ensures dramatic costs savings and higher return.



**BOTTOM LINE:  
NEVER DRILL WITHOUT**

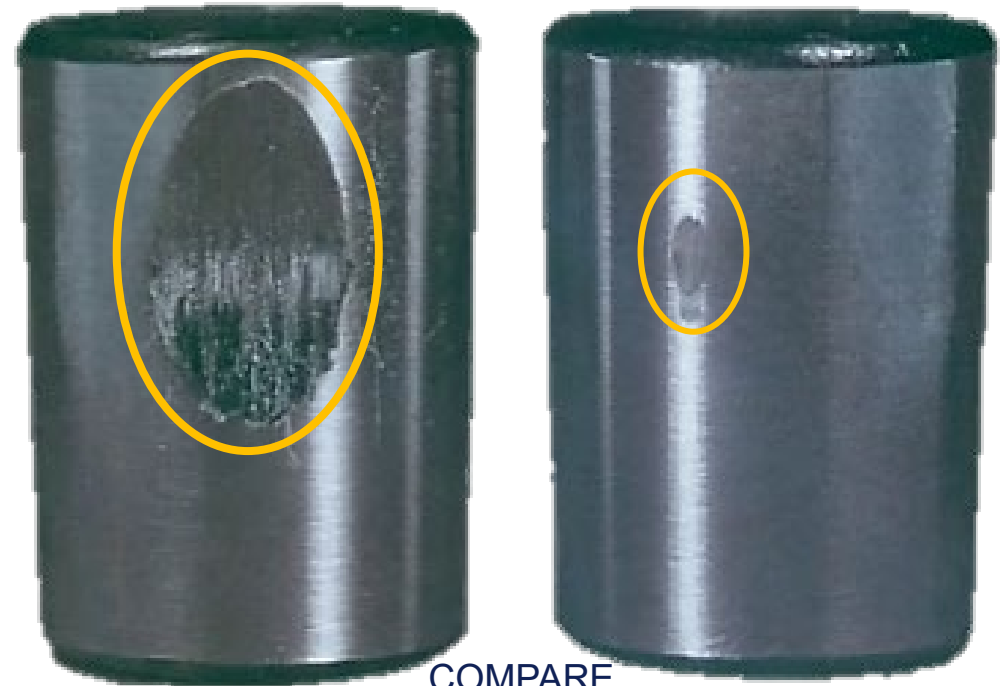
# THE ULTIMATE LUBRICATION GAME CHANGER

## What is XPL+ Technology?

Xtreme Pressure Lubrication with a positive ionic (+) charge so it bonds to metal giving it extreme pressure performance and protection.

### Bottom Line Benefits

- ✓ Dramatically reduces heat & friction
- ✓ Reduces wear to extend equipment life
- ✓ Displaces moisture, prevents corrosion
- ✓ Helps prevent costly down time



Without XPL+ @ 4,000psi

With XPL+ @ 200,000psi



# PRO-ONE VS TYPICAL LUBRICANTS



Characteristics	Typical Lubricants	
Charge	-	+
Bonding/flowing	Flowing	Bonding
Reaction to heat & pressure	Migrates away	Migrates towards
Film strength	Limited	Extraordinary
Environmentally friendly	No	Yes

**Lubrication film strength** is the ability for a **lubricant film** separating moving parts to not break under pressure, which is a critical property in avoiding metal to metal surface contact.



