

GTSC Rig for Hands-on Training

The Rig

To meet the high demand of Petroleum Industry, GTSC has launched the Middle East's first fully operational Training Rig & Well in May 2010 at its main building location in Musaffah, Abu Dhabi. The Training Rig provides hands-on experience and competency based training in drilling, completion, well intervention and work over operations, enabling personnel to develop effectively to the highest standards and up-to-date business drive.

The Well

GTSC Training Well is designed to train Well Intervention discipline and Drilling Rig personnel. 1700 feet well is drilled and set with 7 inches casing. The well is with tapered tubing of 3 inches and 2 inches each with all the common completion equipment with packer and Xmas tree. The 7 inches casing string and tubing string will have communication to each other but totally isolated from the formation. Xmas tree and the Wellhead are connected to Surface Flowing facilities which can simulate various Well situations including pressure simulation for training purposes. The Well is fully equipped with 7000 gallons tank, twin pump - pre filling and high pressure pump, 2 inch flowline and drilling tools, plus a shale shaker, mud pumps and mud tanks. Wireline unit set in fully air conditioned classroom cum-workshop with control console inside. The above is designed to suit the purpose of training green hand personnel. A 19 meter derrick rigged up and well equipped with 20 tons man hoist and 5 tons tigger line and all tools for operations.

NO	DESCRIPTION	DEPTH	LENGTH	OO	ID
	Elevation	0.00	11.75		
1	3 1/2" Tubing Hanger NVAM BxB	11.75	1.00		
2	3 1/2" Tubing, 9.2 # NVAM (13 Jts)	12.75	391.33	3 500	2 992
3	3 1/2" BAKER 'B' Nipple, NVAM BxP	404.08	1.83	3 880	2 813
4	3 1/2" Tubing, 9.2 # NVAM (16 Jts)	405.91	482.42	3 500	2 992
	3 1/2" X-over, NVAM B x 8rd EUE P				
5	3 1/2" KBUG' SPM, 8rd EUE BxB	888.33	9.42	5 313	2 875
	3 1/2" X-over, 8rd EUE P x NVAM P				
6	3 1/2" Tubing, 9.2 # NVAM (3 Jts)	897.75	90.25	3 500	2 992
	3 1/2" X-over, NVAM B x 8rd EUE P				
7	3 1/2" BAKER 'L' SSD, 8rd EUE BxP	988.00	5.08	4 500	2 813
	3 1/2" X-over, 8rd EUE Box x NVAM Pin				
8	3 1/2" Tubing, 9.2 # NVAM (3 Jts)	993.08	91.17	3 500	2 992
9	3 1/2" BAKER 'F' Nipple, NVAM BxP	1084.25	1.50	3 887	2 750
10	3 1/2" Tubing, 9.2 # NVAM (3 Jts)	1085.75	90.58	3 500	2 992
11	3 1/2" BAKER 'R' Nipple, NVAM BxP	1176.33	1.42	3 887	2 697
12	3 1/2" Tubing, 9.2 # NVAM (3 Jts)	1177.75	90.17	3 500	2 992
	NVAM X-over, 3 1/2" B x 2 1/2" P	1257.92	1.00	3 500	2 442
13	2 1/2" Tubing, 6.4 # NVAM (2 Jts)	1288.92	62.67	2 875	2 442
	2 1/2" X-Over, NVAM B x 8rd EUE B				
14	2 1/2" OTIS 'XO' SSD, 8rd EUE PxP	1331.58	4.83	3 750	2 313
	2 1/2" X-Over, 8rd EUE B x NVAM P				
15	2 1/2" Tubing, 6.4 # NVAM (2 Jts)	1336.42	62.75	2 875	2 442
16	2 1/2" OTIS 'X' Nipple, NVAM BxP	1399.17	1.00	3 230	2 313
17	2 1/2" Tubing, 6.4 # NVAM (2 Jts)	1400.17	62.67	2 875	2 442
18	2 1/2" OTIS 'XN' Nipple, NVAM BxP	1462.84	3.08	3 230	2 205
19	2 1/2" Tubing, 6.4 # NVAM (2 Jts)	1465.92	62.58	2 875	2 442
20	2 1/2" WLEG, NVAM Box	1528.50	0.83	3 230	2 442
	EOT	1528.50			
23	PSTD	1620.00			



