COURSE OVERVIEW DE1068-3D
Gas Condensate Fields Development

Course Title
Gas Condensate Fields Development

Course Date/Venue
Please see page 3

1.8 CEUs (18 PDHs) AWARD

Course Reference
DE1068-3D

Course Duration/Credits
Three days/1.8 CEUs/18 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 Gas Condensate Fields Development. It covers the characteristics and classification of gas condensate and its differences from dry gas and oil reservoirs; the phase behavior and retrograde condensation, reservoir rock and fluid properties and in-situ stress and pressure regimes; the reservoir drive mechanisms, geological and structural considerations, well planning and drilling considerations; the completion and stimulation techniques, well testing and deliverability evaluation; the reservoir simulation and compositional modelling, production optimization strategies and reservoir monitoring and surveillance; and the two-phase and three-phase separation, condensate stabilization and dehydration, compression systems and dew point control and storage and pipeline specifications.

During this interactive course, participants will learn the condensate dropout in pipelines, hydrate, wax, and slugging risks; the inhibitor injection, pigging operations, pipeline simulation and thermal analysis; the lean gas and miscible gas reinjection, co_2 injection and impact on dew point; the recycling schemes to maintain pressure, gas flaring and condensate venting limits; the emissions control and carbon footprint, safety systems for high-pressure facilities and compliance with environmental regulations; and the integrated field development planning.

Course Objectives

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

- Apply and gain an in-depth knowledge on gas condensate fields development
- Discuss the characteristics and classification of gas condensate and its differences from dry gas and oil reservoirs
- Identify phase behavior and retrograde condensation, reservoir rock and fluid properties and in-situ stress and pressure regimes
- Recognize reservoir drive mechanisms, geological and structural considerations and well planning and drilling considerations
- Carryout completion and stimulation techniques including well testing and deliverability evaluation
- Illustrate reservoir simulation and compositional modelling, production optimization strategies and reservoir monitoring and surveillance
- Apply two-phase and three-phase separation, condensate stabilization and dehydration, compression systems and dew point control and storage and pipeline specifications
- Discuss condensate dropout in pipelines, hydrate, wax, and slugging risks, inhibitor injection and pigging operations and pipeline simulation and thermal analysis
- Recognize lean gas and miscible gas reinjection, co_2 injection and impact on dew point and recycling schemes to maintain pressure
- Explain gas flaring and condensate venting limits, emissions control and carbon footprint, safety systems for high-pressure facilities and compliance with environmental regulations
- Apply integrated field development planning by linking subsurface to surface design, phase-wise development and infrastructure scaling and uncertainty handling in reservoir and fluid behavior

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 gas condensate fields development for reservoir engineers, drilling engineers, geosteering engineers, geologists, petrophysicists, mud logging engineers, operations and field supervisors and other technical staff.

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 Date/Venue

Session(s)	Date	Venue
1	May 12-14, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	August 03-05, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE
3	October 20-22, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
4	December 07-09, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Fee

US$ 5,250 per Delegate + **VAT**. 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 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: -

- 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.

- 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 **1.8 CEUs** (Continuing Education Units) or **18 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.

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. Steve Ehrenberg, PhD, MSc, BSc, is a **Senior Geologist & Reservoir Engineer** with over **30 years** of extensive experience within the **Oil** & **Gas**, **Petrochemical** and **Refinery** industries. His wide experience covers in the areas of **Core** & **Log Integration**, **Water Saturation**, **Coring** & **Core Analysis**, **Special Core Analysis**, **Log** Interpretation, Cased-Hole Logging, **Core Calibration**, **Core Analysis**, Core-to-Log Data Integration (**SCAL**), **Wireline** Logging, **Mud** Logging, **Cased Hole** Logging, **Production** Logging, **Well Logging**, **Reservoir** Management, **Reservoir** Appraisal & Development, **Carbonate Reservoir** Management, **Fractured Reservoirs** Evaluation & Management, **Naturally Fractured Reservoir**, Integrated **Carbonate Reservoir** Characterization, **Geological Modelling**, **Reservoir Characterization**, **Geomodelling**, Development **Geology**, **Petroleum Geology**, **Exploration Production**, **Structural Geology**, **Wellsite Geology**, Analytic Modelling Methods, **Sedimentary Geology**, **Geophysics**, **Geophysical Exploration**, **Reservoir** Engineering, **Reservoir** Engineering Applications, **Reservoir** Engineering & Stimulation, **Reservoir** Characterization, **Clastic Reservoir**, **Carbonate Reservoir Petrology**, Subsurface Facies Analysis, **Borehole Images, Geophysical Methods**, **Oil & Gas Exploration**, **Marine & Petroleum Geology**, **Reservoir Performance** Using Classical Methods, **Fractured Reservoir** Evaluation & Management, **Reservoir** Surveillance & Management, **Reservoir Monitoring**, , **Reservoir Volumetrics**, **Water Drive Reservoir**, **Reservoir Evaluation**, **Well Surveillance**, **Well Testing**, **Well Testing** & Oil Well Performance, Well Log Interpretation (**WLI**), Rock Physics & Seismic Data, **Formation Evaluation**, **Well Testing** & Data Interpretation, **Pore Pressure** Prediction and **Oil & Gas Reserves Estimations**, Well Workover Supervision, Description and Prediction of **Reservoir Quality**, **Sequence Stratigraphy** of Carbonate Systems and Introductory Geology.

