COURSE OVERVIEW DE0490(DP1)
Directional Drilling

Course Title
Directional Drilling

Course Reference
DE0490(DP1)

Course Duration/Credits
Five days/3.0 CEUs/30 PDHS

Course Date/Venue

Session(s)	Date	Venue
1	April 21-25, 2024	Oryx Meeting Room, DoubleTree By Hilton Doha-Al Sadd, Doha, Qatar
2	May 26-30, 2024	
3	September 08-12, 2024	
4	November 17-21, 2024	

Course Description

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

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

The course will provide participants with necessary skills to plan and execute the drilling of directional 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 practical learning using videos.

Specific problems associated with directional drilling such as torque, drag, hole cleaning, logging, and drill string component design are included. Participants will receive instruction on planning and evaluating directional wells based on the objectives of the well. 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 a comprehensive knowledge on directional drilling
- Discuss the directional drilling and terminology of fundamentals, applications limitations including its, well objectives, target issues and well planning positioning and coordinate systems
- Employ systematic techniques on survey calculation methods, anti-collision and well planning, and advanced well planning covering survey surveying tools, MWD, LWD and mudlogging
- Identify downhole equipment that include drilling tools, deflection methods, drilling motors, BHA design and rotary steerable systems
- Illustrate well planning and path design including directional well path design, horizontal well planning and calculations, horizontal drilling planning, drill sting design torque, drag, shocks and vibrations
- Carryout hole cleaning and discuss wellbore stability and geo-steering
- Recognise directional drilling problems and its solutions

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 drilling for drilling engineers, wellsite geologist and operation geologists.

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.

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.

Course Accreditations

Certificates are accredited by the following international accreditation organizations: -

- 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 **3.0 CEUs** (Continuing Education Units) or **30 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.

- 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 Fee

US$ 8,500 per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

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

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:

Mr. Sigve Hamilton MSc, BSc, is a **Senior Reservoir Engineer & Geologist** with over **20 years** of **onshore & offshore** experience within the **Oil & Gas**, **Refinery** and **Petroleum** industries. His specialization widely covers in the areas of **Sedimentology** & **Sequence Stratigraphy** Analysis, **Seismic Sequence Stratigraphy**, **Depositional Environments**, **Stratigraphic** Modeling, **High-resolution Sequence Stratigraphy**, **Geophysical** Characterization of **Sedimentary Rocks**, **Sedimentary** & **Reservoir Rocks**, **Petrophysical Reservoir Rocks**, **Rock** Mechanics, **Rock Properties**, **Reservoir Distribution** & **Geometry**, Quantitative Prediction of **Source Rocks & Reservoir**, **Carbonate Rocks & Siliciclastic Rocks**, Applied **Rock Mechanics**, **Rock Physics**, **Petroleum Geology**, **Play Assessment & Prospect Evaluation**, **Oil In Place** (**OIP**) **Estimation & Range of Uncertainty**, **Enhanced Oil Recovery**, **Reservoir** Engineering & Management, **Reservoir** Simulation, **Reservoir** Geophysics, **Naturally Fractured Reservoir**, Special Core Analysis, **Integrated Production** System, **Drilling Fluids** Technology, **Fluid Flow**, Fluid Mechanics, **Drilling Fluids** Technology, **Fluid Separation & Processing** Techniques, **Network** Design, **Network** Optimization, **Advanced Drilling** Operation Management, **Drilling Fluid** Technology, **Directional & Horizontal Drilling**, **Drilling** Optimization & Well Planning, **Drilling** Operation Management, **Drilling** Control & Operation, **Drilling & Completion** Design, **Drilling & Stuck Pipe** Prevention, **Gas Lift** Operations, **Gas Lift** Design & Technology, **Production** Technology, **Production Logging**, **Well Logging**, **Well Test** Analysis, **Well Testing** Procedures & Evaluation, **Well** Performance & **Control**, **Wellhead** Operations, **Wellhead** Design, **Tubing Design & Casing**, **Well Production** Optimization, **Well Control & Blowout** Prevention, **Coiled Tubing** Technology, **Coring & Core** Analysis, **Core & Log Integration**, **Core Logging**, **Carbonate & Seismic Sequence** Stratigraphy, **Completion & Casing** Design, **CO_2 & Injection** System, **Fracture** Characterization & Modelling, **PVT** Analysis, **Fluid** Mechanics, **Fluid** Dynamics, Water Shutoff, **Water Injection** Technology, **Water Flooding**, **Petroleum** Engineering, **Petroleum** Physics, **Petroleum** Data Management, **Petroleum** Exploration, **Streamline** Simulation, **Artificial Lift** Design, **Subsurface Production** Operation, **Rig** Inspection, **Logging**, **Hydraulic & Pneumatic**, Heterogeneity Modelling for Reservoir Characterization, Prosper, **2D & 3D Geological** Modelling, Property & Heterogeneity Modelling, IRAP RMS Streamlines, Grid Design & Upscaling for Reservoir Simulation and MBAL, Prosper and GAP Software,

