



COURSE OVERVIEW DE0114

Subsurface Evaluator: Reservoir Surveillance & Monitoring Strategies

Course Title

Subsurface Evaluator: Reservoir Surveillance & Monitoring Strategies

Course Date/Venue

January 04-08, 2026/TBA Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference

DE0114

Course Duration/Credits

Five days/3.0 CEUs/30 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 detailed and up-to-date overview of Subsurface Evaluator: Reservoir Surveillance & Monitoring Strategies. It covers the reservoir surveillance, reservoir characterization essentials and reservoir fluids and flow dynamics; the objectives of surveillance programs and data sources for reservoir monitoring; the surveillance planning and strategy, production data analysis (PDA) and well testing and pressure transient analysis (PTA); the permanent downhole monitoring systems, surveillance using tracers and 4D seismic monitoring; the advanced logging techniques and data management; and the quality control, integrated reservoir surveillance and reservoir simulation for surveillance.



During this interactive course, participants will learn the material balance and surveillance linkage, surveillance in waterflooded reservoirs and uncertainty and risk in surveillance; the smart wells and intelligent completions, enhanced oil recovery (EOR) surveillance and artificial lift surveillance; the machine learning in surveillance, integrated asset management and regulatory and economic aspects; the field development and surveillance link, digital oilfield and IoT applications and emerging technologies; the workflow for surveillance planning and key performance indicators (KPIs); and the surveillance plan templates and post-implementation review.

Course Objectives

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

- Get certified as a “*Certified Subsurface Evaluator*”
- Discuss reservoir surveillance, reservoir characterization essentials and reservoir fluids and flow dynamics
- Explain the objectives of surveillance programs and data sources for reservoir monitoring
- Carryout surveillance planning and strategy, production data analysis (PDA) and well testing and pressure transient analysis (PTA)
- Recognize permanent downhole monitoring systems and apply surveillance using tracers, 4D seismic monitoring and advanced logging techniques
- Employ data management and quality control, integrated reservoir surveillance and reservoir simulation for surveillance
- Discuss material balance and surveillance linkage, surveillance in waterflooded reservoirs and uncertainty and risk in surveillance
- Apply smart wells and intelligent completions, enhanced oil recovery (EOR) surveillance and artificial lift surveillance
- Carryout machine learning in surveillance, integrated asset management and regulatory and economic aspects
- Describe field development and surveillance link, digital oilfield and IoT applications and emerging technologies
- Illustrate workflow for surveillance planning, key performance indicators (KPIs), surveillance plan templates and post-implementation review

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 reservoir surveillance and monitoring strategies for reservoir evaluators, reservoir engineers, petroleum engineers, geoscientists, production engineers, field engineers and operations staff, technical project managers in oil and gas, graduate engineers in reservoir management, asset managers in oil and gas, geologists and petrophysicists, data managers and IT professionals in oil and gas, geoscience technicians and other technical staff.

Course Fee

US\$ 8,000 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)

- (1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a “*Certified Subsurface Evaluator*”. Certificates are valid for 5 years.

Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of the certificates that will be awarded to course participants: -





- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

** Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology **

Haward Technology Middle East
Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-24
HTME No. 74851
Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
DE0114	Subsurface Evaluator: Reservoir Surveillance & Monitoring Strategies	Nov 10-14, 2024	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY
Jaryl Castillo
Jaryl Castillo
Academic Director

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

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org


** Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology **

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

Haward's certificates are accredited by the following international accreditation organizations: -

- 
British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

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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 **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.

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:



