

COURSE OVERVIEW DE0184-4D
Directional Drilling, Horizontal and Sidetracking

Course Title

Directional Drilling, Horizontal and Sidetracking

Course Date/Venue

November 18-21, 2024// Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

DE0184-4D

Course Duration/Credits

Four days/2.4 CEUs/24 PDHs



Course Description



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.



This course is designed to provide participants with a good working knowledge on directional drilling, horizontal and sidetracking. Design considerations and operational aspects of directional and horizontal drilling will be highlighted in the course. The course will increase the understanding of the operations carried out by directional drillers and how directional and horizontal wells are planned and optimized. The basic applications and techniques for multilateral wells are also covered in the course.



The course will provide participants with necessary skills to plan and execute the drilling of directional and horizontal wells. It emphasizes the planning of well paths with single and multiple targets and selection of appropriate bottomhole assembly and drillstring for a given well path trajectory. The course also provides several opportunities for hands-on computer sessions for analyzing directional planning and simulating directional drilling process.

Specific problems associated with directional/horizontal drilling such as torque, drag, hole cleaning, logging, and drill string component design are included. Participants will receive instruction on planning and evaluating horizontal wells based on the objectives of the horizontal well. The basic applications and techniques for multi-lateral wells are covered in the course. Additionally, they will become familiar with the tools and techniques used in directional drilling such as survey instruments, bottomhole assemblies, motors, steerable motors, and steerable rotary systems. Participants will be able to predict wellbore path based on historical data and determine the requirements to hit the target.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on directional drilling, horizontal and sidetracking
- Interpret TVD, polar, rectangular coordinates, dogleg severity and the problems associated with it
- Interpret torque and drag and what factors affect those in the drilling process
- Understand main concepts associated to well path planning
- Recommend suitable measures to mitigate operational issues related to directional and horizontal drilling
- Understand main concepts associated to well construction of multilateral wells
- Discuss directional profiles and other applications of directional drilling
- Carryout directional drilling methodologies and techniques, directional and horizontal drilling, side tracking, inaccessible location and offshore development drilling
- Recognize dry hot rock development, low permeability and heterogeneous reservoirs and water and gas coning
- Employ horizontal drilling methods and applications, plan directional and horizontal wells including extended reach wells (ERD) and apply directional well planning and navigation
- Plan and design optimum well-path trajectory, as well as implement the methods of calculating well-path trajectory from survey points and its presentation in 3D coordinate system
- Identify the operating principles and applications of surveying equipment
- Apply planning torque and drag calculations as well as dogleg, torque and drag calculations
- Implement hole cleaning practices in deviated and horizontal wells as well as multi-lateral wells concepts and application
- Identify the deflecting and drilling tools and methods and the factors controlling bit deflection
- Recognize the equipment and methods to kick off the well and control deviation

- Apply drillstring configuration with respect to long radius, short radius, ultra short radius and stabilizer configuration
- Illustrate drillstring design for directional control, calculate side forces and lead angle (building or dropping tendency) of the bit and determination of the shape of the string for a given bottomhole configuration
- Determine performance analysis of single versus multiple stabilizer bottomhole assembly
- Design bottomhole assembly for build-up, slant and drop-off sections of the well trajectory

Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials, sample video clips of the instructor’s actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of directional, horizontal and sidetracking drilling for drilling engineers, field engineers, petroleum engineers, supervisors, directional drillers and other technical staff from work-over and other company staff involved in directional, horizontal and sidetracking drilling.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours: -

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -


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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology’s courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **2.4 CEUs** (Continuing Education Units) or **24 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant’s involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant’s CEU and PDH Transcript of Records upon request.