# OIL & GAS CUSTOMERS



# APPLICATIONS





## Industrial and Commercial Companies Currently Testing or Using ProOne

- 3M
- ACC – American Colloid Company
- ADM Grain Company
- AJAX Highway Constructions
- Allied Molded Products, Inc.
- Amcor
- Anaheim School District
- Arrow Tru-Line Rolling Door Company
- Ash Grove Packaging
- B&B Aerospace
- Ball Metals
- Baroid
- Basalite Concrete Products
- Basin Marine
- Bell Berringer
- Boston Transit Authority
- Boyd Gaming
- Buena Park Tool
- Bull Moose Steel Company
- Burrows Hay Grinders
- C&H Sugar Company
- Campbell's Soup
- Captains Locker
- Carson City NV Public Works
- Chemical Lime Corp
- Chrysler (Manufacturing)
- City of Anaheim
- City of Long Beach
- City of Monroe
- Michigan Waste Water City of
- San Francisco Sanitation
- City of San Mateo
- City of Santa Cruz
- CLD Pacific Grain
- Coastline Equipment
- Con Agra Foods
- Consolidated Container Company
- Continental Mills
- Countyline
- Crystal Sugar
- Curtis Industries
- CVS Distribution Centers
- Davey's Locker Sportfishing
- Del Monte Foods
- Delta Gear Diageo
- Dole Dot Foods
- Earle M. Jorgensen Company
- Eckert Cold Storage
- Edgerton Forge, Inc.
- Escalon Premier Brands
- Ferro Corporation
- Ford (Manufacturing)
- Foster Farms
- Foulton County
- Coil Steel Processing
- GAF Corporation
- Gallo Wines
- Georgia Pacific
- Gerdau Steel Corporation
- Global Brass & Copper Inc.
- Global Valve Manufacturing
- GM Lordstown
- Goldman Auto Parts
- Granite Rock
- Grass America
- Great Salt Minerals Corp
- Greif
- GT Technologies
- Harrahs Corporation
- Heinz Foods
- Hersheys
- Hornblower Cruises
- Idaho Power Supply
- Independence Sportfishing
- Intermountain Power Service Group
- Intrepid Potash
- Joseph Gallo Farms
- Kagome Foods
- Kennecott Mines
- Lafarge Asphalt
- Las Vegas Paving
- Lee Jennings Trucking
- Marina Shipyard
- Mars
- Masaba Mining Equipment
- Massachusetts Bay Commuter
- Railroad
- Matsu Ohio, Inc.
- Maumee Valley Bottlers, Inc
- MGM/Mirage Corporation
- Mileston Highway Construction
- Milyard Windows & Doors
- Minturn Nut Company
- Morton Salt
- Mumms Winery
- New York Transit Authority
- Northstar Steel Corporation
- Norton
- NTD
- Nucor
- OG Packaging Group
- Olin Brass/ Bryan Metals
- Pabco Gypsum
- Pacific SW Containers
- Penhall Company
- Peter Pan Bus Lines
- Pierpoint Landing Sportfishing
- Pilkington North America, Inc.
- Powers & Sons, LLC
- Quebecor World Nevada
- Rain 4 Rent
- Ralcorp Frozen Baby Products
- Ralston Purina
- Rayonier, Inc. (Paper Mills)
- Reser's Fine Foods
- Rexam
- Safeway
- San Diego Marine Exchange
- Santa Clara County
- Santa Clara Sanitation
- Santa Cruz Boardwalk
- Sea Adventure Sportfishing
- Sebastiani Vineyards
- Setton
- Sign Tech International
- Silgan Can Company
- Simplot Foods
- Six Flags Magic Mountain
- Smokey Mountain Mines
- SoCal Sportfishing
- South Bay Sanitation
- South Bayside System Authority
- Spartech Plastics, Inc.
- St. Mary's Cement
- Sterling Vineyards
- SuperLite Block
- Sutter Homes Winery
- Taylor Farms Pacific
- Team Elmers
- Highway Construction
- Tempurpedic
- Tesla Motors
- Trinchero Winery's
- Tyco Electronics
- US Steel Corporation
- Utah Pacific Bridge & Steel
- Vamco Wind Machines
- Washoe County Schools
- Weber Metals
- Werner Ladders
- Wesson Foods
- West Coast Aerospace
- Wisdom Manufacturing

# PRO-ONE DRILLING



# NITRO

Downhole Drilling Fluid Treatment



XPL+ Super Lubricant  
Torque Reducer



# DIAMOND DUST

2-in-1 Drill Fluid Conditioner



Shale Inhibition &  
Stabilization  
High temp fluid loss control

+

XPL+ Lubrication



# PROVEN TO DRASTICALLY

- ✓ REDUCE TORQUE & DRAG
- ✓ INCREASE ROP
- ✓ SOLVE DRILLING PROBLEMS
- ✓ IMPROVE SLIDING CAPABILITY

HIGH TORQUE & DRAG

LOW ROP

EXCESSIVE TRIPS

STUCK PIPE

LONG HORIZONTALS

SHORT DRILL BIT LIFE

DEVIATED WELLS

DOGLEGS  
& MICRO DOG LEGS

TOP DRIVE  
OVERHEATING

GOING THROUGH MUD  
MOTORS & PUMPS

CHOPPED HOLES

SPIRALED HOLES



## Nitro Drilling Fluid

Set Casing Faster

Slide Liner Faster

Straighter Vertical with Less  
Corkscrewing

Increase ROP

Maintain WOB and Reduce Torque  
by 20-50%

Reduce Hook Load Significantly

Drill Curve in Half the Time

Few trips: Reduce Number of Mud Motors and  
Drill Bits

Reduces well bore damage in vibration induced formations

## Diamond Dust

Reduces Corrosion on Drill Strings

Ideal for Seepage and LCM Control

Enhances Shale Inhibition and Stabilization

Superior High Temperature Fluid Loss  
Control

Enables a Thin, Tough and Slick Filter Cake

Improves Cleaning of Drill Cuttings

Exceptional HP Lubricity for Torque , Drag,  
Differential Sticking, Bit balling & Bit Wear

