Expanding Boundaries in Deepwater

Certified specialists, technologies, infrastructure and logistics
From the Lower Tertiary in the Gulf of Mexico to the pre-salt areas of Brazil and West Africa, drilling deeper wells at greater water depths presents formidable technological challenges.

In addition to extreme water depths, operators are confronted by high-pressure, high-temperature (HPHT) conditions and the other downhole challenges of deeper wellbores. Today more than ever, you need a service partner that possesses the responsiveness and track record to help you minimize the risks and maximize the rewards of this highly challenging arena: a service partner like M-I SWACO.

Beyond our achievements to date no company can match our on-going investment in deepwater R&D. We continue to push boundaries by developing superior and high-performance drilling, drill-in, and completion fluids and associated technologies. We are pioneers in the development of state-of-the-art engineering, wellbore modelling and visualization software to support the most effective well construction choices.

Environmentally, we are second-to-none with several environmental labs staffed by professionals committed to ensuring our products meet the complex environmental regulations in place around the world. We also have the industry’s most advanced deepwater cuttings handling and processing technologies that are designed and installed to meet these environmental regulations and maximize drilling performance.

Yet what sets M-I SWACO, a Schlumberger company, apart is our continually evolving international infrastructure with shore-based facilities in all of the world’s mature and emerging deepwater regions. We ensure that - no matter how remote your well may be - the right resources are always close at hand.

At our primary research centers in Houston, Aberdeen and Stavanger, M-I SWACO continues to develop new generation fluid systems and related technologies for deepwater. Today, a considerable portion of our efforts center on efficient gas hydrate inhibition, wellbore strengthening in fragile deepwater formations, solutions for lost circulation, and drill cuttings processing and treatment, while meeting increasingly stringent environmental regulations.
Expanding Boundaries in Deepwater

As the industry’s recognized pioneer of engineered drilling fluids and related technologies, we’ve maintained a leadership position since drilling rigs began moving to the outermost fringes.

- Each year, M-I SWACO plays pivotal roles in 40% more deepwater wells drilled worldwide than our closest competitor. Of those, we hold a commanding lead in global wells drilled in water depths greater than 5,000 feet (1,524 m) with 55% more ultra-deepwater wells than our competitors.
- We reinforced our overwhelming market position in wells drilled in water depths from 9,000-10,000 feet (2,743-3,048 m) by servicing rigs that set four consecutive water depth world records.
- Our commanding presence in deep and ultra-deepwater extends across the globe, from the mature plays in the Gulf of Mexico and Brazil to leading positions in the emerging offshore markets of West Central Africa, South Africa, Australia, Malaysia, China and India.
- To assure customers that M-I SWACO specialists have the distinct knowledge and practical skills required to perform effectively in deepwater operations, we have developed the industry’s first Deepwater Certification Program.

Record water depth

10,385

40% more wells drilled

55% deeper wells

over 300 deepwater specialists
Extending Deepwater Capabilities

Whether it's resolving the flow assurance issues of gas hydrates, developing drilling fluids that function effectively at fluctuating deepwater temperatures and pressures, or handling waste generated at wellsites far from shore, we have an answer to the demands of deepwater.

Shallow Gas Hazards
- Mix-on-the-fly capabilities
- Shore-based facilities for timely delivery of high fluid volumes
- Hydraulics modelling of circulating pressures

Gas Hydrates
- Primary and secondary thermodynamic inhibition
- Gas hydrate prediction by laboratory testing and software forecasting

Lost Circulation
- I-BOSS† strengthening-while-drilling
- LC ADVISOR†
- Advanced lost circulation materials featuring the FORM–A† suite of cross-linking polymers and dewatering pills
- WELL COMMANDER† circulating valve

Wellbore Pressure Management
- VIRTUAL HYDRAULICS† software
- PRESSPRO RT† wellbore pressure management service

Cold Temperatures
- Rig site downhole drilling fluid rheology modelling and prediction
- Fann 75 modelling
- RHELIANT† and RHELIANT-PLUS flat rheology synthetic based drilling fluids
- TCT/PCT completion fluid measurements

Drilling Waste Management
- Total well planning and environmental compliance through recycling and disposal
- Complete portfolio of solids control and waste handling technologies
  - MD-3† high efficiency shale shaker
  - VERTI-G† cuttings dryer
  - HAMMERMILL† thermal desorption system
– CLEANCUT\textsuperscript{†} cuttings handling and processing systems
– ENVIROUNIT\textsuperscript{†} slop water treatment
– ATC LITE\textsuperscript{†} tank cleaning