During his career life, Dr. Ehrenberg held significant positions and dedication as **Consultant**, **Professor**, **Senior Reservoir Geologist**, **Senior Geologist**, **Research Geologist**, **Associate Professor**, **Assistant Professor** and **Senior Instructor/Trainer** from various international companies and universities such as the Badley Ashton & Associates Ltd., Khalifa University of Science and Technology, Sultan Qaboos University, PanTerra Geoconsultants B.V, UAE University, Statoil, Stavanger, Shell Development Company and Northern Illinois University.

Dr. Ehrenberg has a **PhD**, **Master's** and **Bachelor's** degree in **Geology** from the **University of California**, **USA** and **Occidental College**, **USA**, respectively. Further, he is a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**), a **Certified Instructor/Trainer** and has 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 workshop 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 Gas Condensate Fields*** *What are Gas Condensates? • Characteristics & Classification • Differences from Dry Gas & Oil Reservoirs • Typical Field Locations & Global Examples*
0930 – 0945	*Break*
0945 – 1030	***Phase Behavior & Retrograde Condensation*** *PVT Relationships & Phase Envelopes • Dew Point & Retrograde Regions • Condensate Dropout & Recovery Challenges • Use of Phase Diagrams in Development Planning*
1030 – 1130	***Reservoir Rock & Fluid Properties*** *Petrophysical Parameters in Gas Condensate Zones • Fluid Characterization: Composition & Properties • Core Analysis & Saturation Measurements • Laboratory Tests: CVD, Swell Tests & Recombination*
1130 – 1215	***In-Situ Stress & Pressure Regimes*** *Pressure Gradients & Overpressure Zones • Stress Effects on Wellbore & Formation • Role of Pore Pressure in Field Design • Formation Evaluation Using MDT & Logs*
1215 – 1230	*Break*
1230 – 1330	***Reservoir Drive Mechanisms*** *Natural Depletion & Drawdown Behavior • Effect of Pressure on Condensate Recovery • Water Drive & Weak Aquifer Impacts • Need for Pressure Maintenance Strategies*
1330 – 1420	***Geological & Structural Considerations*** *Trap Types in Gas Condensate Accumulations • Reservoir Heterogeneity & Layering • Fault Seal Integrity & Structural Compartmentalization • Building Static Models for Development Planning*
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

0730 – 0830	***Well Planning & Drilling Considerations*** *HPHT Challenges in Gas Condensate Drilling • Well Trajectory & Placement Optimization • Casing Design & Material Selection • Mud Weight Selection to Manage Formation Pressure*
0830 – 0930	***Completion & Stimulation Techniques*** *Perforation Strategies & Zone Isolation • Sand Control & Skin Reduction • Hydraulic Fracturing in Tight Gas Condensate Reservoirs • Well Clean-Up & Flowback Techniques*
0930 – 0945	*Break*
0945 – 1100	***Well Testing & Deliverability Evaluation*** *Multi-Rate Testing & Pressure Buildup • Well Inflow Performance (IPR) & Productivity Index • Use of Separator Tests to Evaluate CGR • Flow Assurance & Condensate Recovery Issues*

