COURSE OVERVIEW DE0171
PTA/RTA Foundation

Course Title
PTA/RTA Foundation

Course Date/Venue
Session 1: February 02-06, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar
Session 2: August 03-07, 2025/Meeting Plus 8, City Centre Rotana Doha Hotel, Doha, Qatar

Course Reference
DE0171

Course Duration/Credits
Five days/3.0 CEUs/30 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 basic and up-to-date overview of pressure transient analysis/rate transient analysis (PTA/RTA). It covers the basic theory of diffusion PTA/RTA; the basic principles and terminology governing both methods; the Darcy's law and the equation of state leading to the diffusivity equation; the principle of superposition, infinite-acting radial flow, wellbore storage and skin and pseudo-steady state; the PTA methodology from the simple straight line horner to the current model-on-the-fly bourdet derivative; the quality control process before making an analysis; and the basic Saphir features including the interpretation path of load, edit, synchronizing, model, classical methods, derivative and the application to field examples.

Further, the course will also discuss the well models comprising of vertical wells, skin, finite/infinite conductivity fractures, limited entry and horizontal wells; the reservoir models covering homogenous and heterogeneous models behavior including 2Φ, 2κ and composite; the boundary models that include single limit, intersecting, parallel faults and closed system; and the typical errors encountered when diagnosing a boundary effect with an illustration of superposition effects and the influence of production duration on the analysis.

During this interactive course, participants will learn the use of pseudopressures and multiple period analysis for rate dependent skin; the IPR AOF options in Saphir and the connection to the amethyste WPA module; the test objectives and designing a test to achieve them; the methodology from the basic empirical methods including Arps and Fetkovich to the current modern Blasingame, material balance and loglog diagnostic plots; the basic Topaze features including the interpretation path of load, edit, model, p(q), q(p), fast model and application to field examples; the principle of the linear (single phase) numerical model and how to build a model; and the well type, composite zones, faults and thickness.

Course Objectives

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

- Apply and gain a basic knowledge on pressure/rate transient analysis
- Discuss the basic theory of diffusion PTA/RTA as well as the basic principles and terminology governing both methods
- Describe Darcy's law and the equation of state leading to the diffusivity equation
- Explain the principle of superposition, infinite-acting radial flow, wellbore storage and skin and pseudo-steady state
- Carryout PTA methodology from the simple straight line horner to the current model-on-the-fly bourdet derivative
- Apply quality control process before making an analysis as well as discuss the basic Saphir features including the interpretation path of load, edit, synchronizing, model, classical methods, the derivative and the application to field examples
- Identify well models comprising of vertical wells, skin, finite/infinite conductivity fractures, limited entry and horizontal wells
- Describe reservoir models covering homogenous and heterogeneous models' behavior including 2Φ, 2κ and composite
- Recognize boundary models that include single limit, intersecting, parallel faults and closed system
- Determine the typical errors encountered when diagnosing a boundary effect with an illustration of superposition effects and the influence of production duration on the analysis
- Use pseudo pressures and multiple period analysis for rate dependent skin
- Explain the IPR AOF options in Saphir and the connection to the amethyst WPA module
- Discuss test objectives and design a test to achieve them
- Apply methodology from the basic empirical methods including Arps and Fetkovich to the current modern Blasingame, material balance and loglog diagnostic plots
- Recognize the basic Topaze features including the interpretation path of load, edit, model, p(q), q(p), fast model and application to field examples
- Discuss the principle of the linear (single phase) numerical model and how to build a model
- Define the well type and identify composite zones, faults and thickness

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 a basic and up-to-date overview of pressure/rate transient analysis for production engineers, reservoir engineers, production, operations, petroleum and reservoir engineers, geologists, analysts field personnel, senior and field supervisors with an engineering background and analysts involved with the design, supervision and interpretation of well tests who need to obtain a better understanding of the advanced practices used in pressure transient tests and its advanced interpretation models.

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 Fees

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.

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. Giovanni Da Prat, PhD, MSc, BSc, is a **Senior Petroleum & Reservoir Engineer** with **40 years** of industrial experience within the **Oil & Gas, Petrochemical and Refinery** industry. His expertise widely covers in the areas of Advanced **Well Testing**, **Well Testing** for Injector Wells, Pressure & Rate Transient Analysis (**PTA/RTA**) Methods, **Well Test Analysis & Saphir Application**, **Formation Evaluation Results & Reservoir** Engineering, Multi-Rate Test Evaluation, Production & Back Pressure Tests, **Production** Engineering, Interpretation of **Pressure Tests**, **Pressure Data Quality** Control, **Pressure Transient Data** Acquisition & Analysis, **Decline Curve** Analysis, **Layered Reservoir** Evaluation, **Pressure Test** History Simulation, **Deconvolution** Method, Pseudo Pressure & Pseudo Time, Unconventional **Reservoirs**, **Reservoir** Engineering & Management, **Well Test** Engineering, **Analytical Interpretation** Model, Nonlinear Numerical Interpretation Model, **Oil & Gas Wells**, **Well Test** Design & Interpretation, Exploratory Wells Evaluation Methodology, Advanced **Well Test** Analysis, DST Testing (Offshore), **Field Testing** Program Design, Testing **Naturally Fractured Reservoirs** Detection & Evaluation, **Integrated Reservoir** Management, **Integrated Carbonate Reservoir** Characterization, Unconventional **Shale Oil & Gas Resources**, **Nodal** Analysis, **Seismology**, **Fracture** Characterization & Modelling, **Natural Gas**, Completion, **Geophysics**, **Integrated Petrophysics**, **Directional Drilling**, **Formation** Evaluation, Falloff Testing, **Production** Systems, **Laboratory Seismic Methods** for **Remote Monitoring** of **Thermal EOR**, **Artificial Lift** and **Logging**.

