COURSE OVERVIEW DE0300
Integration of Rocks, Log & Test Data

Course Title
Integration of Rocks, Log & Test Data

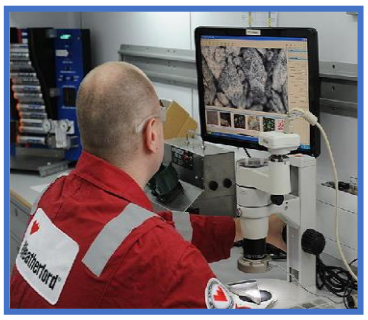
Course Reference
DE300

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

Course Date/Venue

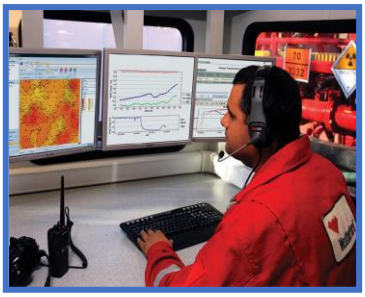
Session(s)	Date	Venue
1	April 28-May 02, 2024	Oryx Meeting Room, DoubleTree By Hilton Doha-Al Sadd, Doha, Qatar
2	September 22-26, 2024	
3	December 08-12, 2024	

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.

Well logs have become an indispensable tool for evaluating hydrocarbon reservoirs. But, taken alone, they are not the complete answer; indeed, they sometimes can be very misleading. This course will show you how to avoid the common errors in formation evaluation by collecting and integrating all the data you need into a reliable model of your reservoir. How can you identify ineffective porosity? Confronted by shale sand, what's the first question you should ask? Which shale sand equation should you use? What does a karstic reservoir look like? How can it be evaluated? Is your value of porosity reliable? Is the water saturation correct? Can you be sure of your fluid contacts? The instructor uses clear and easy-to understand power-point slides and loads of practical examples, livened with entertaining anecdotes from a lifetime's experience in the oil-patch.



Which tools to use to evaluate your reservoir, and what their limitations are. How to combine all the information—from all your wells—using methods which optimize the data you need to model your reservoir and estimate reserves: porosity, saturation, net pay, permeability and fluid distribution. When you can use core data to calibrate your logs – and when you can't. You will work on examples from a wide variety of formation types—shale sands, granular carbonates, karsts—from all over the world. You will learn how to use modern high-tech methods—FMS, MDT, NMR, LWD—and when they are a waste of time and money.

This course will teach you how to evaluate reservoirs and quickly identify flawed results. Robust, minimum error reserves are achieved by a logical, systematic integration of all relevant data. Interpretation is cost-effective compared with data acquisition or development mistakes and essential for the complex reservoirs and marginal fields being re-evaluated today. Systematic integration can often replace the need to run logs and explain apparent data conflicts. It provides the right answer faster, minimizes uncertainty and precludes criticism. By contrast stand-alone log analysis often results in bad economic decisions and bad personal reputations.

Further, this course demonstrates through an experienced consultant how robust answers are achieved by the integration of diverse data. Basic economic questions are addressed head-on by a disciplined, logical process which optimizes the interpretation of porosity, permeability, saturation, net pay, and fluid contacts - the basis of reserves. Low contrast low resistivity pay (LCLRP) classics and carbonates are evaluated by simple integration techniques which surpass stand-alone log analysis. LWD, wireline, NMR, image logs, routine core, special core and MDTs are brought innovatively together to interpret difficult exploration wells, improve reservoir simulation and typically increase reserves. The seismic petrophysics work flow to project these results into inter-well regions is then reviewed. This course is a condensed packet of powerful integration techniques and it will fully integrate data sets to understand reservoir performance.

Course Objectives

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

- Apply an in-depth knowledge on the integration of rocks, logs and test data
- Solve complex reservoir evaluation and productivity problems in exploration through understanding rock properties, logging tools and engineering data
- Identify rock properties, basic log analysis and logging tools
- Differentiate formation water resistivity, water saturated resistivity and resistivity saturation
- Define contacts, fluid zone and capillary pressure
- Perform seismic petrophysical integration and report results

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 integration of rocks, log and test data for paraphysicists, reservoir engineers and geologists.

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.

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: -

- 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.

