COURSE OVERVIEW DE0024
Seismic Sequence Stratigraphy Interpretation

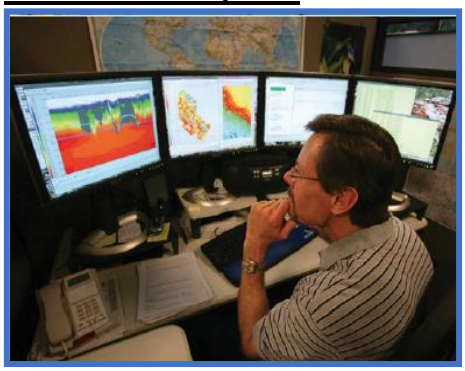
Course Title
Seismic Sequence Stratigraphy Interpretation

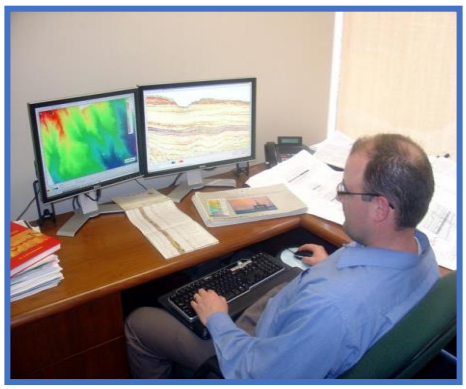
Course Date/Venue
October 05-09, 2026/TBA Meeting Room,
Le Royal Méridien, Abu Dhabi, UAE

Course Reference
DE0024

Course Duration/Credits
Five days/2.75 CEUs/27.5 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.

Creation of shareholder value should be at the heart every business decision. This course is geared towards explorationists who are involved in screening seismic data for possible leads that they develop into prospects. This is a hands-on course where the instructor spends as little time on lectures as possible and the bulk of the time is spent interpreting seismic lines. These lines have been collected from oil producing basins worldwide and provide textbook examples of structural and stratigraphic geometries.

The course is evenly divided between the seismic expression of structural styles and seismic stratigraphy. After spending minimal time on acquisition and background theory participants will be made acutely aware of impedance and resolution and identification of processing errors and how important it is to understand these before interpretation. The participants will be introduced to the structural complexity associated with fold and thrust terrains, extensional systems and various types of wrench faulting and salt/mud related deformation.

The seismic stratigraphy portion of the course not only covers the practice of sequence stratigraphy using seismic data (AAPG Memoir 26), but also spends quite a bit of time on seismic facies analysis in cross-sectional view. Through lots of exercises by the end of the course everyone should be proficient at sequence analysis on seismic lines and be able to interpret depositional environments and net:gross using seismic facies analysis. The course will also introduce participants to the world of seismic geomorphology, attribute analysis and direct hydrocarbon indicators with an emphasis on unconventional resource plays such as fractured shale gas reservoirs and tight-gas sandstones.

Participants are strongly urged to bring paper copies of their own seismic data to work on. These data will not be shared with anyone and will only be reviewed by the instructor.

Course Objectives/Outcomes & Benefits for the Participants

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

- Apply and gain an in-depth knowledge on seismic sequence stratigraphy interpretation
- Discuss seismic sequence stratigraphy including seismic reflection basics, interpretation difficulties and time sections versus depth sections
- Differentiate unmigrated versus migrated profiles, lateral arrivals, multiples, diffractions and reflected refractions
- Identify static corrections, geological models and seismic responses
- Define sequence stratigraphy and seismic sequence stratigraphy
- Carryout sedimentary analysis and sequence stratigraphy and establish a framework of genetically related stratigraphic facies geometries and their bounding surfaces to determine depositional setting
- Recognize the coastal elements, clastic depositional systems and sedimentary analysis
- Describe the power of sequence stratigraphy, sedimentary fill hierarchy and building block
- Explain unconformities, seismic sequence boundaries, cyclic sea level, system tracts as templates and geometry predictions
- Apply outcrop interpretation, core and well log and seismic data as well as outcrop and vertical seismic resolution and lithostratigraphic modeling
- Carryout sequence stratigraphy analysis and discuss unconfined geometric architecture
- Illustrate carbonate tidal flats, stacking patterns, confined sedimentary fill and geometric and stacking patterns
- Determine system tracts and relative sea level, stacking, surfaces, system tracts and relative sea level
- Describe surfaces, system tracts and sequences and define maximum flooding surfaces, transgressive surfaces, sequence boundaries and characteristics of sequence boundary (SB) from seismic