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Dr. Chris Kapetan, PhD, MSc, is a **Senior Petroleum Engineer** with over **30 years** of international experience within the **onshore and offshore oil & gas** industry. His wide experience covers **Decision Analytic Modelling Methods for Economic Evaluation, Probabilistic Risk Analysis (Monte Carlo Simulator) Risk Analysis Foundations, Global Oil Demand**, in Electrical Submersible Pumps Application, **ESP Assembly & Disassembly Techniques, ESP Modeling & Design, ESP Construction & Operational Monitoring, ESP Troubleshooting & Maintenance, Crude Oil Market, Global Oil Reserves, Oil Supply & Demand, Governmental Legislation, Contractual Agreements, Financial Modeling, Oil Contracts, Project Risk Analysis, Feasibility Analysis Techniques, Capital Operational Costs, Oil & Gas Exploration Methods, Reservoir Evaluation, Extraction of Oil & Gas, Crude Oil Types & Specifications, Sulphur, Sour Natural Gas, Natural Gas Sweetening, Petroleum Production, Field Layout, Production Techniques & Control, Surface Production Operations, Oil Processing, Oil Transportation-Methods, Flowmetering & Custody Transfer and Oil Refinery**. Further, he is also well-versed in Enhanced Oil Recovery (EOR), Electrical Submersible Pumps (ESP), **Oil Industries Orientation, Geophysics, Cased Hole Formation Evaluation, Cased Hole Applications, Cased Hole Logs, Production Operations, Production Management, Perforating Methods & Design, Perforating Operations, Fishing Operations, Well & Reservoir Testing, Reservoir Stimulation, Hydraulic Fracturing, Carbonate Acidizing, Sandstone Acidizing, Drilling Fluids Technology, Drilling Operations, Directional Drilling, Artificial Lift, Gas Lift Design, Gas Lift Operations, Petroleum Business, Petroleum Economics, Field Development Planning, Gas Lift Valve Changing & Installation, Well Completion Design & Operation, Well Surveillance, Well Testing, Well Stimulation & Control and Workover Planning, Completions & Workover, Rig Sizing, Hole Cleaning & Logging, Well Completion, Servicing and Work-Over Operations, Practical Reservoir Engineering, X-mas Tree & Wellhead Operations, Maintenance & Testing, Advanced Petrophysics/Interpretation of Well Composite, Construction Integrity & Completion, Coiled Tubing Technology, Corrosion Control, Slickline, Wireline & Coil Tubing, Pipeline Pigging, Corrosion Monitoring, Cathodic Protection** as well as Root Cause Analysis (RCA), Root Cause Failure Analysis (RCFA), **Gas Conditioning & Process Technology, Production Safety and Delusion of Asphalt**. Currently, he is the **Operations Consultant & the Technical Advisor at GEOTECH** and an independent **Drilling Operations Consultant** of various engineering services providers to the international clients as he offers his expertise in many areas of the **drilling & petroleum discipline** and is well **recognized & respected** for his process and procedural expertise as well as ongoing participation, interest and experience in continuing to promote technology to producers around the world.

Throughout his long career life, Dr. Chris has worked for many international companies and has spent several years **managing technically complex wellbore interventions** in both **drilling & servicing**. He is a **well-regarded** for his **process and procedural expertise**. Further, he was the **Operations Manager at ETP Crude Oil Pipeline Services** where he was fully responsible for optimum operations of crude oil pipeline, **workover and directional drilling, drilling rigs** and equipment, drilling of various geothermal deep wells and **exploration wells**. Dr. Chris was the **Drilling & Workover Manager & Superintendent for Kavala Oil** wherein he was responsible for supervision of **drilling operations and offshore exploration**, quality control of performance of **rigs, coiled tubing**, crude oil transportation via pipeline and abandonment of **well** as per the API requirements. He had occupied various key positions as the **Drilling Operations Consultant, Site Manager, Branch Manager, Senior Drilling & Workover Manager & Engineer and Drilling & Workover Engineer, Operations Consultant, Technical Advisor** in several petroleum companies responsible mainly on an **offshore sour oil field (under water flood and gas lift)** and a gas field. Further, Dr. Chris has been a **Professor of the Oil Technology College**.

Dr. Chris has **PhD in Reservoir Engineering** and a **Master degree in Drilling & Production Engineering** from the **Petrol-Gaze Din Ploiesti University**. Further, he is a **Certified Surfaced BOP Stack Supervisor of IWCF**, a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management (ILM)** and has conducted **numerous short courses, seminars and workshops** and has published several technical books on **Production Logging, Safety Drilling Rigs and Oil Reservoir**.

Course Fee

US\$ 6,750 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday 18th of November 2024

0730 – 0800	<i>Registration & Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0900	<i>Directional Profiles & Other Applications of Directional Drilling</i>
0900 – 0930	<i>Directional Drilling Methodologies & Techniques</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Application of Directional & Horizontal Drilling</i>
1100 – 1200	<i>Side Tracking</i>
1200 – 1230	<i>Inaccessible Locations</i>
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Offshore Development Drilling</i>
1315 – 1345	<i>Dry Hot Rock Development</i>
1345 – 1420	<i>Low Permeability & Heterogeneous Reservoirs</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2: Tuesday 19th of November 2024

0730 – 0830	<i>Water & Gas Coning</i>
0830 – 0930	<i>Horizontal Drilling Methods & Applications</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Planning Directional & Horizontal Wells Including Extended Reach Wells (ERD)</i>
1100 – 1200	<i>Directional Well Planning & Navigation</i>
1200 – 1230	<i>Planning & Design of the Optimum Well-Path Trajectory</i>

1230 – 1245	<i>Break</i>
1245 – 1315	<i>Methods of Calculating Well-Path Trajectory from Survey Points & its Presentation in 3D Coordinate System</i>
1315 – 1345	<i>Operating Principles & Applications of Surveying Equipment</i>
1345 – 1420	<i>TVD, Polar, Rectangular Coordinates, Dogleg Severity & The Problems Associated with it</i>
1420 – 1430	Recap