Reach TD Faster and Safer

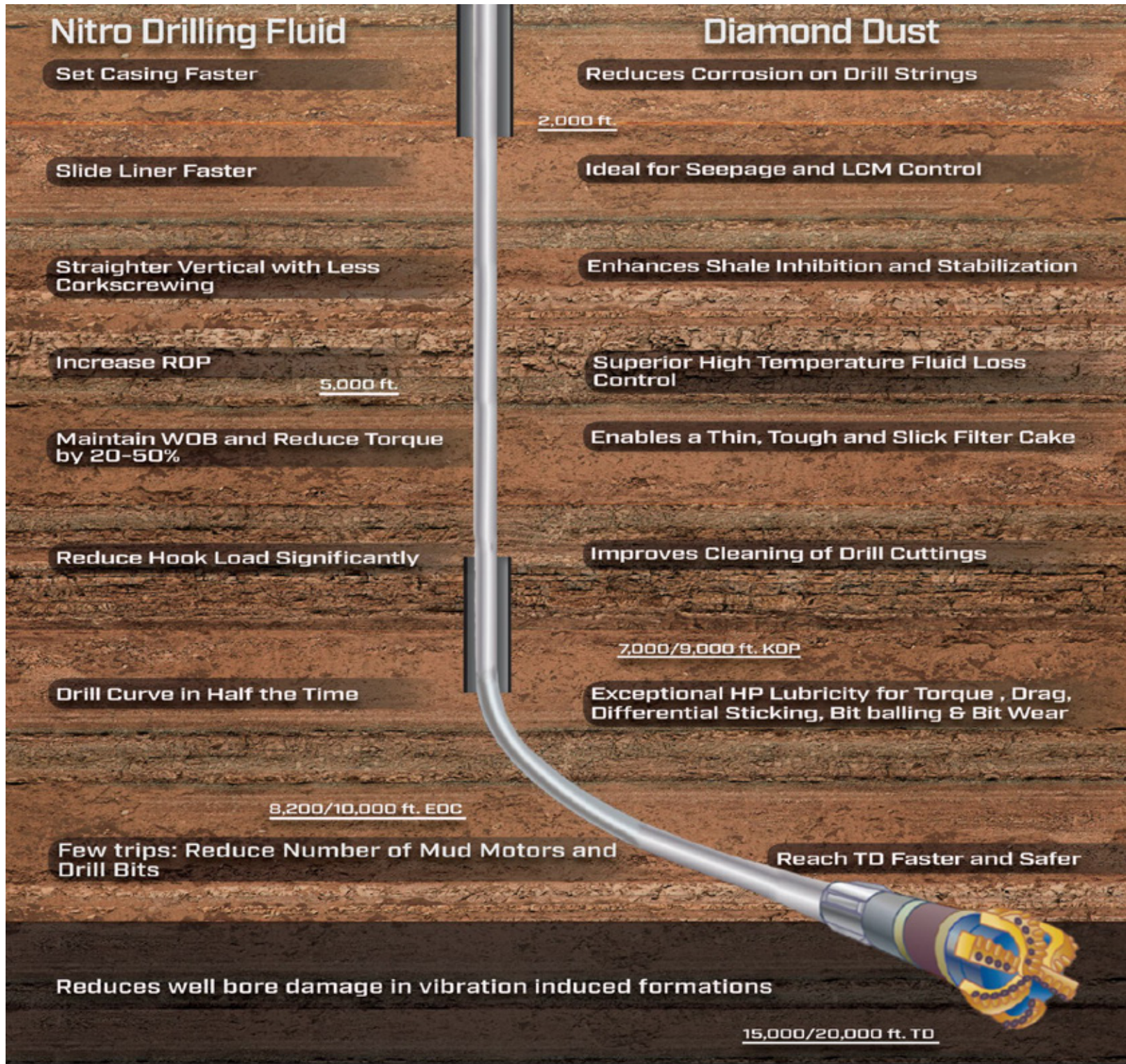
2,000 ft.

5,000 ft.

7,000/9,000 ft. KOP

8,200/10,000 ft. EOC

15,000/20,000 ft. TD



# LAB and FIELD TESTING RESULTS

Powered by



Technology



# NITRO

Downhole Drilling Fluid Technology

"We Saved Over \$300,000 with ProOne... Amazing!" - Major Operator





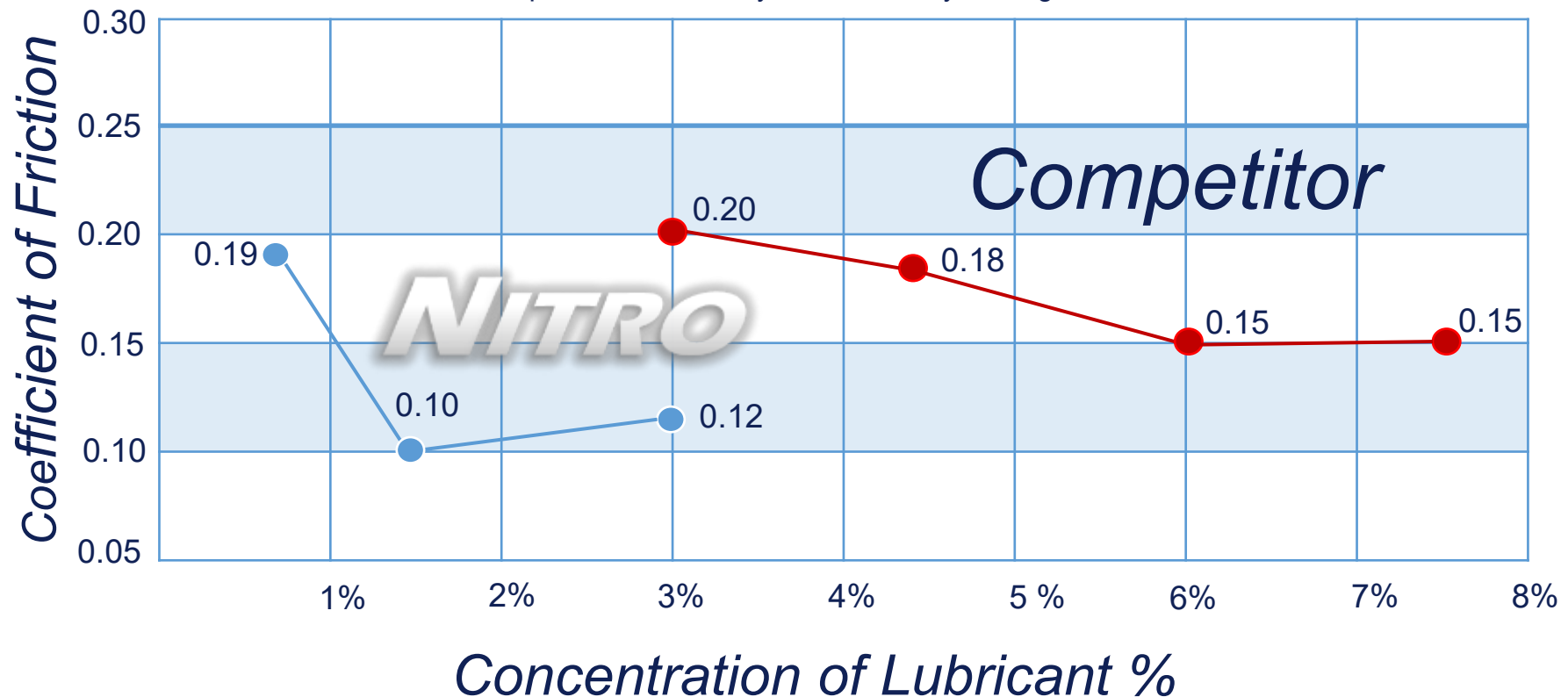
# ProOne – Nitro Downhole Drilling Fluid Treatment



