

The Chemistry



StaFoam™ Fluid System

The StaFoam Fluid System is a highly effective blend of foaming surfactants, shale inhibitors, copolymers, and corrosion inhibitors, developed to adapt to a wide variety of drilling conditions. The StaFoam System is a non-flammable, corrosion-inhibitive system

that is well suited to the following conditions:

- Mist drilling
- Foam drilling
- Shale drilling
- Drilling in the presence of acid gas and high chlorides

The StaFoam Fluid System can be injected continuously “on-the-fly” or batch treated as conditions warrant.

- StaFoam D - Foaming Agent
- StaBle 900 - Clay Stabilizer
- StaClear 120 - Clay Stabilizer
- Defoam 250 - Defoamer
- StaVis 311 - Viscosifier

The Rest of the Equation

Engineering Design Solutions

- Experienced team with over 100 years experience worldwide
- “Systems” approach for faster drilling with less damage

Contact Total Separation Solutions today for more information on Managed Pressure Drilling and how it can help your bottom line.

Phone: 832-467-3400 • www.managedpressurefluids.com

Positioned for Service

With headquarters in Houston, Texas and Regional Offices in Poteau, Oklahoma, Lafayette, Louisiana, and Sissonville, West Virginia, TSS is positioned to service your Underbalanced and Air Drilling projects in North America.

Poteau Office	Sissonville Office
309 Kerr Avenue	309 Riverbend Road
Poteau, Oklahoma	Sissonville, WV 25320
Office: 918-647-4363	Phone: 304-988-0525
Fax: 918-647-7363	



THE TOTAL FLUID SOLUTIONS COMPANY

Drilling, Filtration, Reclamation Services



Managed Pressure Drilling



THE TOTAL FLUID SOLUTIONS COMPANY

Drilling, Filtration, Reclamation Services

Total Separation Solutions, LLC

6650 W. Sam Houston Parkway N. • Suite 450 • Houston, TX 77041 • Phone: 832-467-3400 • Fax: 832-467-4800
www.managedpressurefluids.com

Managed Pressure Drilling

Total Separation Solutions is fast becoming one of the leaders in managed pressure drilling in North America. Headed up by a highly-experienced oilfield team with over 100 years combined experience, TSS brings together the experience, technology and chemistry to successfully implement this often misunderstood technology.

Since first being employed in the 1950's, managed pressure drilling has been strategically utilized in many locations throughout the world, and its advantages are well known:

- Less expensive and faster
- Prevents lost circulation
- Reduced formation damage
- Better show detection
- Less environmental impact

A lesser known advantage of managed pressure drilling which has not yet been fully exploited is its flexibility with respect to drilling in "balance". By using the appropriate equipment, chemistry, and techniques, the imposed bottom-hole pressure can be adjusted to be in balance with the formation pore pressure.

Through recent technological advancements, many obstacles have been overcome and what was once unthinkable is now reality. Total Separation Solutions has experience, technology and chemistry and is committed to the advancement of managed pressure drilling techniques.



Experience Equals Return

Many operators that have attempted managed pressure drilling and failed, have abandoned the technique. It is often due to the difficult task of keeping abreast of the latest technological advancements. The average level of expertise in air drilling technology is comparable to the industry's limited knowledge of hydraulic fracturing

methods two decades ago. To successfully implement this technology, it is most cost-effective to rely upon a highly-skilled team, familiar with the latest methodologies. Total Separation Solutions' highly-experienced oilfield team with over 100 years combined experience is an industry leader in problem-solving product development,

and our new mechanical and chemical products meet the challenges that underbalanced drilling presents. This means that now there is a viable method for utilizing managed pressure drilling techniques, and that operators need to learn more in order to take advantage of the potential that it offers.

The Team

Charlie Bellinger

- 21 Years Operators' Drilling Engineer
- 10 Years Global UB / Air Drilling Product Line Manager

Tim Roe

- 30 Years with Drilling Contractors
- 12 Years as Service Company UB / Air Drilling Sales and Wellsite Technical Supervisor

Taylor Green

- 25 Years MI Drilling Fluids Engineering
- 5 Years MI Mud School Instructor
- 1 Year MPD / UB Engineering

RJ Smith

- Manager, Special Projects
- 5 Years as Senior Wellsite Supervisor for Weatherford UBD

Cole Blancett

- 17 Years Underbalanced Drilling and Lightweight Fluids
- Business Development Manager
- Drilling Services

John Simon

- Operations & Business Development Manager, Appalachian Basin
- 25 years in the Oil & Gas Service Business
- 20 Years in the Pumping Service Business
- 5 Years in the Drilling Service Business

The Technology

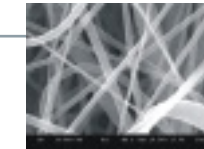
TSS augments the latest in standard equipment with patented cutting-edge technology to extract the greatest results from managed pressure drilling practices.

PYROS®

- Scale-free, flameless heat brings synthetic and oil-based muds back to density
- Non-shear dynamic mixing provides rapid mixing on the molecular level for tighter emulsions

NanoSol® Filters

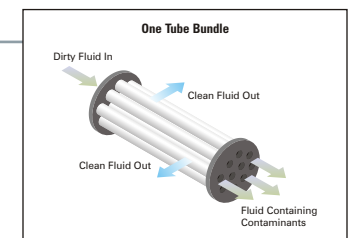
- Traps more dirt
- High flow rate
- Clean, solids-free fluids down to 0.5µ absolute



Cross-flow® Filtration

- Filters continuously when other methods will not
- Extremely long life, self-cleaning

While dead-end cartridge filters require change-outs, and DE filters require frequent blow-downs, cross-flow filtration technology allows you to keep on filtering.



Micro-bubble Mixer™

- Total Separation Solutions' micro-bubble mixer is used to create lightweight - inhibitive fluid for drilling applications in both producing and non-producing formations.
 - Surface area increases exponentially with more bubbles for a given volume
 - Increases stability with improved "texture"
 - Predictable rheology
 - Lowers Friction Pressures
 - Field proven



Chemical Injection

- Gain control of influxes while calculating gallon-to-gallon to eliminate inconsistency.

Compression Equipment, High-Pressure Boosters, and Mobile Foam Air Equipment

- Sullair 1350/350 compressor, powered by a Cat C-18 630-660 HP
- CIP Model PHT-2 booster, 2000 psi, powered by Cat C-9 300 BPH
- Kerr KP-3300 Triplex, powered by a CAT-3054 with a T-18 4 speed transmission



Ancillary Equipment

- Air Hammers
 - QL-80: 7" OD, Maximum bit 10"
 - QL-120: 11" OD, Maximum bit 17-1/2"
- Bit Shanks
 - 30% larger than competitors
 - More splines and plastic inserts reduce friction and prolong bit life

Digital Data Flow Metering

- Real-time information enables adjustments as parameters change

Full licensee of Signa Engineering HUBS and ERDS drilling software for drilling simulation.