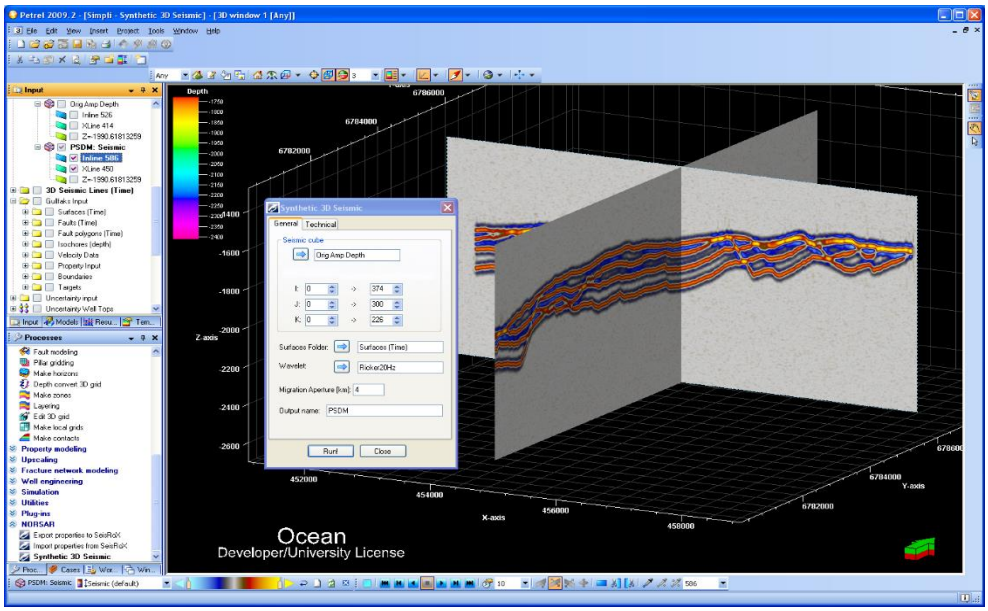
1100 – 1215	***Reservoir Simulation & Compositional Modeling*** *Use of Eos Models for Gas Condensate Simulations • Handling Retrograde Condensation in Simulators • History Matching with CVD & Production Data • Production Forecast & Depletion Planning*
1215 – 1230	*Break*
1230 – 1330	***Production Optimization Strategies*** *Managing Drawdown to Avoid Condensate Banking • Choke Management & Rate Control • Artificial Lift Applications in Gas Condensate Wells • Restart Strategies for Liquid-Loaded Wells*
1330 – 1420	***Reservoir Monitoring & Surveillance*** *Downhole Pressure/Temperature Gauges (DTS, PDG) • Production Logging & Zonal Contribution • Condensate-To-Gas Ratio Tracking • Real-Time Monitoring Tools & Data Analytics*
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 Two*

Day 3

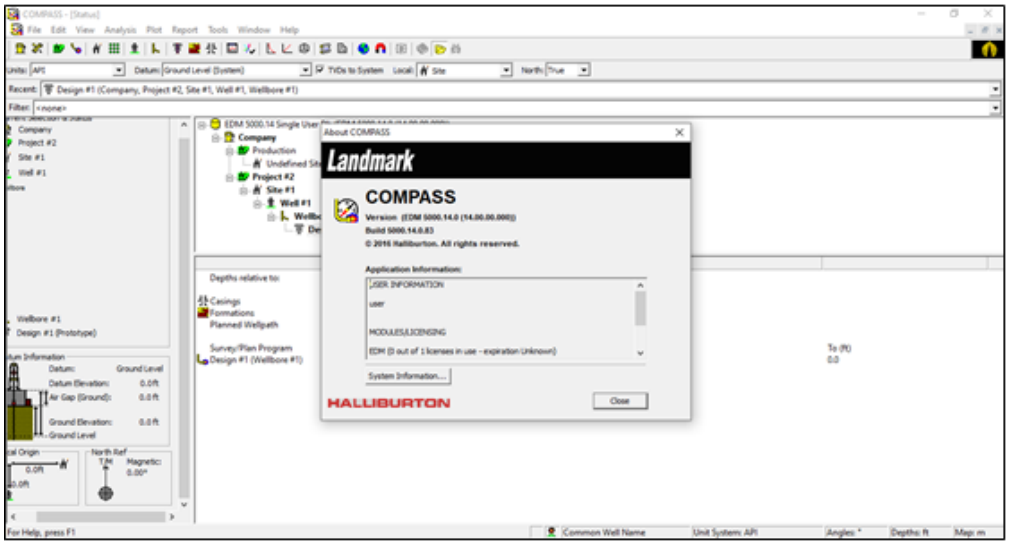
0730 – 0830	***Surface Production Facilities Design*** *Two-Phase & Three-Phase Separation • Condensate Stabilization & Dehydration • Compression Systems & Dew Point Control • Storage & Pipeline Specifications*
0830 – 0930	***Flow Assurance & Transportation*** *Condensate Dropout in Pipelines • Hydrate, Wax & Slugging Risks • Inhibitor Injection & Pigging Operations • Pipeline Simulation & Thermal Analysis*
0930 – 0945	*Break*
0945 – 1030	***Enhanced Recovery in Gas Condensate Fields*** *Lean Gas & Miscible Gas Reinjection • Co_2 Injection & Impact on Dew Point • Recycling Schemes to Maintain Pressure • Evaluating EGR Through Simulation & Pilots*
1030 – 1130	***Environmental & Safety Considerations*** *Gas Flaring & Condensate Venting Limits • Emissions Control & Carbon Footprint • Safety Systems for High-Pressure Facilities • Compliance with Environmental Regulations*
1130 – 1230	***Economics & Project Viability*** *CGR, Condensate Value & Market Dynamics • Capex/Opex Estimation for Gas Condensate Projects • Economic Indicators: NPV, IRR, Payback Period • Sensitivity Analysis & Investment Decisions*
1230 – 1245	*Break*
1245 – 1345	***Integrated Field Development Planning*** *Linking Subsurface to Surface Design • Phase-Wise Development & Infrastructure Scaling • Uncertainty Handling in Reservoir & Fluid Behavior • Case Study: End-to-End FDP for a Gas Condensate Field*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
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)", "ECRIN", "PIPESIM", "Eclipse Software" and "PROSPER" software's.