Dr. Hesham Abdou, PhD, MSc, BSc, is a **Senior Drilling & Petroleum Engineer** with over **30 years** of integrated industrial and academic experience as a **University Professor**. His specialization widely covers in the areas of **Drilling & Completion Technology, Directional Drilling, Horizontal & Sidetracking, Drilling Operation Management, Drilling & Production Equipment, ERD Drilling & Stuck Pipe Prevention, Carbonate Reservoirs, Integrating Geoscience into Carbonate Reservoir, Reservoir Geophysics, Volatile Oil Reservoirs, Evaluation & Management of Fractured Reservoirs, Applied Reservoir Engineering & Management, Reservoir Performance Evaluation, Reservoir Engineering, Smart Completion & Selective Reservoir, Well Flow Modelling in Gas Condensate Reservoir, Wellhead Testing & Operations, Natural & Artificial Flow Well Completion, Well Testing Procedures & Evaluation, Well Performance, Coiled Tubing Technology, Oil Recovery Methods Enhancement, Well Integrity Management, Well Casing & Cementing, Acid Gas Removal, Heavy Oil Production & Treatment Techniques, Crude Oil Testing & Water Analysis, Crude Oil & Water Sampling Procedures, Equipment Handling Procedures, Crude & Vacuum Process Technology, Gas Conditioning & Processing, Cooling Towers Operation & Troubleshooting, Sucker Rod Pumping, ESP & Gas Lift, PCP & Jet Pump, Pigging Operations, Electric Submersible Pumps (ESP), Progressive Cavity Pumps (PCP), Water Flooding, Water Lift Pumps Troubleshooting, Water System Design & Installation, Water Networks Design Procedures, Water Pumping Process, Pipelines, Pumps, Turbines, Heat Exchangers, Separators, Heaters, Compressors, Storage Tanks, Valves Selection, Compressors, Tank & Tank Farms Operations & Performance, Oil & Gas Transportation, Oil & Gas Production Strategies, Artificial Lift Methods, Piping & Pumping Operations, Oil & Water Source Wells Restoration, Pump Performance Monitoring, Rotor Bearing Modelling, Hydraulic Repairs & Cylinders, Root Cause Analysis, Vibration & Condition Monitoring, Piping Stress Analysis, Amine Gas Sweetening & Sulfur Recovery, Heat & Mass Transfer and Fluid Mechanics.**

During his career life, Dr. Hesham held significant positions and dedication as the **General Manager, Petroleum Engineering Assistant General Manager, Workover Assistant General Manager, Workover Department Manager, Artificial Section Head, Oil & Gas Production Engineer and Senior Instructor/Lecturer** from various companies and universities such as the Cairo University, Helwan University, British University in Egypt, Banha University and Agiba Petroleum Company.

Dr. Hesham has a **PhD and Master** degrees in **Mechanical Power Engineering** and a **Bachelor's** degree in **Petroleum Engineering**. Further, he is a **Certified Instructor/Trainer** and a **Peer Reviewer**. Dr. Hesham is a member of Egyptian Engineering Syndicate and the Society of Petroleum Engineering. Moreover, he has published technical papers and journals and has delivered numerous trainings, workshops, courses, seminars and conferences internationally.

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 Program

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

Day 1: Sunday, 04th of January 2026

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Introduction to Reservoir Surveillance Importance in Hydrocarbon Recovery • Role in Production Optimization • Key Challenges & Limitations • Reservoir Life Cycle Perspective
0930 – 0945	Break
0945 – 1030	Reservoir Characterization Essentials Geological Framework & Heterogeneity • Petrophysical Data Integration • Static versus Dynamic Reservoir Properties • Core Log & Seismic Data Roles
1030 – 1130	Reservoir Fluids & Flow Dynamics Fluid Types & PVT Properties • Multiphase Flow Behavior • Relative Permeability & Capillary Pressure • Impact on Surveillance Strategy
1130 – 1215	Objectives of Surveillance Programs Maximizing Recovery Factors • Identifying Bypassed Hydrocarbons • Monitoring Sweep Efficiency • Supporting Field Development Plans
1215 – 1230	Break
1230 – 1330	Data Sources for Reservoir Monitoring Production Data • Pressure & Temperature Data • Well Logs & Surveys • Seismic & Geophysical Inputs
1330 – 1420	Surveillance Planning & Strategy Establishing Surveillance Objectives • Short-term versus Long-term Monitoring Goals • Surveillance Frequency & Scale • Risk-based Prioritization
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day One

Day 2: Monday, 05th of January 2026

0730 – 0830	Production Data Analysis (PDA) <i>Decline Curve Analysis (DCA) • Material Balance Concepts • Production Allocation Techniques • Application to Reservoir Performance</i>
0830 – 0930	Well Testing & Pressure Transient Analysis (PTA) <i>Types of Well Tests (Drawdown, Buildup, Interference) • Principles of PTA • Diagnostic Plots & Interpretation • Linking to Reservoir Properties</i>
0930 – 0945	Break
0945 – 1100	Permanent Downhole Monitoring Systems <i>Fiber Optic & Gauge Technologies • Data Transmission & Storage • Real-time Surveillance Benefits • Case Studies of PDMS Applications</i>
1100 – 1215	Surveillance Using Tracers <i>Chemical Tracers in Injectors/Producers • Radioactive Tracers • Application in Interwell Connectivity • Limitations & Challenges</i>
1215 – 1230	Break
1230 – 1330	4D Seismic Monitoring <i>Time-lapse Seismic Principles • Detecting Fluid Movement • Data Acquisition & Processing • Integration with Simulation Models</i>
1330 – 1420	Advanced Logging Techniques <i>Pulsed Neutron Logging • Production Logging Tools (PLTs) • Resistivity & Saturation Monitoring • Limitations in High Water Cut Wells</i>
1420 – 1430	Recap <i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow</i>
1430	Lunch & End of Day Two