GTSC Simulator Profile

Wireline



Wireline Unit



Control Console



Wireline Classroom



3000 PSI Pumps



7000 Gallons Tanks

GTSC Simulator Profile

Drilling



Micro Portable Drilling Simulator



The DrillsIM-20 is designed for true portability, fitting into a single standard airline check-in suitcase.

It includes graphical imitations of Drilling Controls, Manifolds and BOP consoles, controlled through a touch-screen Student Station. The station also controls the mud systems and displays surface and down-hole graphics.

Full-Sized Rig Floor Simulator



Designed to provide full-sized simulation of drilling and well control operations, the DRILLSIM 5000 is the ultimate drilling training tool for the Oil and Gas Industry.

The DRILLSIM 5000 was developed to meet the training requirements of Operators, Drilling Contractors and Service Company personnel, in both offshore and onshore operations environments. Powered by modern day computer systems, this state-of-art simulator is suitable for all stages of training from entry level to advanced drilling and well control engineering.

Working alone or in groups, trainees can execute real world drilling or well control exercises created by an instructor. This develops the trainee's problem solving skills which in turn, helps reduce the risk of dangerous and expensive incidents made in the field.

Heavy duty steel consoles have been used to ensure the simulator can withstand everyday use. Touch screen terminals provide user friendly interfaces for instructor and trainee, bringing technology to their fingertips.

With its computer generated graphics, real time simulation and digitized sound effects, the DRILLSIM 5000 has set the standards for a new generation of realism in simulated drilling and well control.

Cyberchair Drilling Simulator



The Mechanized Rig Cyber Simulator based at GTSC in Abu Dhabi is a state of the art drilling and well control training simulator simulating the latest in field drilling technology found on modern day drilling rigs. It provides a training environment to enhance the competency of Driller and Assistant Drillers tasked with Drilling wells on modern Cyberchair rigs.

New mechanized drilling rigs today utilize “fly by wire” technology to control the drilling equipment. Historically operations such as controlling the blocks, setting the slips, making and breaking connections were all done manually, this is typified by the stand-up Driller’s Brake environment and reflected in the DrillsIM 5000 standard Drilling & Well Control Simulator, such as that already available at GTSC. However, today the 21st Century Driller is more used to sitting in a “Cyberchair” in an air conditioned Driller’s Cabin, controlling the drilling equipment at the touch of an on screen Man Machine Interface button or the flick of a discrete control switch. Draw works are now moved seamlessly up and down by a joystick mounted on the chair panniers.

The industry is moving from direct hydraulic, air and mechanical control from the operator’s consoles into these systems being driven by PLC’s (Programmable Logic Controllers) and SBC’s (Single Board Computers) interface remote by an on screen HMI (Human Machine Interface).

Although the CyberSIM environment offers a generic land rig, platform and jack up, surface BOP type operation, it is possible to upgrade the CyberSIM chair to include more Rig focused modules representing both a more specific derrick drilling equipment set and an emulated rig control system such as MH Drill view or NOV VICIS, Amphions or Cyberbase for example. These include OEM emulated panniers with matching joysticks and discrete controls to those found on the client’s drilling rig. Drilling Systems offer these higher level systems that closely match the end user client rigs.

Full-Sized Workover Simulator

The Production and Workover simulation (PawSIM-5000) equipment is configured to primarily address workover well control training for the well site personnel according to guidelines and regulations required by the various regulatory authorities. In most cases, once the well is dead the exercise is deemed completed and this satisfies the competence testing requirements.