**Wellbore Stability**

- I–BOSS wellbore strengthening-while-drilling
- OPTI-STRESS\textsuperscript{†} software
- OPTISEAL\textsuperscript{†} WSM wellbore strengthening material
- Complete suite of wellbore strengthening materials

**Wellbore Productivity**

- DEEPCLEAN\textsuperscript{†} wellbore and tubular cleanup
- Full suite of advance specialized cleanup tools
- ISOTHERM\textsuperscript{†} and SAFETHERM\textsuperscript{†} insulating packer fluids to control Annular Pressure Buildup and protect produced fluid quality
- Reservoir Drill-In Fluids (RDF) for maximum reservoir protection, production
- MUDSOLV NG\textsuperscript{†} breaker systems for efficient filter cake removal
- VIRTUAL COMPLETION SOLUTIONS\textsuperscript{†} (VCS) for modelling displacements
- Filtration for brine quality preservation
- OPTI-BRIDGE\textsuperscript{†} software proper RDF particle size distribution design
Advanced Drilling Fluid Systems and Services

M-I SWACO has built an industry-leading reputation on developing advanced drilling fluid systems. Today our ever-growing deepwater portfolio goes well beyond this, with technologies engineered to address the entire fluid cycle.

Widely recognized as pioneering synthetic-based drilling fluids for deepwater, our expertise in fluid system engineering places us at the forefront of this domain. We have developed fluid testing capabilities that enable operators to drill in regions with differing discharge specifications, reducing environmental impact in the deepwater environment.

NOVA† suite of synthetic-based drilling-fluid systems set the original standard for delivering reliable performance with minimal environmental impact. Exceeding the benchmark first set by NOVAPLUS†, our RHELIANT and subsequent RHELIANT-PLUS flat rheology, synthetic-based drilling fluids continue to set new standards of their own for deep and ultra-deepwater drilling performance. The flat rheological profile of RHELIANT-PLUS routinely improves hole cleaning and greatly reduces barite sag, pressure spikes, excessive gel strengths and a host of other problems caused by the broad range of temperatures and pressures encountered in deepwater drilling.

ULTRADRIL† high performance water-based drilling fluid continues to provide exceptional drilling performance comparable to synthetic-based alternatives while possessing all the environmental advantages of aqueous-based systems.

To address the problems that characterize immature and fragile deepwater formations, M-I SWACO assembled the I-BOSS suite of integrated services, products and equipment. Developed to stabilize and strengthen wellbores while drilling, I-BOSS is engineered to maximize drilling performance.
At the time of publication M-I SWACO holds the current record for the deepest water depth well, successfully drilled in India during the first quarter of 2013 by ONGC. The operator used the M-I SWACO RHELIANT fluid system, the VERTI-G cutting dryer package and M-I SWACO engineering. The water depth of the well was 10,385 ft (3,165 m) with a TD of 19,052 ft (5,799 m) drilled in 40 days with zero NPT and no safety related issues.
Proven in the Gulf of Mexico: Raising the bar in deepwater efficiency

The Situation
Synthetic-based drilling fluids are the systems of choice for deepwater operators due to their outstanding performance and environmental acceptability. Yet operators continually struggle to manage the rheological profile of conventional synthetic systems during their exposure to the temperature extremes experienced in deepwater.

The Solution
M-I SWACO developed the RHELIANT flat rheology synthetic-based drilling fluid system to operate effectively independent of extreme temperatures and pressures. RHELIANT opens the door for more efficient, trouble-free and cost-effective deepwater drilling. Not only is it formulated to improve hole cleaning and greatly reduce barite sag, it resolves the pressure spikes, excessive gel strengths and a host of other problems that result from continually battling the temperature extremes associated with deepwater. The capacity of the RHELIANT system to set new standards in drilling performance was put to the test in a deepwater development project.

The Results
The RHELIANT synthetic-based drilling fluid surpassed all expectations, including:

- Rates of penetration (ROP) up to 33% higher than offset wells using conventional synthetic-based fluids
- Equivalent circulating density (ECD) values reduced by up to 38%
- Losses reduced by 50% while running casing and cementing compared to offsets
- Zero hole cleaning problems with lower dilution rates and less chemical treatment
"The RHELIANT system has demonstrated a number of technical benefits helping to achieve good drilling performance, including hole stability, resistance to contaminants and good hole cleaning."