Day 3: Tuesday, 06th of January 2026

0730 – 0830	Data Management & Quality Control <i>Data Validation Procedures • Real-time Data Handling • Error Sources & Correction • Importance of Metadata</i>
0830 – 0930	Integrated Reservoir Surveillance <i>Linking Geology, Geophysics & Engineering • Cross-disciplinary Workflows • Digital Oilfield Applications • Case Examples</i>
0930 – 0945	Break
0945 – 1100	Reservoir Simulation for Surveillance <i>Role of Simulation in Monitoring • History Matching Concepts • Updating Models with New Data • Predictive Analysis</i>
1100 – 1215	Material Balance & Surveillance Linkage <i>Static versus Dynamic MB Calculations • Estimating OOIP/OGIP • Role of Pressure-volume Relationships • Linking MB to Surveillance Data</i>
1215 – 1230	Break
1230 – 1330	Surveillance in Waterflooded Reservoirs <i>Monitoring Injection Efficiency • Water Breakthrough Prediction • Pattern Balancing • Sweep Efficiency Analysis</i>

1330 – 1420	Uncertainty & Risk in Surveillance Sources of Uncertainty • Probabilistic versus Deterministic Approaches • Sensitivity Analysis • Risk-informed Decisions
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Three

Day 4: Wednesday, 07th of January 2026

0730 – 0830	Smart Wells & Intelligent Completions Downhole Flow Control Devices • Interval Control Valves (ICVs) • Multilateral Well Surveillance • Data-driven Optimization
0830 – 0930	Enhanced Oil Recovery (EOR) Surveillance Surveillance in Polymer Floods • CO ₂ Injection Monitoring • Thermal EOR Strategies • Challenges in Miscible Floods
0930 – 0945	Break
0945 – 1100	Artificial Lift Surveillance ESP Monitoring Techniques • Gas Lift Optimization • Rod Pump Diagnostics • Impact on Reservoir Surveillance
1100 – 1215	Machine Learning in Surveillance Data-driven Predictive Models • Pattern Recognition in Production Data • AI in Well Test Interpretation • Limitations & Reliability
1215 – 1230	Break
1230 – 1330	Integrated Asset Management Linking Surface & Subsurface Surveillance • Production System Modeling • Facility Constraints on Surveillance Strategy • Case Examples
1330 – 1420	Regulatory & Economic Aspects Surveillance Requirements by Regulators • Cost-benefit Analysis • Surveillance-driven Investment Decisions • Reporting & Compliance
1420 – 1430	Recap Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Four