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 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. Stan Constantino, MSc, BSc, is a **Senior Petroleum & Reservoir Engineer** with over **40 years** of **Offshore & Onshore** extensive experience within the **Oil, Gas & Petroleum** industries**.** His area of expertise include **Cased Hole Logging**, Advanced Petrophysics/Interpretation of **Cased Hole Logs**, **Cased Hole Formation Evaluation**, **Cased Hole Formation** Evaluation, **Cased Hole Evaluation**, **Cased-Hole Logging**, Applied **Production Logging & Cased Hole & Production Log** Evaluation, **Cased Hole Logging & Formation** Evaluation, Open & Cased Hole Logging, **Fractured Reservoir** Classification & Evaluation, Screening of Oil Reservoirs for **Enhanced Oil Recovery**, **Oil Reservoir** Evaluation & Estimation, **Reserves & Resources**, **Reserves Estimation** & **Uncertainty**, **Reserve** Evaluation, **OIP Estimation & Range** of **Uncertainty**, **Reservoir** Characterization, **Water Flooding**, **Reservoir** Souring & Water Breakthrough, **Reservoir Performance** Using Classical Methods, **Fractured Reservoir** Evaluation & Management, **Reservoir Surveillance** & Management, **Reservoir Engineering** & Simulation, **Reservoir Monitoring**, **Pressure Transient** Testing & **Reservoir** Performance Evaluation, **Reservoir** Characterization, **Reservoir** Engineering Applications with ESP & Heavy Oil, **Reservoir** Volumetrics, Water Drive **Reservoir**, **Unconventional Resource & Reserves** Evaluation, **Oil & Gas Reserves** Estimation, **Petrophysics & Rock** Properties**, Seismic** Technology, **Geological** Modelling, **Water Saturation**, **Crude Oil & Natural Gas** Demand, **Exploration Agreements & Financial** Modelling, **Seismic Survey** Evaluation, **Exploration Well** Identification, **Field Production** Operation, **Field Development** Evaluation, Crude Oil Marketing, **Core & Log Data** Integration, **Core Logging**, Advanced **Core & Log Integration**, **Well Logs & Core Analysis**, **Enhanced Oil Recovery**, **Enhanced Oil Recovery** Techniques, **Petroleum Economic** Analysis, **Oil Industry** Orientation, **Oil Production & Refining**, **Crude Oil Market**, **Global Oil Supply & Demand**, **Global Oil Reserves**, **Crude Oil** Types & Specifications, **Oil Processing**, **Oil Transportation-Methods**, **Oil & Gas** Exploration and Methods, **Oil & Gas** Extraction, Technology Usage in Industrial Security; **Upstream**, **Midstream** & **Downstream Operations**; **Oil Supply & Demand**, **Oil Contracts**, **Government Legislation & Oil Contractual Agreements**, **Oil Projects** & Their Feasibility (revenue and profitability), Rock & Fluid Properties, Fluid Flow Mechanics, PVT Analysis, Material Balance, Darcy's Law & Applications, Radial Flow, **Gas Well** Testing, Natural Water Influx, EOR Methods, Directional Drilling, **Drilling** Production & Operations, Field Development & Production of Oil & Gas, **Wireline Logging**, **Mud Logging**, **Production Logging**, **Slick Line**, **Coil Tubing**, Exploration Wells Evaluation, **Horizontal Wells**, **Well Surveillance**, **Well Testing**, **Design & Analysis**, **Well Testing & Oil Well Performance**, **Well Log Interpretation** (**WLI**), **Formation Evaluation**, **Well Workover Supervision**, **Pressure Transient Analysis** and **Petrophysical Log Analysis**. Currently, he is the **CEO** & **Managing Director** of **Geo Resources Technology** wherein he is responsible in managing the services and providing technical supports to underground energy related projects concerning **field development**, **production**, **drilling**, **reservoir engineering** and **simulation**.

Throughout his long career life, Mr. Stan has worked for many international companies such as the **Kavala Oil**, **North Aegean Petroleum Company** and **Texaco Inc.**, as the **Managing Director**, **Operations Manager**, **Technical Trainer**, **Training Consultant**, **Petroleum Engineering & Exploration Department Head**, **Assistant Chief Petroleum Engineer**, **Reservoir Engineer, Resident Petroleum Engineer**, **Senior Petroleum Engineer** and **Petroleum Engineer** wherein he has been managing the evaluation of exploration wells, reservoir simulation, development training, production monitoring, wireline logging and well testing including selection and field application of well completion methods.