An independent laboratory Dynamic Lubricity test shows that NITRO used at only 1.5% or 3.0% reduces the metal-to-metal coefficient of friction significantly more than a major competitor's product used at 6.0% or even 7.5%.

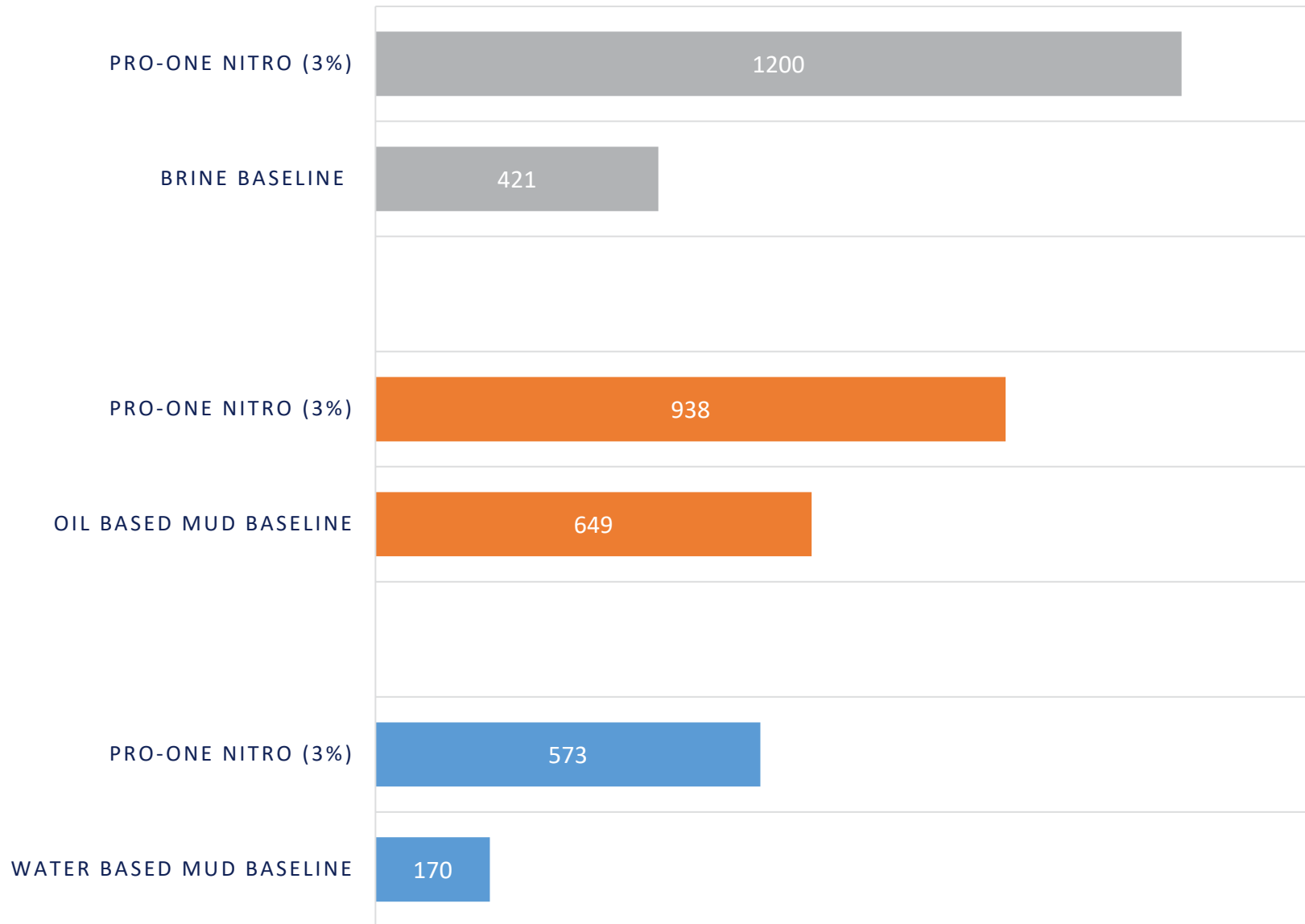
## OUTPERFORMS COMPETITION EVEN AT... 1.5% Vs 7.5%!