Day 5: Thursday, 08th of January 2026

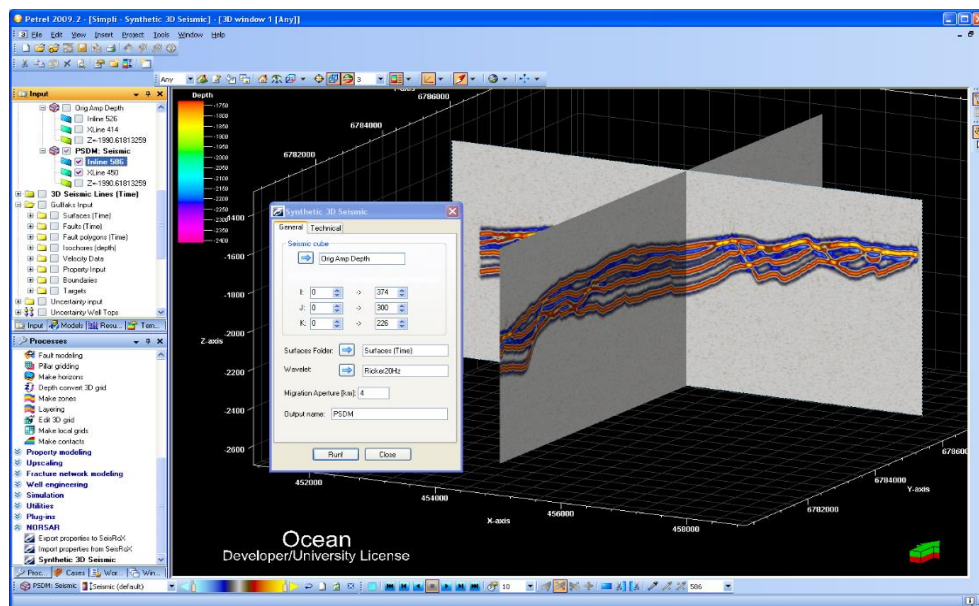
0730 – 0830	Case Studies in Reservoir Surveillance Mature Field Surveillance • Surveillance in Tight Gas/Oil Reservoirs • Offshore versus Onshore Differences • Lessons Learned
0830 – 0930	Field Development & Surveillance Link Role in Full Field Development Planning • Surveillance-driven Infill Drilling • Redevelopment of Mature Reservoirs • Monitoring Unconventional Reservoirs
0930 – 0945	Break
0945 – 1100	Digital Oilfield & IoT Applications Smart Sensors & Real-time Monitoring • Digital Twins for Reservoirs • Cloud-based Data Integration • Future-ready Surveillance
1100 – 1215	Emerging Technologies Nanotechnology for Surveillance • Wireless Sensor Networks • Reservoir Surveillance Drones/Robots • Autonomous Monitoring Systems



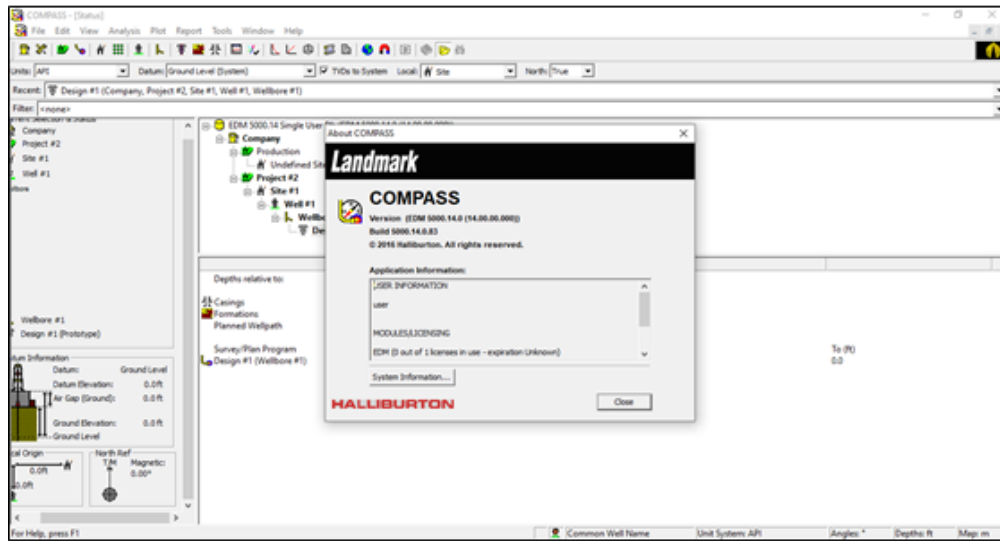
1215 – 1230	Break
1230 – 1300	Designing Surveillance Programs <i>Workflow for Surveillance Planning • Key Performance Indicators (KPIs) • Surveillance Plan Templates • Post-implementation Review</i>
1300 - 1315	Course Conclusion <i>Using this Course Overview, the Instructor(s) will Brief Participants about Topics that were Covered During the Course</i>
1315 – 1415	COMPETENCY EXAM
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