Petrel Software



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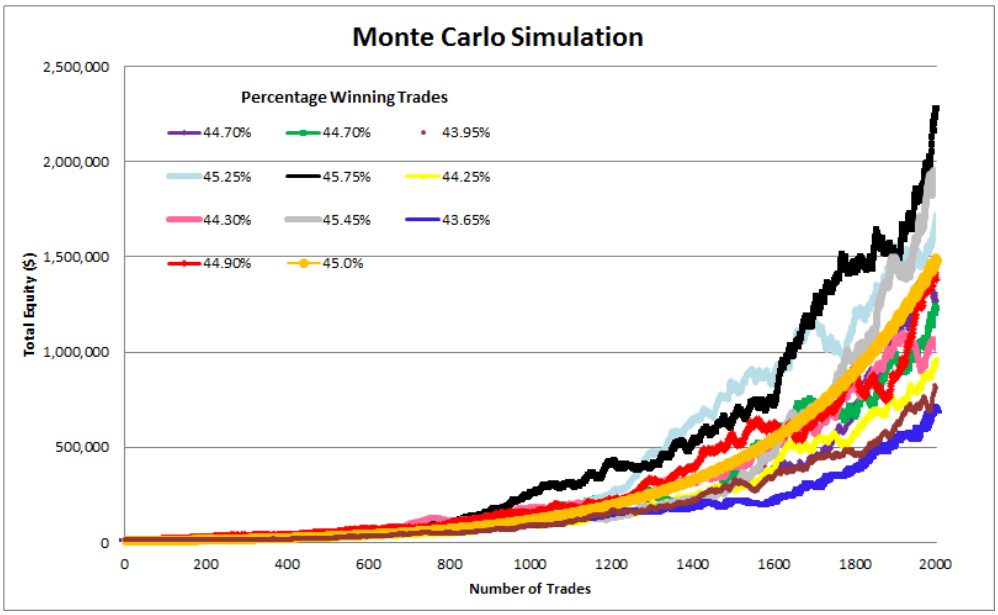
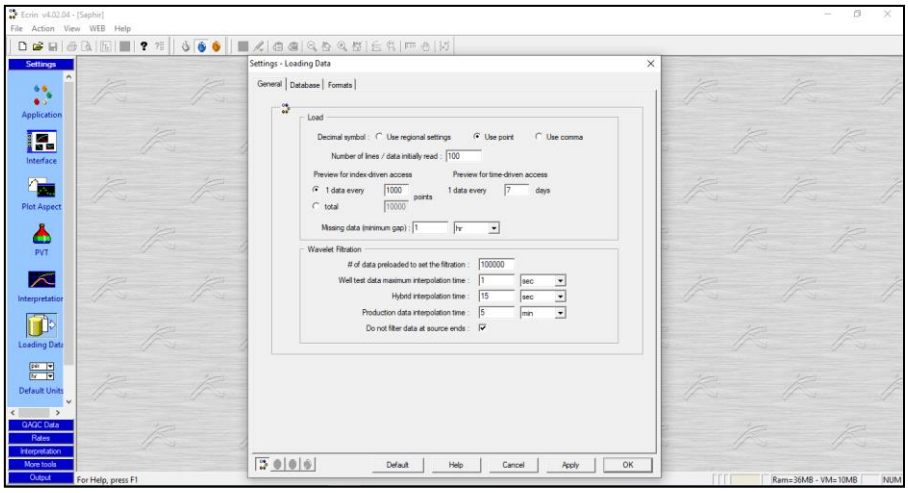


