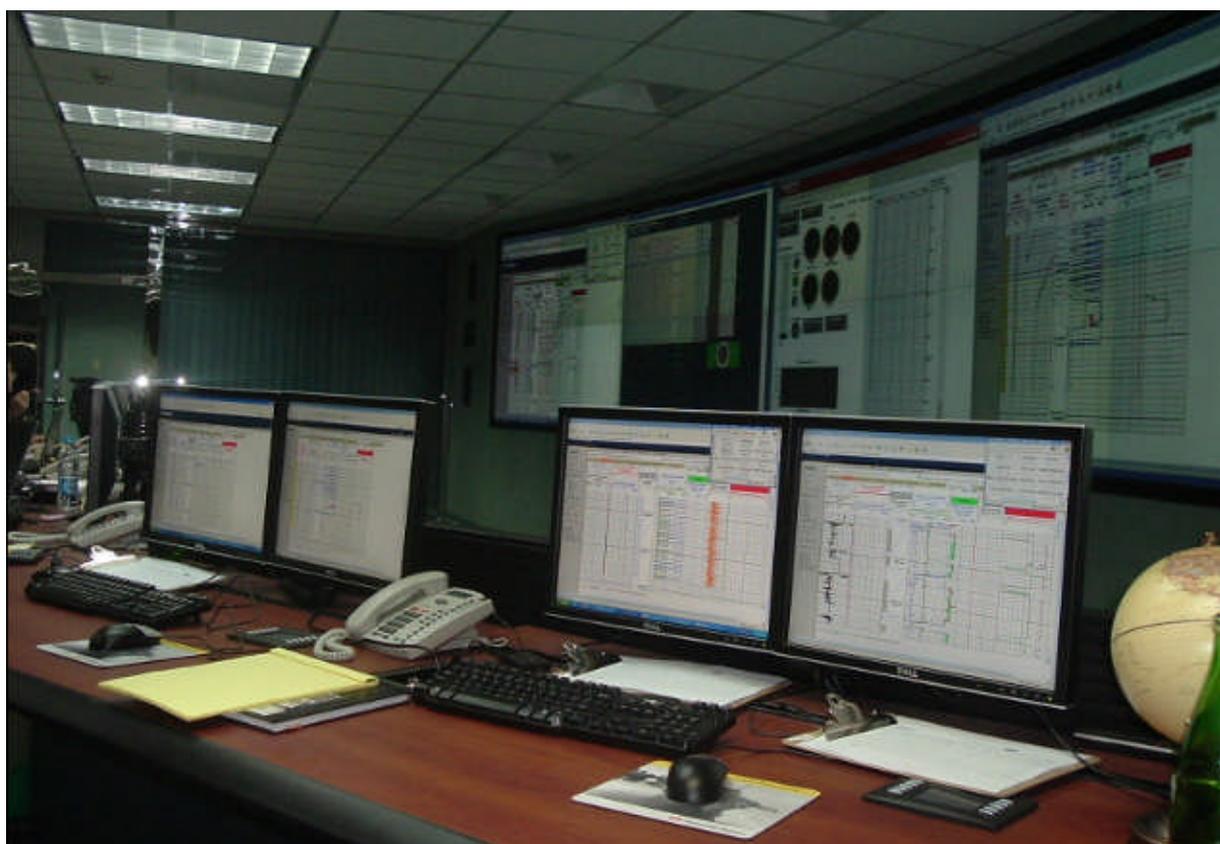


## **ROTC Training**

*A Comprehensive Training Curriculum for the ROTC Drilling Team  
DSI with its partners offers its full complements of Best in Class ROTC  
Training based on extensive experience with ROTC training from Pemex in  
South America to Saudi Aramco*



***Proactive Hole Problems Mitigation, Drilling Optimization, Capturing  
Lessons Learned all Start with a Robust Best in Class Training. ROTC  
Training is our Business***

Contact us:  
[info@drill-sense.com](mailto:info@drill-sense.com)  
(713) 609-9865 (USA)  
drill-sense.com