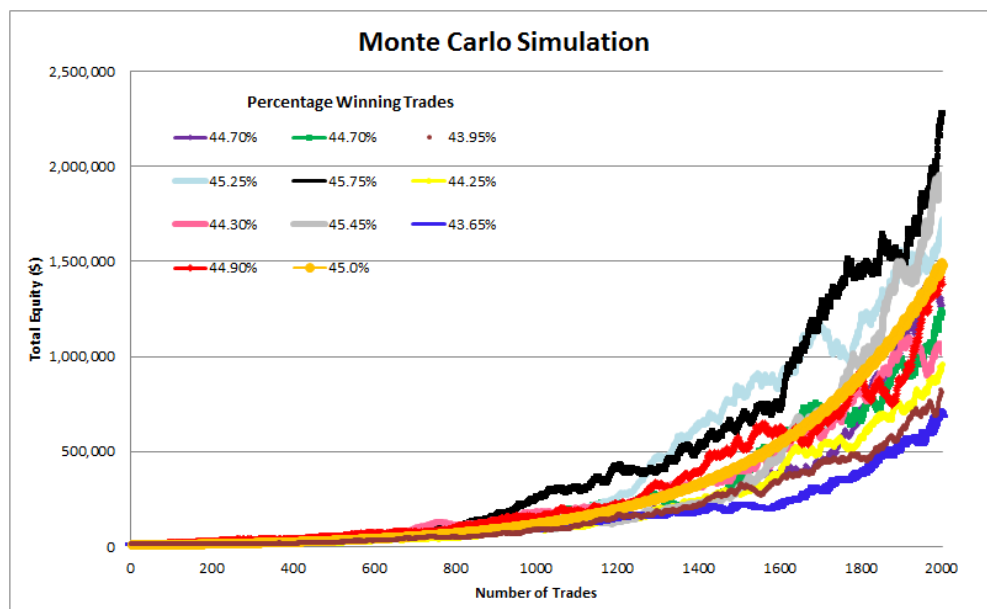
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the “Petrel Software”, “COMPASS”, “Monte Carlo”, “KAPPA”, “Interactive Petrophysics (IP)”, “PIPESIM”, “Eclipse” and “PROSPER” software’s.