Essentially in the majority of exercises, the simulator requires the trainee to take over a producing well and kill it with two circulations and prepare the well for further well servicing or well intervention techniques. The first circulation will reverse out the tubing contents and the second will remove the well fluids from the tailpipe annulus once the packer is pulled. The PawSIM-5000 simulator is unique in its modeling area in that wellbore fluids are completely tracked under the packer and around the tailpipe region of the well. The workover simulator can also be used to bring a well back on stream and metaphorically hand back responsibility to the production department.

Mud Treatment Simulator

A First for Drilling Fluids Simulation, MUDSIM is a unique mud treatment simulator aimed at training engineers in drilling fluids technology and in the management of mud systems and solids control equipment.



This PC based package allows trainees to address common problems faced by a mud engineer at the well site and gain a greater understanding of mud system interaction.

All well site operations are incorporated into the simulator to ensure trainees are given a complete overview of mud system maintenance and a comprehensive understanding of the effects upon drilling performance.

The trainee has to arrange the solids control equipment and build the mud system to suit the training exercise, thereby combining theory with practice.

MUDSIM can be integrated into any drilling fluids course, allowing the development of skills training within the relatively inexpensive environment of the classroom.

The Mud Treatment Simulator was developed in a purpose-built drilling fluids laboratory over a three years period by experienced field personnel and models all water-based mud systems.

Drilling Operations Trainer Simulator (DOT)

For All Your Drilling Training Needs - the Drilling Operations Trainer can be used to train personnel in all aspects of drilling operations. Oil companies, service companies, training institutions and educational establishments can all benefit from this PC-based simulator.



It is an advanced system, offering a wide range of training opportunities from basic tuition to sophisticated directional and horizontal drilling technologies.

The DOT can be loaded on to a PC or file server, enabling any drilling course to start in the classroom which reduces the need for expensive 'on-the-job' training at the wellsite.

All rig site operations are available, including drilling, surveying, assembly configuration, rock bit selection, fishing operations, casing and cementing and electric wireline logging.

The Drilling Operations Trainer is a flexible, user-friendly training package which can be easily updated with the latest technological advances through Instructor Facilities.

Drilling Management Trainer Simulator (DMT)

An Integrated Approach; The Drilling Management Trainer is an integrated PC-based drilling training simulator, requiring four personal computers linked over a Local Area Network. A fifth remote Instructor's PC station can also be attached anywhere within the network to monitor trainee progress or inject drilling malfunctions to create effective training scenarios.



The standard configuration comprises a Driller's Station, which controls the rig floor drilling parameters with the trainee assuming the role of Driller. A Drilling Supervisor's Station is used to order out equipment, monitor the rig inventories and retrieve information from the system for general rig reporting requirements.

The Mud Engineer's Station requires another trainee to manage the mud system as the well is drilled. The Graphics Terminal offers trainees a 'window' of rig floor operations, together with the selected line up of the choke and standpipe manifolds. As the trainees drill the well they begin to interact as a group, resolving drilling problems and enhancing their 'on-the-job' skills training.

DMT incorporates the directional drilling models of the Drilling Operations Trainer, DOT, and the mathematical modeling of the Mud Treatment Simulator, MUDSIM. Integrated with lectures and hardware presentations, DMT offers group skills training across a wide spectrum of drilling activities within the classroom environment.

Well Testing Simulator



The portable Well Surface Testing Trainer, TestSIM-500 simulates the performance of oil/gas wells and the function of the various surface equipment items of onshore and offshore well locations.

An Instructor can pre-select the equipment, and impose simulated malfunctions to increase trainees' troubleshooting skills and process understanding.

With the TestSIM-500, operational errors will have consequential effects on the success of the testing operation ensuring the frequency of on-site problems are reduced or quickly resolved.

Coiled Tubing Simulator



The portable version of Coiled Tubing Simulator CTS 500 is designed to meet the training requirements of both onshore and offshore operations.

Applicable to entry level or advanced engineering skills training, the simulator is used to provide a realistic training environment.

Applicable to entry level or advanced engineering skills training, the simulator can be used to instruct individual or complete Coiled Tubing Crews. It can be used by an instructor to demonstrate particular principles and operations.