Day 3: Wednesday 20th of November 2024

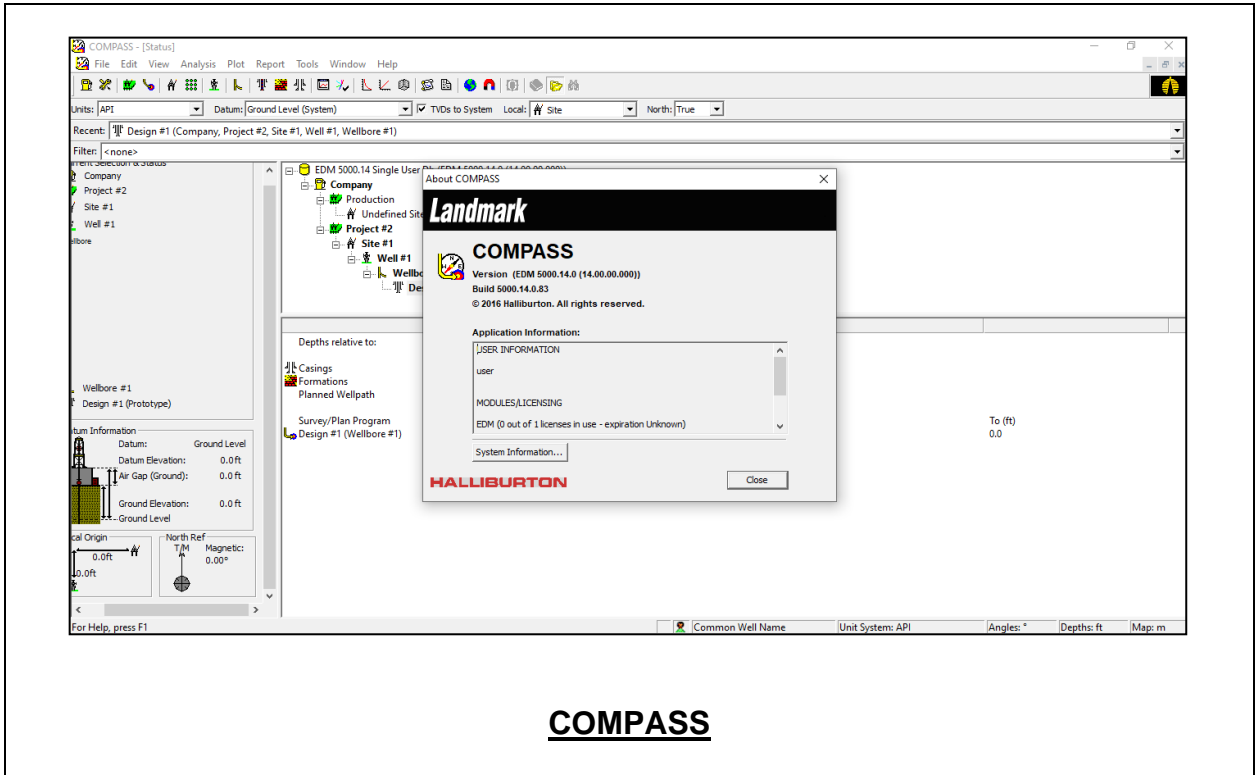
0730 – 0830	<i>Planning Torque & Drag Calculations</i>
0830 – 0930	<i>Dogleg, Torque & Drag Calculations</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Torque & Drag & What Factors Affect Those in the Drilling Process</i>
1100 – 1200	<i>Main Concepts Associated with Well Path Planning</i>
1200 – 1230	<i>Hole Cleaning Practices in Deviated & Horizontal Wells</i>
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Multi-lateral Wells Concepts & Application</i>
1315 – 1345	<i>Measures to Mitigate Operational Issues Related to Directional & Horizontal Drilling</i>
1345 – 1420	<i>Deflecting & Drilling Tools & Methods</i>
1420 – 1430	<i>Recap</i>
1430	<i>Lunch & End of Day Three</i>

Day 4: Thursday 21st of November 2024

0730 – 0830	<i>Factors Controlling Bit Deflection</i>
0830 – 0930	<i>Equipment & Methods to Kick Off the Well & Control Deviation</i>
0930 – 0945	<i>Break</i>
0945 – 1100	<i>Drillstring Configuration with Respect to Long Radius, Short Radius & Ultra Short Radius & Stabilizer Configuration</i>
1100 – 1200	<i>Drillstring Design for Directional Control</i>
1200 – 1230	<i>Calculation of Side Forces & Lead Angle (Building or Dropping Tendency) of the Bit & Determination of the Shape of the String for a Given Bottomhole Configuration</i>
1230 – 1245	<i>Break</i>
1245 – 1300	<i>Performance Analysis of Single versus Multiple Stabilizer Bottomhole Assembly</i>
1300 – 1330	<i>Design of Bottomhole Assembly for Build-Up, Slant & Drop-Off Sections of the Well Trajectory</i>
1330 – 1345	<i>Well Construction of Multilateral Wells</i>
1345 – 1400	<i>Course Conclusion</i>
1400 – 1415	<i>POST-TEST</i>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch & End of Course</i>

Simulators (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art simulator “COMPASS” software.



Course Coordinator

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