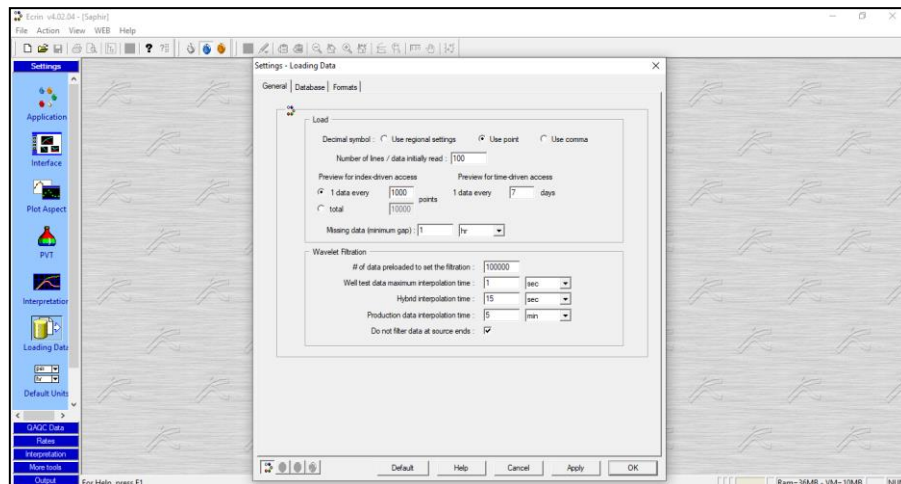
Petrel Software



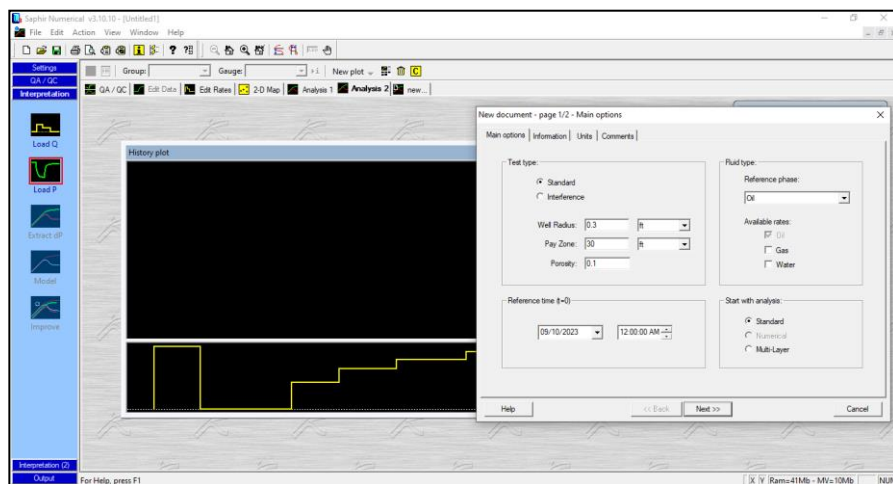
COMPASS



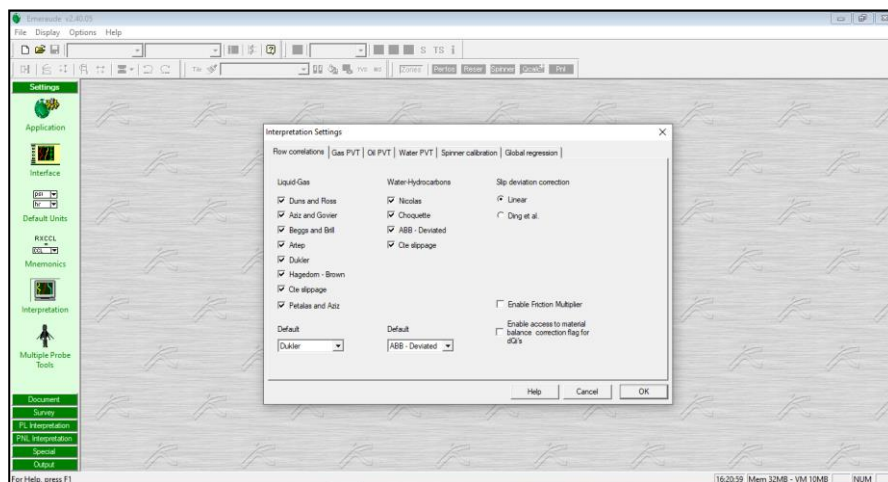
Monte Carlo Simulation



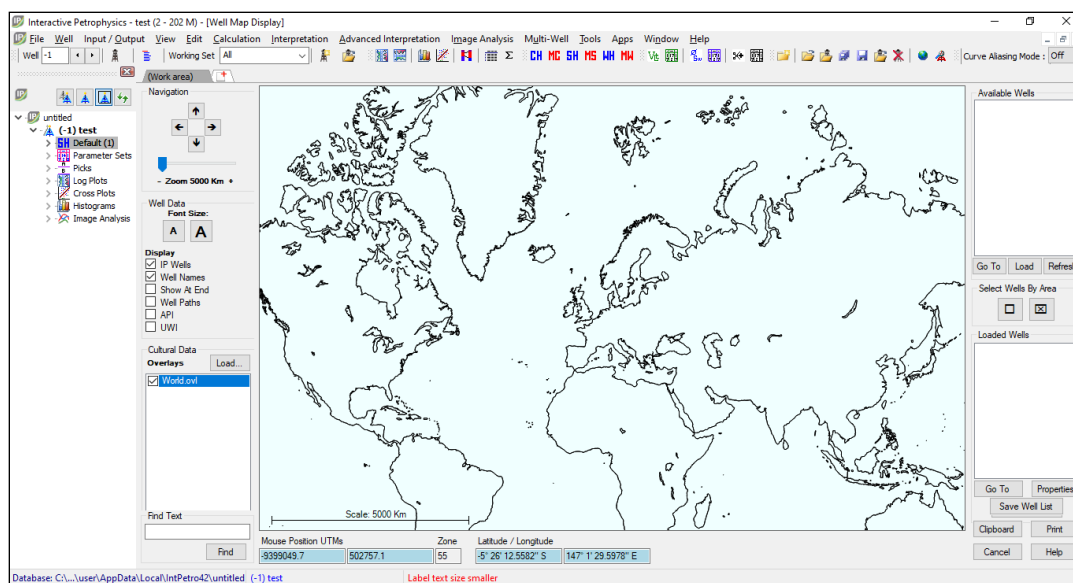
KAPPA Ecrin v4.02.04



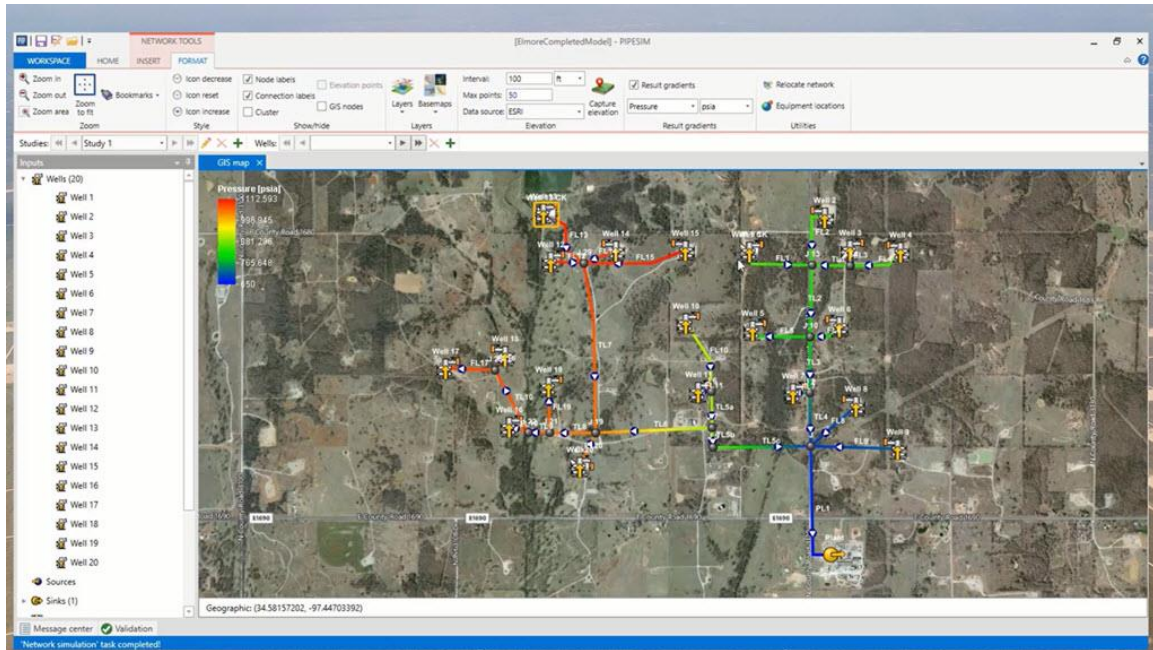
KAPPA Saphir v3.10.10



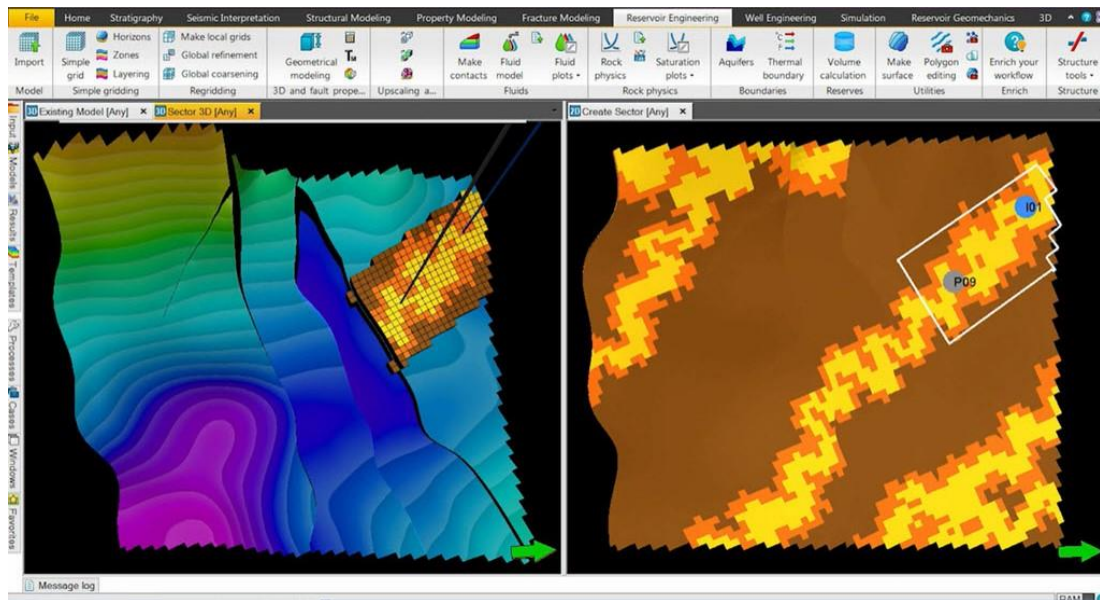
KAPPA Emerald v2.40.05



Interactive Petrophysics (IP) Software



PIPESIM



Eclipse Software



PROSPER

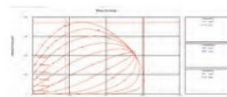


MULTIPHASE WELL AND PIPELINE NODAL ANALYSIS

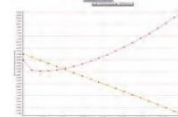
WELL AND PIPELINE MODELS



FULLY COMPOSITIONAL



INFLOW/OUTFLOW RESPONSE



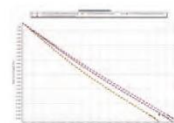
STEAM WELLS



FLOW ASSURANCE



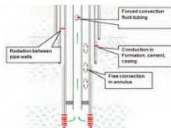
OUTFLOW (VLPs) MODELS



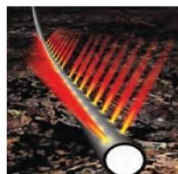
ARTIFICIAL LIFT SYSTEMS



THERMAL MODELLING