- Operator Drilling Fluids
  Coordinator
For optimal solids removal while drilling we engineered the MD-3 triple-deck shale shaker to deliver high capacities within the reduced footprint necessary for offshore rigs. The MD-3 shaker is unique in that it can adapt quickly as drilling conditions and cuttings volumes change, allowing it to more than keep up with the high flow rates required in deepwater drilling. For the ultimate in solids separation we developed the high-speed CD-500† CENTRIFUGE, also designed to handle high deepwater flow rates.

Our deepwater cuttings management portfolio includes the CLEANCUT automatic pneumatic cuttings handling and transport system. The system has consistently delivered zero hours of fluid-related NPT in hundreds of applications worldwide.

The portfolio also encompasses the most advanced cuttings dryers available - proven to significantly reduce waste volumes and environmental impact. For example the VERTI-G cuttings dryer features a high-speed vertical centrifuge that maximizes liquid/solid separation at high volumes. Cuttings can be conveyed from the shakers via a variety of methods including gravity feed, pneumatic or vacuum transfer, or screw conveyors. As well as removing drilling fluid from drill cuttings it also enables the recovery of the drilling fluids. In both oil- and synthetic-base drilling fluid systems the resulting reduction in waste volumes dramatically reduces the costs of deepwater drilling.
Proven in Deepwater Brazil: VERTI-G cuttings dryer successfully helps client reach TD with zero incidents and zero NPT

The Situation
In deepwater environments the solids control and cuttings processing systems are critical to properly collect all solids, to manage dilution levels throughout the fluid cycle, and to ensure compliance by reducing the oil on cuttings discharged to the sea. Beyond equipment itself, close consideration must also be given to the overall operation of the shale shakers, the selection of screens, and the design and operation of all fluid and solids transfer systems.

The Solution
The M-I SWACO waste management and solids control team was responsible for the installation and successful operation of a suite of equipment consisting of screw conveyors to collect and transfer cuttings from shale shakers and the VERTI-G dryer used to remove oil from the cuttings. The system also included a 518 Centrifuge for removal of low-gravity solids from the drilling fluid (RHELIANT) and a 100-horsepower rig vacuum unit for overall cleaning and spill control.

The Results
The client drilled to a total depth of 5,410m which included a 17 ½ inch interval of 683m and a 12 ¼ inch interval of 1,350m using the RHELIANT system. Despite the challenges of the cuttings generated in each section, the customer experienced zero incidents and zero NPT associated with the solids control and waste management equipment. All discharges to the sea were within the 5% oil on cuttings range necessary for regulatory compliance.
"In addition to the equipment performance and compliance, the customer recognized the excellent service quality derived from best practices in preventive maintenance, repair, and planning to optimize solids discharge."

- M-I SWACO Specialist
Progressing in Cased Hole Completions

M-I SWACO SMART 3D† Displacement Services addresses any displacement by analyzing the fluid hydraulics and requirements to perform mechanical and chemical debris removal. Afterwards, an integrated SMART 3D displacement solution is developed that specifically addresses the various challenges. This displacement-related approach eliminates NPT while maximizing a reservoir’s potential.

With our DEEPCLEAN chemistry, M-I SWACO resolve the problems of displacing a synthetic- or oil-based drilling fluid with completion brine. Rather than a conventional wash train requiring several pills followed by multiple seawater circulations, a DEEPCLEAN pill satisfies all the cleanup requirements with a single product.

The double-emulsion chemistry of DEEPCLEAN thins, dissolves and dispenses oily residue while leaving downhole tubulars and metal surfaces in a clean, water-wet state. DEEPCLEAN complements our special knowledge of drilling fluids, giving us an additional resource to help in designing the most efficient clean-up solution for your well.

During cleanup we also offer a full line of filtration services to keep completion fluids clean, as well as, specialized tools to prepare the casing, risers and BOPs by dislodging and extracting drilling debris. Our specialized tools, such as WELL PATROLLER† HD, WELL SCAVENGER† and MAGNOSTAR†, remove all debris and mud residue that can interfere with the completion process and impede production.

Our complete specialized displacement toolbox comprises integrated tools and services that include:
The specially designed M-I SWACO SAFE suite of chemical additives has long been the foundation of our comprehensive completion fluid systems. A major innovation in this offering is our uniquely engineered SEAL-N-PEEL fluid-loss-control pill, designed as a contingency for all screen based completions.