LEM II Computer Controlled Dynamic Lubricity Testing WTC-14-004685



# NITRO vs BASE FLUIDS

## PRO-ONE VS BASELINE MUDS

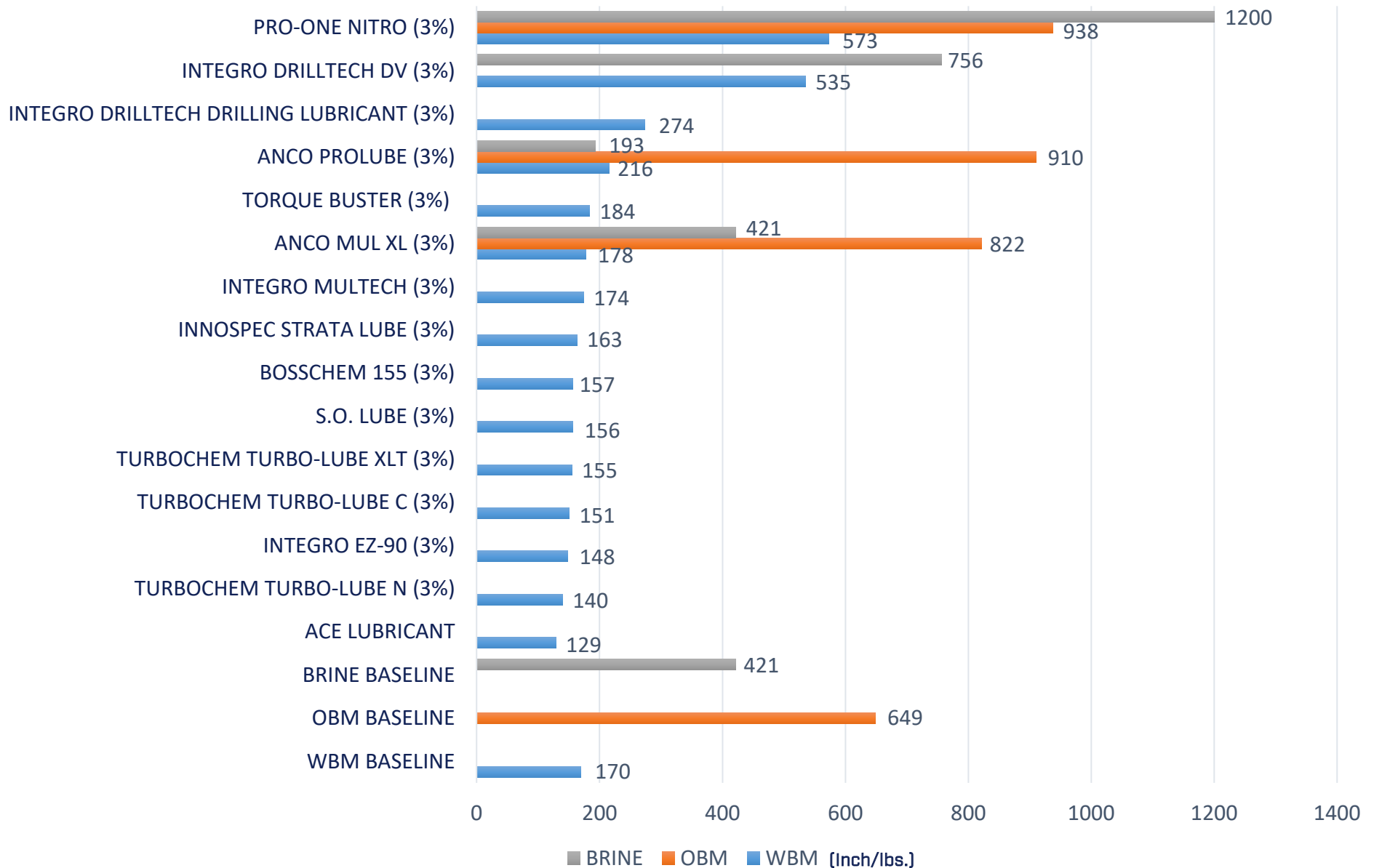


[Measured in  
Inch/lbs.]

- Inch pounds is a measure of the amount of torque, and resultant heat and friction the lubricant can accept before breaking down
- An inch-pound is the torque of one pound of force applied to one inch of distance from the pivot

# NITRO vs COMPETITION

## PRO-ONE VS TOP DRILLING FLUIDS



- Inch pounds is a measure of the amount of torque, and resultant heat and friction the lubricant can accept before breaking down



# NITRO Gulf of Thailand Field Mud Testing **30 – 35% reduction in torque!**

Rheology (150 °F)			
rpm	Mud pure	Nitro 3% by volume	Nitro 5% by volume
600	82	77	76
300	47	45	44
200	35	33	33
100	21	21	22
6	6	6	6
3	5	5	5

Filtration Test (Fluid loss)	
Mud composition	At (350 °F)
Mud Pure (ml)	3.2
Mud + Nitro 3% by volume (ml)	3.2
Mud + Nitro 5% by volume (ml)	3.0
Filtration Test (Mud Cake)	
Mud composition	At (350 °F)
Mud pure (inch)	1/32
Mud + Nitro 3% by volume (inch)	1/32
Mud + Nitro 5% by volume (inch)	1/32

Gel Strength		
Shut off motor time →	10 seconds	10 minutes
Mud composition	At (150 °C)	At (150 °C)
Mud pure (lbf per 100 sq ft)	6	9
Mud + Nitro 3% by volume (lbf per 100 sq ft)	6	9
Mud + Nitro 5% by volume (lbf per 100 sq ft)	6	9

Lubricity	
Mud detail	Torque
Mud pure	10.0
Mud + Nitro 3% by volume (Mix with mud on 21 <sup>st</sup> August 2019)	6.4
Mud + Nitro 5% by volume (Mix with mud on 21 <sup>st</sup> August 2019)	6.7
Mud + Nitro 3% by volume (Mix with mud on 4 <sup>th</sup> October 2019)	7.0
Mud + Nitro 5% by volume (Mix with mud on 4 <sup>th</sup> October 2019)	6.6