During his career life, Dr. Da Prat has gained his practical and field experience through his various significant positions and dedication as the **Unit Production Head**, **District Reservoir Engineer**, **Regional Reservoir Engineer**, **Reservoir Engineer** and **Well Testing Consultant & SPE Global Instructor** for numerous international companies like **Schlumberger**, **Halliburton**, GeoQuest, Intevep, PDVSA and DA PRAT Well Testing.

Dr. Da Prat has a **PhD** degree in **Petroleum Engineering**, a **Master** degree in **Geophysics** and a **Bachelor** degree in **Physics** from the **Stanford University**, **USA** and Universidad Central de Venezuela, respectively. Further, he is a **Certified Instructor/Trainer**, an **SPE Distinguished Lecturer** and has been the author and co-author of over a hundred technical articles, about 25 are SPE technical articles which are available in OnePetro, and all of them have been presented at ATCE, LACPEC and other related SPE conferences. He has further delivered numerous trainings, courses, seminars and workshops 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 – 0930	***Introduction to PTA & RTA*** *When do we Perform PTA or RTA?*
0930 – 0945	*Break*
0945 – 1130	***Basic Theory of Diffusion PTA/RTA*** *The Basic Principles & Terminology Governing both Methods ● Introduction to Darcy's Law & the Equation of State Leading to the Diffusivity Equation*
1130 – 1230	***Basic Theory of Diffusion PTA/RTA (cont'd)*** *The Principle of Superposition, Infinite-Acting Radial Flow, Wellbore Storage & Skin & Pseudo-Steady State*
1230 – 1245	*Break*
1245 - 1420	***PTA Methodology*** *Methodology from the Simple Straight-Line Horner to the Current Model-on-the-fly Bourdet Derivative*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***QA/QC*** *The Quality Control Process before Making an Analysis*
0930 – 0945	*Break*
0945 – 1130	***Saphir Practical*** *The Basic Saphir Features including the Interpretation Path of Load ● Edit ● Synchronizing ● Model*
1130 – 1230	***Saphir Practical*** *Classical Methods ● The Derivative ● The Application to Field Examples*
1230 – 1245	*Break*
1245 - 1420	***Well Models*** *Vertical Wells ● Skin ● Finite/Infinite Conductivity Fractures ● Limited Entry ● Horizontal Wells*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Reservoir Models*** *Homogenous & Heterogeneous Models Behavior Including 2Φ, 2κ & Composite*
0930 – 0945	*Break*
0945 – 1130	***Boundary Models*** *Single Limit, Intersecting, Parallel Faults & Closed System*
1130 – 1230	***Boundary Models (cont'd)*** *Typical Errors Encountered when Diagnosing a Boundary Effect with an Illustration of Superposition Effects ● The Influence of Production Duration on the Analysis*

1230 – 1245	*Break*
1245 - 1420	***Basic Gas Tests*** *The Use of Pseudopressures & Multiple Period Analysis for Rate Dependant Skin Includes an Isochronal Test Example*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

0730 – 0930	***IPR AOF*** *The IPR AOF Options in Saphir & the Connection to the Amethyste WPA Module*
0930 – 0945	*Break*
0945 – 1130	***Test Design*** *Test Objectives & How to Design a Test to Achieve Them*
1130 – 1230	***RTA Methodology*** *Methodology from the Basic Empirical Methods including Arps & Fetkovich to the Current Modern Blasingame*
1230 – 1245	*Break*
1245 - 1420	***RTA Methodology (cont'd)*** *Material Balance & Loglog Diagnostic Plots*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0930	***Topaze Practical*** *The Basic Topaze Features including the Interpretation Path of Load ● Edit ● Model ● p(q)*
0930 – 0945	*Break*
0945 – 1130	***Topaze Practical (cont'd)*** *q(p) ● Fast Model ● Application to Field Examples*
1130 – 1230	***Basic Numerical PTA/RTA*** *The Principle of the Linear (Single Phase) Numerical Model ● How to Build a Model ● Defining the Well Type ● Composite Zones ● Faults & Thickness*
1230 – 1245	*Break*
1245 - 1345	***An Introduction to Advanced Features***
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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