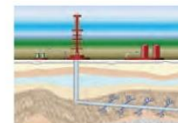
PERFORATION DESIGN AND PERFORMANCE



MULTILATERAL COMPLETIONS



INFLOW (IPRs) MODELS





PETROLEUM ENGINEERING SOFTWARE

IPM SUITE

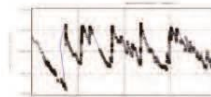


MBAL



ANALYTICAL RESERVOIR ENGINEERING TOOLKIT

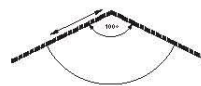
HISTORY MATCHING



MATERIAL BALANCE



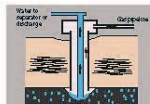
AQUIFER MODELLING



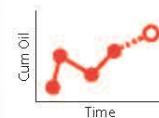
STREAMLINES



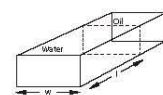
COAL BED METHANE



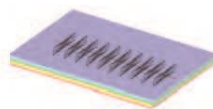
FORECASTS



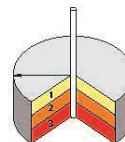
1D MODEL



TIGHT RESERVOIRS



MULTILAYER PRODUCTION



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e-mail: edinburgh@petex.com

www.petroleumexperts.com



PETROLEUM ENGINEERING SOFTWARE

IPM SUITE



GAP



MULTIPHASE NETWORK MODELLING AND OPTIMISATION