Monte Carlo Simulation



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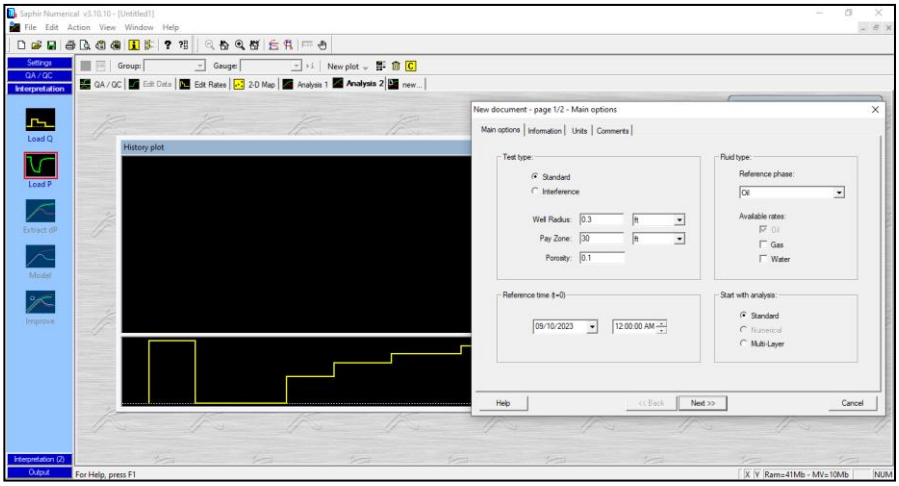

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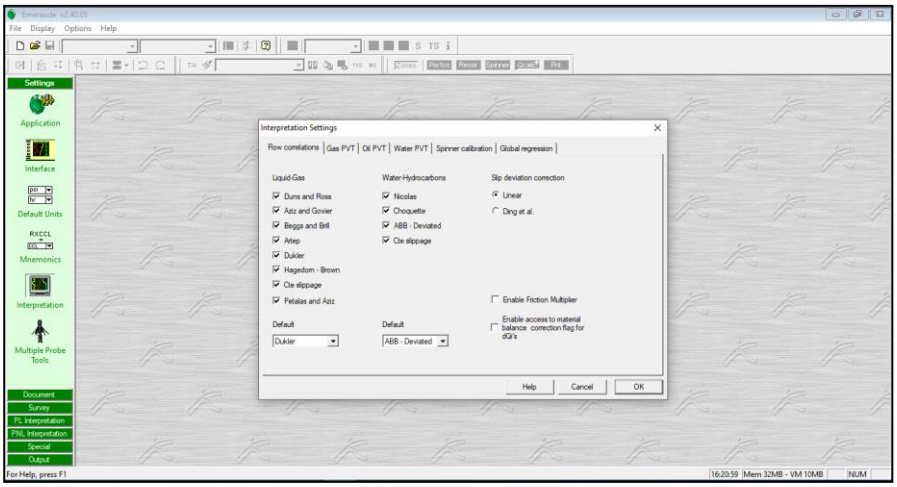