During his career life, Mr. Hamilton held significant positions and dedication as the **Petroleum Engineer**, **Drilling Engineer**, **Petroleum/QHSE Engineer**, **Reservoir Engineer**, **Field Manager**, **Laboratory Engineer**, **Mudlogging Geologist**, **Geoscientist**, **Geologist**, **Petrophysicist**, **Petroleum/Production Engineer & Consultant**, **Project Engineer/Risk Advisor**, **Petroleum Consultant/Advisor**, **Inspector/Study Leader** and **Senior Instructor/Lecturer** from various companies and universities such as the University of Akureyri (UNAK), Stavanger Offshore Technical School, Akademiet, Peteka, FMC Technologies, Gerson Lehrman Group, Ocean Rig, Oilfield Technology Group, Talisman, IOR Chemco, Geoservices, ResLab and Roxar.

Mr. Hamilton has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Reservoir Engineering** from **The University of Stavanger**, **Norway**. Further, he is a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**) and delivered numerous trainings, workshops, courses, seminars and conferences internationally.

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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0915	***Directional Drilling Fundamentals & Terminology*** *Fundamentals ● Applications ● Limitations ● Terminology*
0915 – 0930	*Break*
0930 – 1130	***Directional Drilling Fundamentals & Terminology (cont'd)*** *Well Objectives ● Target Issues • Well Planning (Positing & Coordinate Systems)*
1130 –1215	***Surveying & Advanced Well Planning*** *Survey Calculation Methods ● Anti-Collision ● Well Planning*
1215 – 1230	*Break*
1230 – 1420	***Surveying & Advanced Well Planning (cont'd)*** *Surveying Tools ● MWD, LWD & Mudlogging*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0915	***Downhole Equipment*** *Drilling Tools & Deflection Methods*
0915 – 0930	*Break*
0930 – 1100	***Downhole Equipment (cont'd)*** *Drilling Motors Overview*
1100 – 1215	***Downhole Equipment (cont'd)*** *BHA Design*
1215 – 1230	*Break*
1230 – 1420	***Downhole Equipment (cont'd)*** *Rotary Steerable Systems*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0915	***Well Planning & Path Design*** *Directional Well Path Design • Horizontal Well Planning & Calculations*
0915 – 0930	*Break*
0930 – 1100	***Well Planning & Path Design (cont'd)*** *Horizontal Drilling Planning*
1100 – 1215	***Well Planning & Path Design (cont'd)*** *Drill String Design*

1215 – 1230	*Break*
1230 – 1420	***Well Planning & Path Design (cont'd)*** *Torque • Drag • Shocks • Vibration*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0915	***Hole Cleaning & Wellbore Stability*** *Hole Cleaning*
0915 – 0930	*Break*
0930 – 1100	***Hole Cleaning & Wellbore Stability (cont'd)*** *Well Bore Stability*
1100 – 1215	***Hole Cleaning & Wellbore Stability (cont'd)*** *Well Bore Stability (cont'd)*
1215 – 1230	*Break*
1230 – 1420	***Hole Cleaning & Wellbore Stability (cont'd)*** *Introduction to Multilateral Wells*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0915	***Geo-steering***
0915 – 0930	*Break*
0930 – 1100	***Geo-steering (cont'd)***
1100 – 1215	***Directional Drilling Problems & Solutions***
1215 – 1230	*Break*
1230 – 1345	***Directional Drilling Problems & Solutions (cont'd)***
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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