# NITRO in Polymer WBM

Additive	Unit	Concentration
SODA ASH	ppb	0.25
Caustic Soda	ppb	0.6
NOFOAM SBE30	cc	0.3
Biocide 2S	Cc	0.75
Salt(NaCl),8%by WT	ppb	30
Polylose B	ppb	2.0
Trupac.SL	ppb	0.25
Truzan.DS	ppb	1.5
CaCO <sub>3</sub> F	ppb	143
NOCOR C825	Cc	0.75
Truscav HS	Cc	0.75
Truthin - L	Cc	1.0
Lubricant	Cc	7.0

## Rheology for the formulation I (Fann 35)

Rheology Testing Fann 35	BASE MUD		Treated Mud with PROONE		Treated Mud with RADIAGREEN EME SALT	
	BHR	AHR	BHR	AHR	BHR	AHR
RPM						
600	56	56	56	55	59	66
300	41	41	41	41	42	51
200	34	34	33	35	34	43
100	26	25	26	26	25	32
6	9	9	9	9	9	11
3	8	7	8	7	8	9
Aging D/S (deg F)	-	200	-	200	-	200
HRS	-	16	-	16	-	16
PV (cP)	15	15	15	14	17	15
YP (lbf/100ft <sup>2</sup> )	26	<b>26</b>	26	<b>27</b>	25	<b>36</b>
pH		9.76		9.71		9.56
Density (PPG)		11		11		11

## Lubricity test result for formulation I (Salt Polymer Mud)

Applied pressure 150 pounds Inch

Test parameter	BHR			AHR @ 200°F		
	BASE MUD	PROONE	RADIAGREEN EME SALT	BASE MUD	PROONE	RADIAGREEN EME SALT
Correction factor	1.00	1.00	1.00	1.00	1.00	1.00
Mud Lubricity Coefficient	0.306	0.140	0.215	0.259	0.106	0.199
Torque reduction Percentage	-	54.25	29.74	-	59.07	23.17

\* Testing conducted by Abu Dhabi/Dubai based independent mud company

# NITRO in CaCl<sub>2</sub> divalent brine WBM



Additive	Concentration
CaCl <sub>2</sub> Brine 32% by weight	332.5
Soda Ash	0.25
Truzan DS	1.5
Trulose 100	3.5
CaCO <sub>3</sub> Fine	30.0
Lubricant, 2%	7.0

## Rheology for the formulation II (Fann 35)

RPM	BASE MUD		Treated Mud with PROONE		Treated Mud with RADIAGREEN EME SALT	
	BHR	AHR	BHR	AHR	BHR	AHR
600	70	73	78	78	81	81
300	51	55	60	62	62	67
200	43	47	52	55	53	60
100	32	36	41	45	42	49
6	12	14	18	19	18	18
3	9	11	15	15	15	14
Aging D/S (deg F)	-	200	-	200	-	200
HRS	-	16	-	16	-	16
PV (cP)	19	18	18	16	19	14
YP (lbf/100ft <sup>2</sup> )	32	37	42	46	43	53



## Lubricity test result for formulation II (Di valent Brine Mud)

Applied pressure 150 pounds Inch

Test parameter	BHR			AHR @ 200°F		
	BASE MUD	PROONE	RADIAGREEN EME SALT	BASE MUD	PROONE	RADIAGREEN EME SALT
Correction factor	1.00	1.00	1.00	1.00	1.00	1.00
Mud Lubricity Coefficient	0.234	0.135	0.186	0.221	0.045	0.121
Torque reduction Percentage	-	42.31	20.51	-	79.64	45.25

\* Testing conducted by Abu Dhabi/Dubai based independent mud company

# NITRO vs COMPETITION WBM

Products Name	Unit	Blank Mud	TEST NO.:	TEST NO.:	TEST NO.:	Mixing order	Mixing Time / Speed
		1	2	3	4		
CalciumChloride Brine 1.32 SG	ppb	383	383	383	383	1	1 min @ H B- Low
Sea Water	cc	42	38.5	38.5	38.5	2	1 min @ H B- Low
XCD Polymer	ppb	1.7	1.7	1.7	1.7	3	10 min @ H B- Low
Potato Starch - Fluid Loss	ppb	7	7	7	7	4	10 min @ HB- High
Calcium Carbonate Fine	cc	35	35	35	35	5	5 min @ H B- Low
BLANK		BLANK					
Radiagreen EME (100%)	cc		7.0			6	5 min @ H B- Low
(Radiagreen EBS +DDBSA SALT+MEA )	cc			7.0			5 min @ H B- Low
PROONE - New Sample -	cc				7.0		5 min @ H B- Low
H2S Scavenger	cc	0.25	0.25	0.25	0.25	7	1 min @ H B- Low
MgO	ppb	0.25	0.25	0.25	0.25	8	1 min @ H B- Low
Corrosion Inhibitor	cc	0.25	0.25	0.25	0.25	9	1 min @ H B- Low
Defoamer	cc	0.25	0.25	0.25	0.25	10	1 min @ H B- Low
Photograph of the Lubricant samples			SAMPLE - RADIAGREEN EME SALT				
					NEW SAMPLE - 2016		