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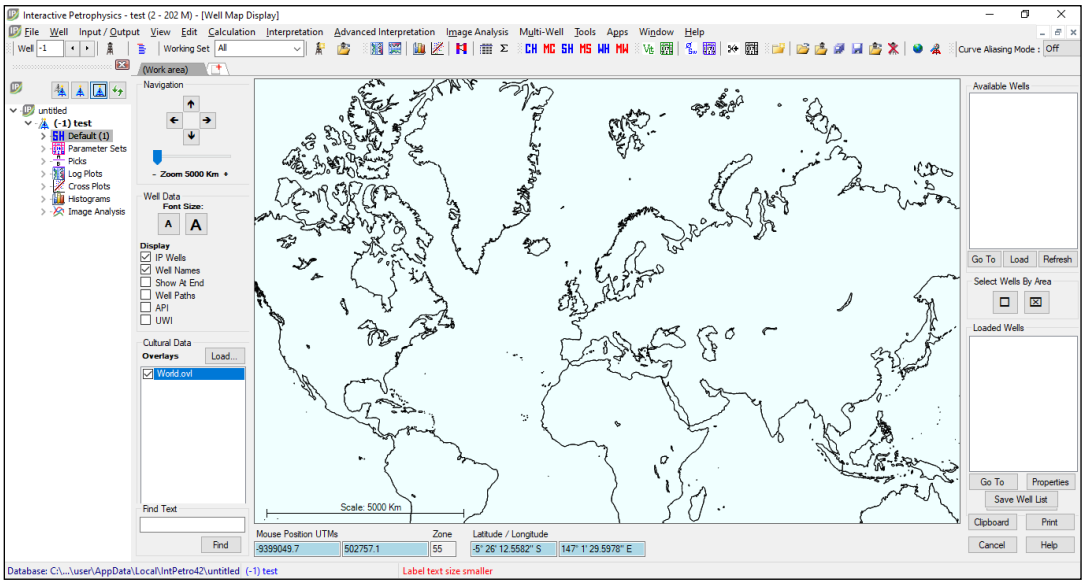