- Cleanup and displacement chemicals
- Specialized cleanup tools
- Filtration Equipment and Services
- VIRTUAL COMPLETION SOLUTIONS software
- Planning and post-displacement laboratory analyses

M-I SWACO offers a comprehensive portfolio of clear brine fluids that are displaced in the wellbore once the drilling phase has been completed. These completion fluids are designed to minimize formation damage and control reservoir formation pressures. The effects of temperature and pressure on a completion brine are critical considerations in deepwater applications.
Proven in the Gulf of Mexico: DEEPCLEAN additive effectively cleans deepwater well shut-in for 10 years

**The Situation**
A Gulf of Mexico operator planned to re-enter a well that had been shut in for at least 10 years with 10.5 lb/gal (1.2 sg) synthetic based mud. Owing to the unknown condition of both the mud and casing, the operator required an additive that offered the best possible efficiency for cleaning and water wetting the casing.

**The Solution**
The operator selected a wash spacer formulation incorporating the new dual purpose DEEPCLEAN product, which also was specified as an additive in the transition spacer. The DEEPCLEAN product is engineered for thorough and efficient cleaning of technically demanding well cleanups. DEEPCLEAN product was especially designed and tested to outperform other cleaning products even in laminar flow. In addition, the displacement was designed using M-I SWACO best practice design techniques.

**The Results**
After circulating only 200 bbl of seawater, the NTU reading was less than 100, indicating a successful casing cleanup and displacement. Further evidence of a successful cleanup was observed when the well was displaced with the clear brine and the final NTU reading was reduced to 25 with only a trace of solids.
"The DEEPCLEAN product proved to be highly efficient at cleaning a challenging deepwater well, despite less-than-ideal pumping conditions. Thus, the operator was able to successfully re-enter a well shut-in for 10 years."

- M-I SWACO Specialist
Breaking New Ground in Open Hole Completions

SMART RDF reservoir drill-in fluids, which includes the award-winning FAZEPRO and FLOTHRU systems, as well as the divalent brine based DIPRO\(^1\), allows the operator to achieve each well’s productive potential by addressing drilling and completion considerations simultaneously. MUDSOLV NG service designs filtercake breaker systems for thorough removal in open hole completions.

M-I SWACO also has a full line of breakers for the dispersion and/or dissolution of both water-base and invert-emulsion filter cakes. Our latest generation breaker technologies include the BREAKFREE\(^1\), BREAKDOWN\(^1\) and BREAKDOWN\(^1\) HD systems that provide optimum dissolution or dispersion through the incremental destruction of filtercake components. We also developed the FAZEBREAK\(^1\), FAZE-AWAY\(^1\) and FAZE-OUT\(^1\) breakers that are specially formulated to destroy filter cakes laid down by our reversible FAZEPRO drill-in fluid. Unlike traditional acid treatments, each of these systems provides a more uniform filter cake removal for improved reservoir drainage.
Proven in the Gulf of Mexico: Critical Deepwater Recovery and Successful Workover Attributed to DIPRO System

The Situation
The highly faulted and compartmentalized field consists of geo-pressured, unconsolidated silt/very fine sand Pleistocene-age reservoirs. Cased-hole, frac-pack completions are used on all wells in this field to maximize well productivity with minimum solids production. Shunt tubes have been installed with the gravel-pack screens to help ensure proppant placement in the casing/screen annulus over the entire reservoir interval.

The Solution
After conferring with the operator and field participants, M-I SWACO engineers specified the fluid requirements to carry solids and debris to the surface at low pump rates and to control the amount of fluid lost to the formation with an overall objective to recover the gravel-pack screen, re-perforate and re-complete the well. A 12.8-lb/gal (1534-kg/m³) DIPRO† fluid was recommended to control losses to the formation through open perforations, as well as washerover the screen and remove the frac-pack proppant.

The Results
Total losses of DIPRO fluid to the formation were 41 bbl after 25 days of exposure to the formation. The brine-base drill-in fluid was used to wash over 225 ft (69 m) of blank sand screen in 13 hr (two trips) with minimal fluid loss and no sweeps required. A short period of lost circulation (35 bbl to regain full circulation) was experienced while washing over the screens near the suspected screen failure depth. After washing over the screens down to the sump packer, the screens and shunt tubes were retrieved fully intact. One shunt tube was packed with formation sand. The outer layer of screen was packed with filter cake and a greater than 2-in. (51-mm) diameter hole was observed in the premium screen adjacent to an end ring. The well was successfully re-perforated and re-completed.
“The customer stuck a 5 in. liner 300 ft off bottom with 12.9 lb/gal synthetic-base mud in the hole. The client decided to set the liner in place and complete as an open hole gravel pack. We recommended DIPRO RDF for the completion and it was a good choice.”