INTEGRATED
PRODUCTION AND
INJECTION
NETWORKS



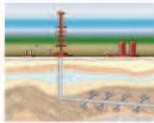
EQUATIONS BASED
SOLVER

$$\begin{bmatrix} a_{1,1} & a_{1,2} & a_{1,3} & \dots & a_{1,n} \\ a_{2,1} & a_{2,2} & a_{2,3} & \dots & a_{2,n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{m,1} & a_{m,2} & a_{m,3} & \dots & a_{m,n} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ \vdots \\ x_n \end{bmatrix} = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ \vdots \\ b_n \end{bmatrix}$$

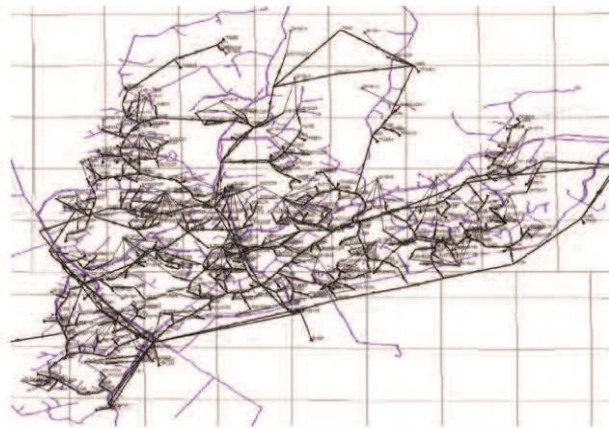
NON-LINEAR
OPTIMISATION



UN CONVENTIONALS



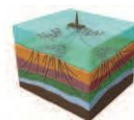
FLOW ASSURANCE



RULE BASED
CONSTRAINTS



WELL
PERFORMANCE



SURFACE EQUIPMENT
MODELLING



ADVANCED PVT
HANDLING



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www.petroleumexperts.com

Course Coordinator

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