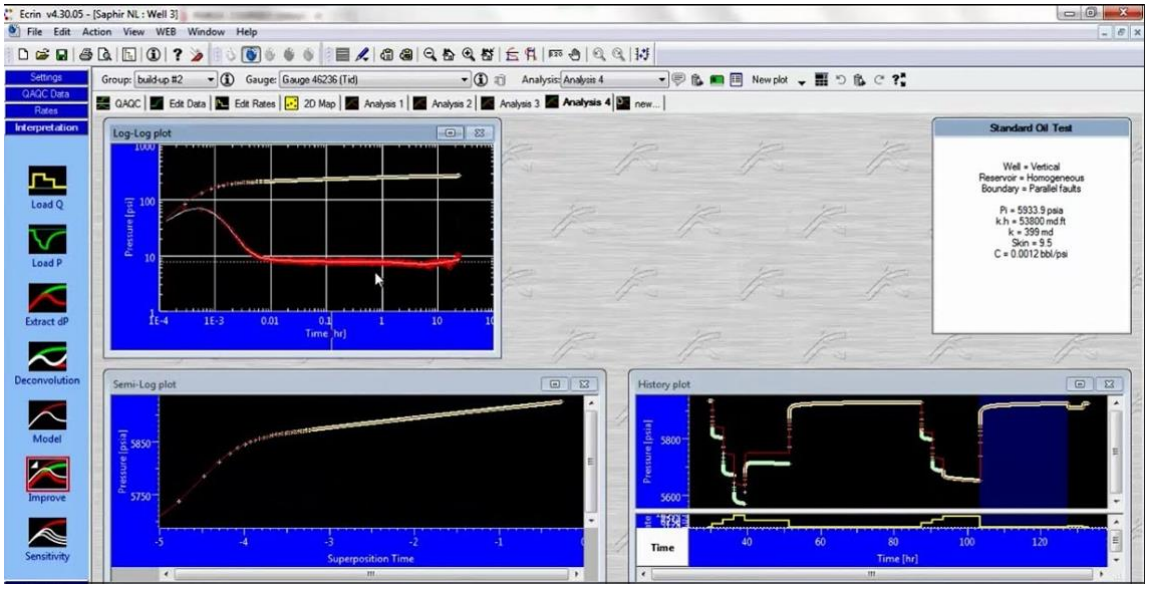
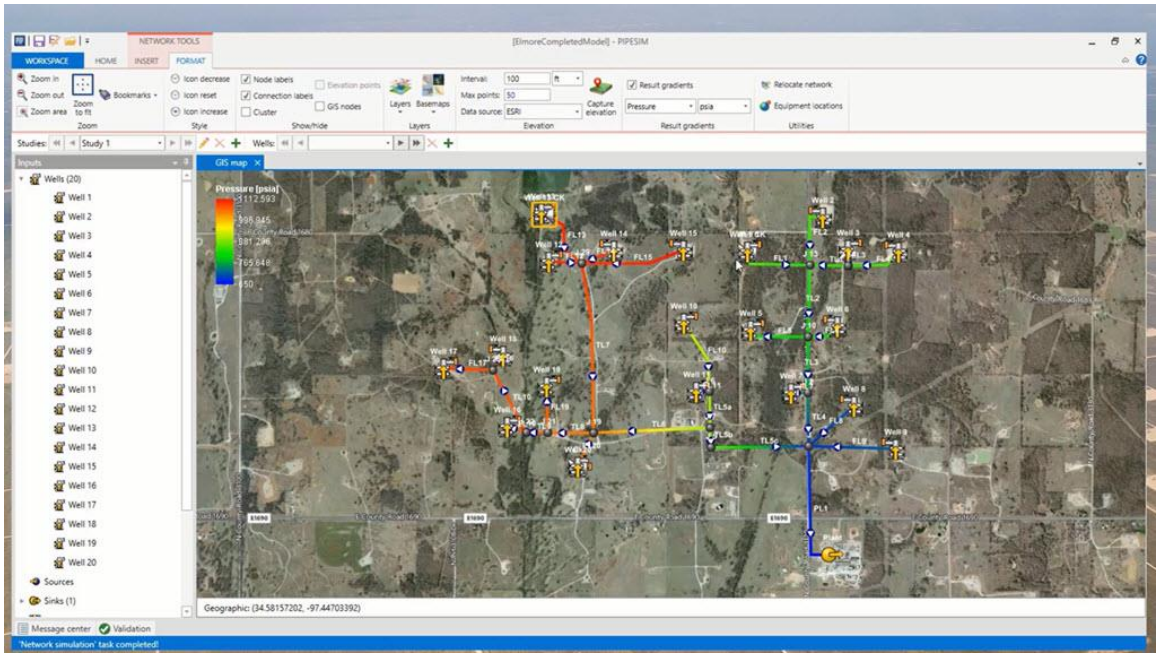