Mr. Stan has a **Master's** degree in **Petroleum Engineering** and a **Bachelor's** degree in **Geology** from the **New Mexico Institute of Mining & Technology** (**USA**) and from the **Aristotelian University** (**Greece**) respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership of Management (ILM**) and a member of the Society of Petroleum Engineers, USA (**SPE**), Society of Well Log Professional Analysts, USA (**SPWLA**) and European Association of Petroleum Geoscientists & Engineers (**EAGE**). Moreover, Mr. Stan published numerous scientific and technical papers and delivered various trainings, courses and workshops worldwide.

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 – 0900	***Introduction***
0900 – 0930	***Rock Properties***
0930 – 0945	*Break*
0945 – 1030	***Basic Log Analysis***
1030 – 1130	***Logging Tools***
1130 – 1215	***Data Preparation***
1215 – 1230	*Break*
1230 – 1330	***Lithology & Clay Content: Vcl , Vsh***
1330 – 1420	***Porosity Core Sampling***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***Formation Water Resistivity: Rw***
0830 – 0930	***Water Saturated Resistivity: Ro***
0930 – 0945	*Break*
0945 – 1115	***Resistivity Saturation: Swrt***
1115 – 1215	***Shaly Sand Swrt***
1215 – 1230	*Break*
1230 – 1330	***Core Saturations***
1330 – 1420	***Magnetic Resonance Saturation, Swmr***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Contacts, Fluid Zones & Capillary Pressure*** *Pressure Data*
0930 – 0945	*Break*
0945 – 1115	***Permeability: k***
1115 – 1215	***Capillary Pressure Saturation, Swpc***
1215 – 1230	*Break*
1230 – 1330	***Reconciliation of Swrt via n*** *SW Calculation*
1330 – 1420	***Saturation Derivatives***
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***Base Case Saturation - The Sw Decision Tree***
0930 – 0945	*Break*
0945 – 1115	***Netpay and Netrock: N:G***
1115 – 1215	***Uncertainty***

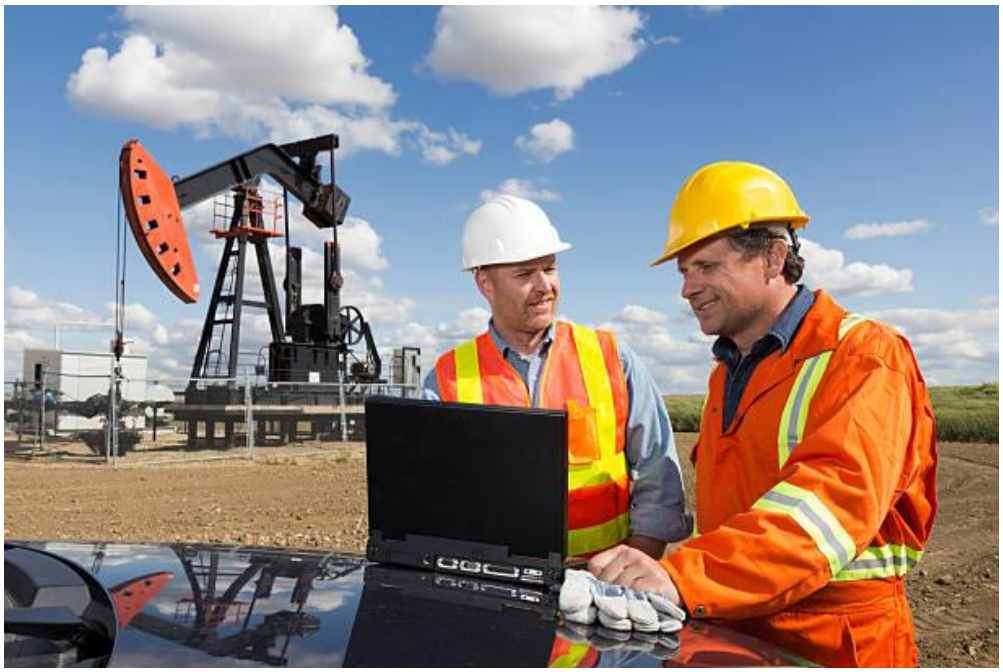
1215 – 1230	Break
1230 – 1330	***Seismic Petrophysical Integration***
1330 – 1420	***Reporting Results***
1420 – 1430	***Recap***
1430	Lunch & End of Day Four

Day 5

0730 – 0930	***Why Integrate?***
0930 – 0945	Break
0945 – 1115	***Formation Evaluation Recommendations***
1115 – 1215	***Case History: Low Porosity Resistivity***
1215 – 1230	Break
1230 – 1345	***Equations***
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

Jaryl Castillo, Tel: +974 4423 1327, Email: jaryl@haward.org