- M-I SWACO Specialist
Insulating packer fluids are used post completion and engineered to maintain produced fluid quality in cold-temperature, deepwater, and arctic environments.

Our SAFETHERM packer fluid, which is formulated from an inherently low-thermal conductivity base fluid, is viscosified to suppress convective heat loss. This insulating annular fluid is compatible with a wide range of fluids, elastomers and other components. The ISOTHERM™ oil base packer fluid systems provides lower thermal conductivity and arrests thermal convection to avoid annular pressure buildup in long term applications.

Our insulating packer fluids are also ideal during well testing for maintaining wellbore temperature and fluid quality.

In addition, our portfolio of conventional barrier packer fluids includes corrosion and scale inhibitors designed to protect downhole tubulars and elastomers.
Proven in the Gulf of Mexico: SAFETHERM helps minimize production problems in Deepwater

**The Situation**
A Gulf of Mexico operator required thermal protection for a deepwater production well. In deepwater production wells, thermal protection is required to maintain produced liquid quality, prevent annular pressure buildup and the formation of production blocking hydrates, as well as provides threaded connection, elastomer seal and cement bond integrity. The occurrence of any of these problems could seriously jeopardize the success of the entire project.

**The Solution**
M-I SWACO recommended its SAFETHERM insulating packer fluid that would be engineered specifically to meet this particular application. SAFETHERM was designed with a thermal conductivity (K) value of 0.27 BTU/hr-ft-°F, heat capacity value of 0.75 BTU/lbm-°F, yield stress of 20.25 lbf/100ft², and density of 9.5 lb/gal (1.14 s.g.). These properties would give SAFETHERM the ability to minimize conduction and convection and offer maximum protection against thermal cycling related production problems.

**The Results**
SAFETHERM was successfully installed in the annulus of the well from above the production packer to the mudline. The system was uniquely engineered for this specific application in order to minimize conduction and convective heat loss and prevent production line blockage and casing string collapse. In addition, SAFETHERM proved to be compatible with the elastomers and fluids used in this well, as well as the surface processing equipment. The system was comprised of environmentally acceptable components and was mixed straightforwardly at the M-I SWACO Port Fourchon shore base and pumped trouble free on the rig.
“SAFETHERM was efficiently mixed and pumped in the Gulf of Mexico without any problems or QHSE incidents.”

- M-I SWACO Specialist
Pioneering engineering software

The evolving M-I SWACO suite of engineering software packages is a key component of our best-practices strategy for dealing with the downhole difficulties unique to the deepwater environment, including shallow gas hazards, lost circulation and gas hydrates. Our knowledge of deepwater drilling fluids has led to the development of sophisticated engineering software, allowing our experts to pre-plan for every conceivable possibility in both the drilling and completion phases.

One important tool in both planning and execution is our industry standard VIRTUAL HYDRAULICS software package, which optimizes hydraulics to considerably reduce or eliminate lost circulation. This pacesetting technology was followed by our proprietary VIRTUAL HYDRAULICS NAVIGATOR 3-D wellbore-visualization package. Its interactive 3-D visualization of the inside of a virtual wellbore represented a true industry first. VIRTUAL HYDRAULICS software is also an integral part of the M-I SWACO PRESSPRO RT service that uses surface measurements to calculate downhole pressures and corresponding fluid properties in real time during both drilling and tripping operations.

Another digital tool is the patented OPTI-STRESS wellbore stability module. Its proprietary algorithms enable the design of loss-prevention materials (LPMs) for the I-BOSS suite and other wellbore-strengthening solutions.

In preparing for a completion fluid displacement, M-I SWACO specialists employ the proprietary VIRTUAL COMPLETION SOLUTIONS software package to properly engineer the transition from drilling fluid to clear brine fluid in the extreme temperature environments and challenging well configurations and potential flow paths associated with deepwater.