Interactive Petrophysics (IP) Software



ECRIN Software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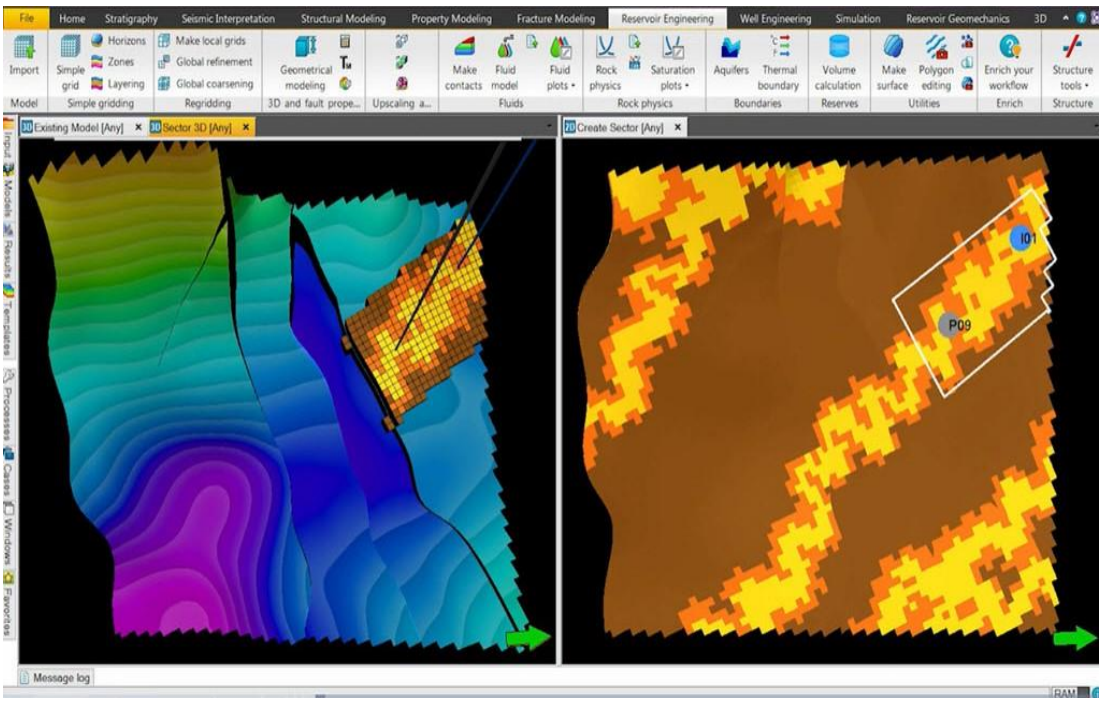
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Seismic Interpretation
Structural Modeling
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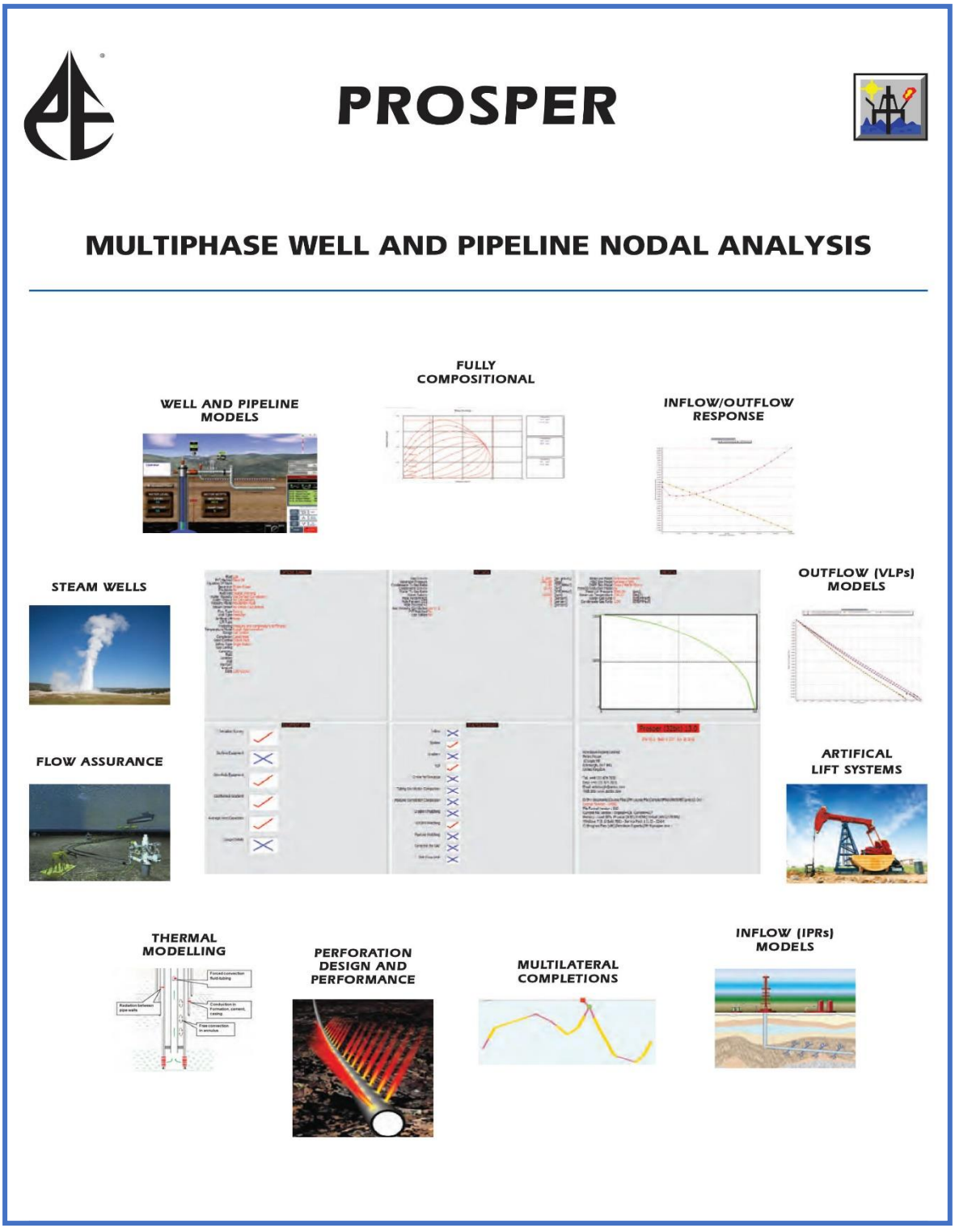

Course Coordinator
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