

COURSE OVERVIEW DE0187-4D Directional, Horizontal and Multilateral Drilling

Course Title

Directional, Horizontal and Multilateral Drilling

Course Date/Venue

Session 1: July 29–August 01, 2024/Al Aziziya Hall,
The Proud Hotel Al Khobar, Al Khobar,
KSA

Session 2: November 04-07, 2024/Boardroom 1,
Elite Byblos Hotel Al Barsha, Sheikh
Zayed Road, Dubai, UAE



Course Reference

DE0187-4D

Course Duration/Credits

Four days/2.4 CEUs/24 PDHs

Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.



This course is designed to provide participants with a detailed and up-to-date overview of directional, horizontal and multilateral drilling. It covers the horizontal and multilateral well technology; the horizontal and multilateral well design and the applications for directional drilling; the directional profiles and extended reach wells; the directional measurement, surveying, survey calculations and accuracy; the dogleg severity calculations and planning directional and horizontal wells; the horizontal drilling methods and applications; and kicking off the well, drilling the tangent section, dropping hole angle, logging high angle wells and hole cleaning.



During this interactive course, participants will learn the well control in horizontal wells and multi-laterals; the various types of survey instruments and the tools used to deflect a wellbore; the torque and drag calculations; the drilling fluids, turbodrills and measurement while drilling (MWD); the formation evaluation, kick detection and response; the general considerations for BOP equipment, cementing and drilling problems in horizontal and multilateral wells; the control over borehole trajectory and tools used to deflect a wellbore; freeing stuck pipe, baking-off the drill string, fishing and milling; the sidetracking and lost circulation; the productivity of horizontal and multilateral wells; and the influence of well eccentricity and formation damage.

Course Objectives

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

- Apply and gain a comprehensive knowledge on directional, horizontal and multilateral drilling
- Make survey calculations as well as interpret TVD, polar and rectangular coordinates and vertical section including dogleg severity and the problems associated with it
- Plan a two-dimensional directional well including the horizontal wells based on the objectives of the well
- Determine the best multi-lateral completion for an application and the declination and non-magnetic drilling collar selection
- Apply the best survey instrument for the job and determine directionally drill with rotary BHAs, jetting, whipstocks, motor, steerable motors and rotary steerable systems
- Discuss drill horizontally underbalanced and interpret torque and drag
- Determine what factors will affect the torque and drag as well as cementing requirements for directional wells
- Discuss the horizontal and multilateral well technology including the horizontal, multilateral wells and reservoir concerns
- Illustrate horizontal and multilateral well design and the applications for directional drilling
- Recognize directional profiles and extended reach wells as well as apply directional measurement, surveying, survey calculations and accuracy
- Employ dogleg severity calculations, planning directional and horizontal wells and horizontal drilling methods and applications
- Describe kicking off the well, drilling the tangent section, dropping hole angle, logging high angle wells and hole cleaning
- Illustrate well control in horizontal wells and multi-laterals
- Identify the various types of survey instruments and the tools used to deflect a wellbore
- Carryout torque and drag calculations and discuss drilling fluids, turbodrills and measurement while drilling (MWD)
- Illustrate formation evaluation, kick detection and response and well killing in horizontal wells
- Determine general considerations for BOP equipment, cementing, drilling problems in horizontal and multilateral wells, control over borehole trajectory and tools used to deflect a wellbore
- Describe freeing stuck pipe, baking-off the drill string, fishing and milling
- Discuss the sidetracking and lost circulation as well as productivity of horizontal and multilateral wells
- Recognize the influence of well eccentricity and formation damage

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 conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of directional, horizontal and multilateral drilling for drilling engineers, reservoir engineers, geologists, production and completion engineers and supervisors.

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 Fee


Al Khobar	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.
Dubai	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 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 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

0730 – 0800	<i>Registration and Coffee</i>
0800 – 0815	<i>Welcome & Introduction</i>
0815 – 0830	PRE-TEST
0830 – 0900	<i>Overview of Horizontal & Multilateral Well Technology</i>
0900 – 0930	<i>Horizontal & Multilateral Wells & Reservoir Concerns</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Horizontal & Multilateral Well Design</i>
1030 – 1115	<i>Applications for Directional Drilling</i>
1115 – 1145	<i>Directional Profiles</i>
1145 – 1230	<i>Extended Reach Wells</i>
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Directional Measurement & Surveying</i>
1315 – 1345	<i>Survey Calculations & Accuracy</i>
1315 – 1400	<i>Dogleg Severity Calculations & Problems Associated with</i>
1400 – 1420	<i>Planning Directional & Horizontal Wells</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day One</i>

Day 2

0730 – 0815	<i>Horizontal Drilling Methods & Applications</i>
0815 – 0845	<i>Kicking Off the Well</i>
0845 – 0930	<i>Drilling the Tangent Section</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Dropping Hole Angle</i>
1030 – 1100	<i>Logging High Angle Wells</i>
1100 – 1145	<i>Holecleaning</i>
1145 – 1230	<i>Well Control in Horizontal Wells</i>
1230 – 1245	<i>Break</i>
1245 – 1315	<i>Multi-laterals</i>
1315 – 1345	<i>Types of Survey Instruments</i>
1345 – 1400	<i>Tools Used to Deflect a Wellbore</i>
1400 – 1420	<i>Torque & Drag Calculations</i>
1420 – 1430	Recap
1430	<i>Lunch & End of Day Two</i>

Day 3

0730 – 0815	<i>Drilling Fluids</i>
0815 – 0845	<i>Turbodrills</i>
0845 – 0930	<i>Measurement While Drilling (MWD)</i>
0930 – 0945	<i>Break</i>
0945 – 1030	<i>Formation Evaluation</i>
1030 – 1115	<i>Kick Detection & Response</i>
1115 – 1145	<i>Well Killing in Horizontal Wells</i>
1145 – 1230	<i>General Considerations for BOP Equipment</i>

1230 – 1245	Break
1245 – 1315	Cementing
1315 – 1345	Drilling Problems in Horizontal & Multilateral Wells
1345 – 1400	Control Over Borehole Trajectory
1400 – 1420	Tools Used to Deflect a Wellbore
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4

0730 – 0830	Freeing Stuck Pipe
0830 – 0930	Baking-off the Drill String
0930 – 0945	Break
0945 – 1045	Fishing & Milling
1045 – 1145	Sidetracking & Lost Circulation
1145 – 1230	Productivity of Horizontal & Multilateral Wells
1230 – 1245	Break
1245 – 1315	Influence of Well Eccentricity
1315 – 1345	Formation Damage
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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