## Lubricity Testing Result

Mud Lubricity coefficient - Lubricity testing Results AHR @200°F

Mud Lubricity coefficient @	Blank Mud	Radiagreen EME (100%)	Radiagreen EBS +DDBSA SALT+MEA	PROONE - New Sample	Note
Correction Factor	1.000	1.000	0.997	0.980	
150 psi, 60 rpm	0.158	0.112	0.128	0.058	
200 psi, 60 rpm	0.200	0.140	0.167	0.072	
300 psi, 60 rpm	0.285	0.212	0.243	0.102	
400 psi, 60 rpm	0.380	0.280	0.313	0.177	
500 psi, 60 rpm	0.474	0.346	0.394	0.263	

## % of Torque Reduction

% of Torque Reduction Lubricity testing Results AHR @200°F

Torque reduction psi @ 60RPM	Blank Mud	Radiagreen EME (100%)	Radiagreen EBS +DDBSA SALT+MEA	PROONE - New Sample	Note
150 psi 60 RPM		29.1	19.2	63.4	
200 psi 60RPM		30.0	16.7	64.2	
300 psi RPM		25.6	14.6	64.2	
400 psi 60 RPM		26.3	17.6	53.3	
500 psi 60 RPM		27.0	16.9	44.6	

\* Testing conducted by international mud company

# NITRO in OBM with Cement Shear Bond



Initial Rheologies at 150°F		
	OBM Neat	OBM + 2% ProOne
PV	48	45
YP	30	26
10 Sec Gel	14	12
10 Min Gel	16	16
Rheologies at 150°F after hot rolling 16 hours		
	OBM Neat	OBM + 2% ProOne
PV	65	55
YP	23	21
10 Sec Gel	11	12
10 Min Gel	14	14
Shear Bond Strength after curing 48 hours at 150°F		
	OBM Neat	OBM + 2% ProOne
Average Shear Bond Strength, psi	103	109

\* Testing conducted by CSI Technologies Houston

# CASE STUDY – Canadian Texas



**“We would not have been able to complete this well without ProOne.”** - Company Man

## Direct Results:

- ProOne reduced torque 37% from 15,500 ft./lbs. to 9,700 ft./lbs.
- ProOne increased ROP from 22.75 fph to 25.50 fph (increase of 12%)
- Reduced drill curve time from 64 to 30 hours
- Torque maxed out. With ProOne, hole reached TD

## Savings:

2x Trip Outs @ 60,000 each	\$120,000
2 Drill Bits @ \$15,500 each	\$31,000
Reduced Drill Curve Time - 34 Hours Faster (64 to 30 hours) @ \$2,500 per hour	\$85,000
ROP @ Curve to TD 4,437 ft. @ 25.50 fph (Increase of ROP 12% Savings 21 hours x \$2,500)	\$52,500
No Hard-banding Needed! (Magnets Stayed Clean)	\$12,047
<b>Gross Savings</b>	<b>\$300,547</b>



# CASE STUDY – Eddy, New Mexico



Longest Lateral in New Mexico History = **19,770 ft. TD**

**“In 25 years in the oilfield, I have never seen anything like ProOne. To lay this much 5” drill string for 12,000 ft. of the lateral should take twice the hook load in this tough formation.”** - Company Man

Tripped out @ 15,287 MD Hook Load – 400,000 lbs. – Without ProOne

Tripped out @ 18,181 MD Hook Load – 260,000 lbs. – With ProOne

## Direct Results:

- TORQUE- 50% reduction. Maxed out from 30,000 ft./lbs. to 15,000 ft./lbs.
- ROP – Increase of 28% from 41 fph to 57.5 fph
- TRIP OUT – Decreased drag
- INCREASE WOB – 25,000lbs.



**“We experienced a significant drop in torque (50%) and increase in R.O.P. (28%)”** - Company Man



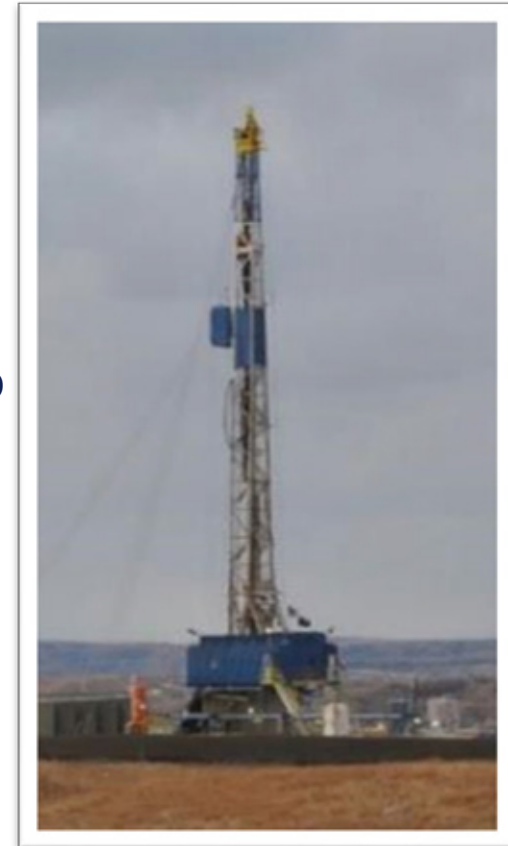
# CASE STUDY – Denton, Texas

**“When we added ProOne, we noticed a significant drop in torque and increase in ROP.”**

- Company Man

## Direct Results:

- TORQUE- 40% reduction
- WOB INCREASE - from 25,000 lbs. to 32,000 lbs. holding torque to 13,500 ft./lbs. at TD
- TRIP OUT – Decreased drag
- HOOK LOAD – Reduced from 330,000 lbs. to 260,000 lbs.
- CASING – 2 hours off company record
- ADDITIONAL –Increased sliding