This sophisticated, integrated suite of computer programs targets the hydraulics modelling and displacement profiles of high-density brines and other completion fluids to enhance wellbore cleanup and ultimately the productivity of your well. With this powerful software package, M-I SWACO specialists can minimize rig time and design a displacement that meets equipment limitations and ensures safety and well control.
Recognizing deepwater expertise

Working in deepwater requires a special type of individual. M-I SWACO has developed a formal process to ensure that the specialists assigned to your project are fully qualified to work in this critical environment.

To assure customers that M-I SWACO specialists have the distinct knowledge and practical skills required to perform effectively, we have developed the industry’s first Deepwater Certification Program. This comprehensive program continually evolves to meet ever-changing trends and issues in deepwater, ensuring our wellsite specialists are fully up-to-date on the most advanced technologies and processes.

After completing an exhaustive training and testing program candidates face an interview and examination by an expert panel: the Deepwater Certification Board of Review. Only then is a successful candidate formally qualified as a deepwater certified specialist.

The personnel that undergo our extensive certification process are among the most experienced in the industry. Once they complete their training, they rank among the best of the best.
Improving environmental performance

At M-I SWACO protecting the environment, on- and offshore, is one of our foremost priorities. We lead the industry in engineering cost-effective technologies designed to reduce the HSE footprint of your drilling operations.

Consequently, our environmental strategy begins with the engineering of invert-emulsion and aqueous drilling-fluid systems that meet and often exceed regulatory requirements. We work closely with operators and local regulatory bodies to develop and implement toxicity tests based on local conditions.

Our new generation drilling waste management technologies includes vacuum and pneumatic conveyance systems for the safe collection and transport of cuttings. Our wide range of cuttings treatment systems includes a multi-disciplinary waste injection process, cuttings drying equipment and patented thermal desorption technologies.

Our portfolio of drilling waste management solutions includes:

- Cuttings slurrification and re-injection (CRI)
- Dewatering and water treatment
- Thermal processing
- Cuttings drying
- Vacuum collection
- Pneumatic cuttings transport
- Slop water treatment
- Tank Cleaning

M-I SWACO was the first company to field a dedicated and specially trained Compliance Engineering Group, whose sole responsibility is helping operators meet local and regional environmental standards, regardless of where the operation is taking place.
Expanding deepwater accessibility

With M-I SWACO, you can tap into the industry’s most extensive deepwater distribution infrastructure. With high-capacity fast-turnaround facilities at key ports and a network of 30 strategically located deepwater bases around the world, M-I SWACO is equipped to help you respond to the ever-changing demands of deepwater projects.

For the deepwater Gulf of Mexico, M-I SWACO is the exclusive provider of drilling, reservoir drill-in and completion fluids at the deepwater C-Port I and II facilities in Port Fourchon, Louisiana.

There, huge supply boats can get large quantities of fluids, pipe and other supplies out to your operation in a matter of hours rather than days.

Like Port Fourchon, our shore bases in the deepwater regions of West Africa, Brazil, India, Australia and elsewhere have also undergone extensive expansion, making M-I SWACO the clear leader in quickly delivering all the products and systems you need when you need them.
Port Fourchon: Maximizing fluid volumes

The Situation
The challenge for the M-I SWACO liquid mud facilities in Port Fourchon, LA was a formidable one. The 26-in. riserless sections of seven deepwater wells were to be batch-drilled, requiring a calculated cumulative volume of 210,000 bbl of salt-saturated drilling fluids. With roughly 30,000 bbl of PAD mud required for each well, it would not only have to be mixed and delivered in time to meet the fast-paced drilling schedule, but do so without disrupting service to the other deepwater rigs M-I SWACO was servicing in the area at the time.

The Solution
To keep the high-volume project on schedule, the local M-I SWACO team worked closely with the operator to establish an integrated planning, communication and logistics framework. The resources of three Port Fourchon drilling fluid facilities were dedicated to the project. The project would require the utmost in communication, planning and tight logistical control over every possible aspect, including product lead times, mixing and transfer rates, and storage capacity and movement of the supply vessels.

The Results
The concentrated planning, communications and logistical effort resulted in the successful formulation and on-time delivery of a record volume of deepwater riserless drilling fluid. After 49 days of continual mixing at three Port Fourchon plants, an aggregate 187,702 bbl of drilling fluid was pumped to a total of 21 supply vessels and shipped to location with zero HSE incidents. Moreover, the high-volume project was met with no fluid-related downtime incurred by the operator’s other four deepwater rigs.