<b>Training Objectives</b>	<ol style="list-style-type: none"> <li>1. Define the detailed functions and responsibilities of RTOC staff and carefully address each task with specialized courses and on the job training</li> <li>2. Provide competencies in planning and real-time surveillance involving rigsite &amp; office collaboration Maximum use of all available data in a timely manner</li> <li>3. Provide real time decision support training on critical operations such as first action on stuck pipe, pipe technical limits, mud weight adjustments, extra</li> </ol>
<b>Training Phases</b>	<ol style="list-style-type: none"> <li>1. Phase 1: Develop case histories covering different hole sections and field conditions</li> <li>2. Phase 2: Deliver 17 highly specialized courses from technical limit to best practices</li> <li>3. Phase 3: Rig and on the job RTOC training</li> </ol>
<b>Training Focus</b>	<ol style="list-style-type: none"> <li>1. Early detection of anomalous drilling parameters</li> <li>2. Diagnostics of root cause</li> <li>3. Resolution game plan to solve or react to the impending problem/hole condition and enforce best practices</li> <li>4. Optimization and drilling efficiency</li> <li>5. Technical limit drilling</li> <li>6. All software tools required in the RTOC</li> <li>7. Best practices and knowledge transfer and archiving</li> </ol>
<b>Training Duration</b>	14 months (3 months for development of in house best practices and case studies, 5 months of class training, 3 months rig training, 3 months on the job RTOC training). Off course, the scope and duration of the RTOC training is customized for each client based on in depth DSI study of the client assets and network of rigs and offices.
<b>RTOC Training Business Drivers</b>	<p>Reduce non productive time (invisible lost time as well) by at least 5% for the first year, 10% for next year, this should translate into significant saving. RTOC training is the only to accomplish such possible results by:</p> <ol style="list-style-type: none"> <li>1. To enable 24-hour monitoring by highly experienced staff, and to allow onshore and offshore to communicate more effectively on a daily basis, in terms of making informed drilling decisions based on shared visual information</li> <li>2. Foster a collaborative work together to gather, analyze, predict drilling performance, and plan for proactive mitigation</li> </ol>
<b>Training Benchmarking</b>	DSI benchmarks with industry leaders such as OSC (SLB), ROC, (Sperry) BEACON (Baker), Weatherford (Satellite)
<b>DSI Training, Services, and Experience in RTOC Technology</b>	DSI offers a rigorous RTOC training for the entire RTOC team from geologists to superintendents and drilling engineers. Catering to the need for all RTOC staff members is a challenging task, but DSI has been doing it for Pemex, Saudi Aramco, as well as other operators. We can staff your RTOC with the right mix of talents and conduct daily routines without missing a beat.
<b>The Training Team</b>	DSI team made up of top talents and a unique mix of operation engineers to academic scholars. On the team: Berry Browne (drilling operation engineer with 30 plus experience), Bill Cagle (with 40 years plus experience), John Mitchell (operation and hole problems expert with over 30 years of experience), and Dr. Aadnoy, professor at Stavanger university (world renown expert in drilling technology) to name few.

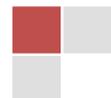




**Outline of Courses Offering:**

#	Course	Objectives/Duration
1	<b>Drilling Analysis</b>	Review of past well histories and derive calibration data ,
2	<b>Sidetracking Operation</b>	Review of sidetracking operation and their best practices.
3	<b>Stuck pipe</b>	General focused course on best practices for early detection, and first action strategies
4	<b>Hole cleaning and Hydraulics</b>	Focus on prediction of hole cleaning requirements for any given hole and fluid type. Heavy focus on best practices, research, and field experience
5	<b>Pore pressure Prediction</b>	Focus on familiarity of practical prediction of pore pressure in clastic rocks and real time detection pore pressure using mud logging data
6	<b>Wellbore stability</b>	The course will deliver complete account of the process of building a geomechanic model using basic software. Real time detection of wellbore instability is highly emphasized
7	<b>Drill String design</b>	Drill string design concepts, neutral points (NP), buckling tendencies, effect of dog legs on drill string integrity, maximum dog leg for drill string fatigue , determining NP in vertical and inclined wells for back off operations, others
8	<b>Torque and Drag</b>	Well friction finger printing and analysis using Landmark tool (WellPlan™)
9	<b>Directional Control</b>	Fundamentals of directional well planning, downhole tools, uncertainty and geosteering
10	<b>Drilling Optimization</b>	Drilling vibration (all types) will be reviewed (detection and resolution) with many cases from field practices. Bit performance monitoring in real time and operational optimization of bit footage/ROP

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11	<b>Drilling Fluids</b>	Review of basic drilling fluid contamination for each hole section and respective treatment
12	<b>Solids Control</b>	Focus on importance of solids control in minimizing drilling problems and how to monitor solids control equipment functions from daily morning report data
13	<b>Well Control</b>	The focus on the course will be on best practices to deal with well influx in on shore and offshore conditions with different fluids (gas, oil, brine)
14	<b>Drilling Operations Best Practices</b>	This course aims at developing the necessary skills in standard drilling operations and to recommend best practices to deal with various hole problems. This course draws similarity from the popular Murchison drilling schools.
15	<b>Real Time Drilling Diagnostics</b>	A course to be compiled from operator's (client) case histories on real time diagnostics of hole problems other than stuck pipe cases (such as bit balling, BHA stiffness, ledges, vibration, pipe washouts, others). This course will be the final milestone to prepare the RTOC engineers for taking over responsibilities