18,000 ft./lbs. (Torque) @ 25,000 lbs. (WOB) - Without ProOne

10,000 ft./lbs. (Torque) @ 25,000 lbs. (WOB) – With ProOne





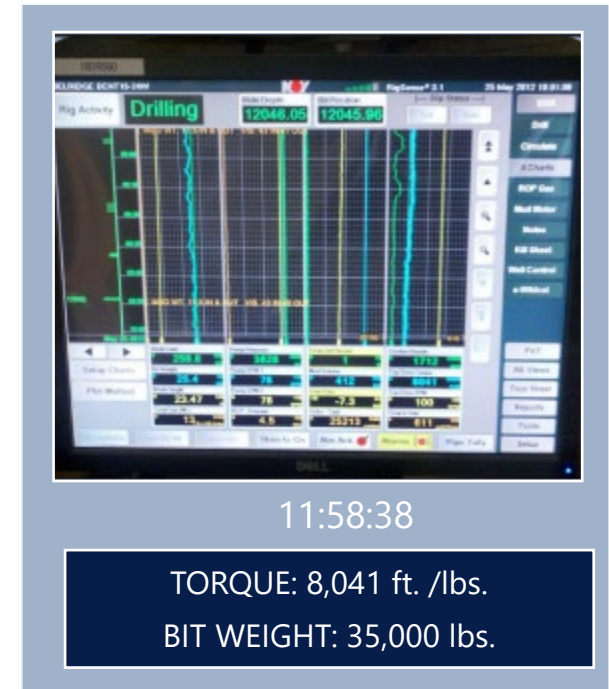
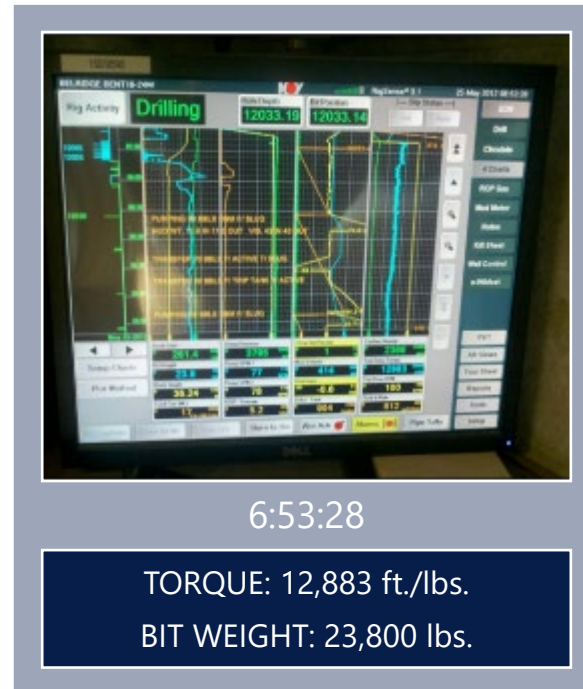
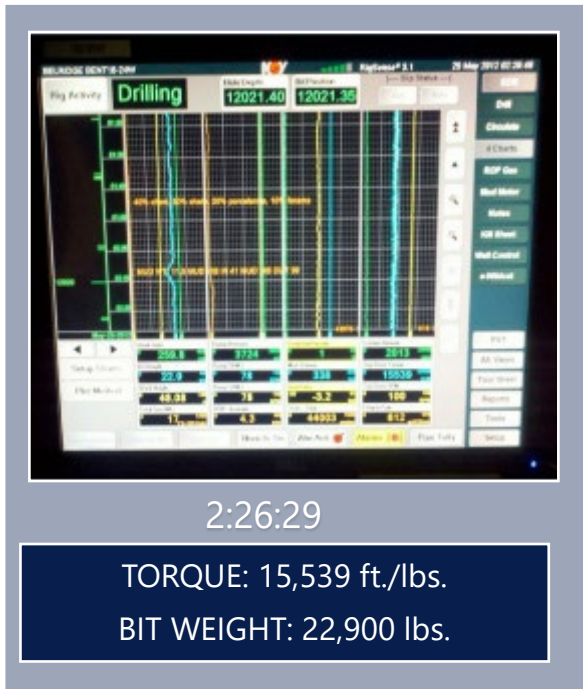
# CASE STUDY – Laredo, Texas



- Stuck Drill String – Top of the line lubricant was used and was unsuccessful in recovering the string
- Four sweeps of ProOne added at 6% through the slug pits
- After ProOne was introduced - the drill string was extracted from the hole!
- Was able to go back on bottom and TD the hole
- \$1.7 to \$2 million saved



# CASE STUDY – Elk Hills, CA H&P Rig #444



- Maxed out torque at 15,500 ft./lbs.
- ProOne was added at 3% of active system volume.
- Torque was reduced 45% to 8,041 ft./lbs.



# IN THE NEWS – DOMESTIC



# MANUFACTURING FACILITIES



# MANUFACTURING FACILITIES



# SUMMARY

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- Plant Based Extreme Pressure Lubricants
- Products for O&G, Industry, Transportation, Mining, Commercial
- Can replace SBM with WBM on certain wells with addition of Nitro!
- Improved drilling performance (T&D, ROP etc.) expected (even with SBM !!) provides potential for drilling engineer to further optimize well design
- Reduced wear and tear on downhole tools and rig equipment
- Approved for Offshore (California)