- Identify boundary surfaces, lithofacies and lithofacies codes, facies assemblage and clastic sequence stratigraphic hierarchies
- Discuss sedimentary facies, surfaces, system tract, conceptual models, subaerial unconformity, correlative conformity, regressive surface, maximum regressive surface, maximum flooding surface and transgressive ravinement surfaces

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 overview of all significant aspects and considerations of seismic sequence stratigraphy interpretation for geologists and geophysicists that spend most of their time interpreting seismic data on the workstation. Whether you are an early career geoscientist wanting to learn a systematic approach to seismic interpretation or an experienced professional wanting to learn some of the latest techniques to have emerged in structural geology and seismic stratigraphy, this is the course for you.

Course Fee

US$ 8,000 per Delegate + **VAT**. The 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.

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.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

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 center, 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 **2.75 CEUs** (Continuing Education Units) or **27.5 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. John Petrus, PhD, MSc, BSc, is a **Senior Drilling Engineer & Geologist** with over **30 years** of **onshore & offshore** experience within the **Oil & Gas**, **Refinery** and **Petroleum** industries. His wide experience covers in the areas of **Production Technology** & Engineering, **Well Completions**, **Well Logs**, **Well Stimulation** & **Production Logging**, **Well Completion** Design & Operation, **Well** Surveillance, **Well Testing**, **Well Stimulation** & Control and **Workover** Planning, **Horizontal & Multilateral Wells**, **Completions & Workover**, Hole Cleaning & Logging, **Drilling & Work-Over** Operations, **Drill String Design & Drilling** Optimization, **Wellhead** Operations, Maintenance & Testing, Petrophysics/Interpretation of Well Composite, **Reservoir & Tubing** Performance, Practical **Reservoir** Engineering, Clastic **Exploration & Reservoir Sedimentology**, **Carbonate Reservoir Characterization** & Modeling, **Seismic Interpretation**, **Mapping & Reservoir** Modelling, **Reservoir Geology**, Integrating **Geoscience** into **Carbonate Reservoir** Management, **Faulted & Fractured Reservoirs**, **Fractured Hydrocarbon Reservoirs**, Analyses, Characterisation & Modelling of **Fractured Reservoirs & Prospects**, **Fracture Reservoir** Modeling Using **Petrel**, **Reservoir** Engineering Applied Research, **Artificial PVTLift**, **Artificial Lift System** Selection & Design, Fluid Properties & Phase Behavior (**PVT**), Electrical Submersible Pumps (**ESP**), Enhance Oil Recovery (**EOR**), **Oil In Place** (**OIP**) **Estimation & Range of Uncertainty**, **Hydraulic Fracturing**, **Sand Control** Techniques, **Perforating** Methods & Design, **Perforating** Operations, **Petroleum** Exploration & Production, **Hydrocarbon Exploration** & Production, Exploration & Production, **Play Assessment & Prospect Evaluation**, **Formation** Evaluation, **Petroleum Engineering** Practices, **Petroleum** Hydrogeology & Hydrodynamics, **Project** Uncertainty, Decision Analysis & Risk Management, **Decision Analysis & Uncertainty** Management, **Exploration & Development Geology**, **Sedimentology & Sequence Stratigraphy**, **Structural Interpretation** in Exploration & Development, **Fracture** Modelling, **Dynamic** Modelling, **Field Development** Planning, **Water Injection** Planning, Stereophotogrammetry, Fault Mapping, GPS Survey, 2D & 3D **Seismic Acquisition** & Processing, **3D Seismic** Surveys & Mapping, 3D GIS, GMAP, **Sandbox** Modelling, Sedimentological Logging, GR Logging, Surface & Subsurface 3D Modelling, Best Practices Management System (**BPMS**), Subsurface Work for Energy Projects, Digitalization Projects, **Structural Model** using **Petrel**, G&G Seismic & Well **Data** Modelling, **GIS System** Management, **Database** Management, Strategic Planning, Best Practices and Workflow, **Quality** Management, **Project** Management and **Risk Assessment** & Uncertainty Evaluation. Further, he is also well-versed in **seismic interpretation**, **mapping** & **reservoir modelling tools** like **Petrel** software, **LandMark**, **Seisworks**, **Geoframe**, **Zmap** and has extensive knowledge in MSDos, Unix, **AutoCAD**, MAP, Overlay, Quicksurf, 3DStudio, **Esri ArcGIS**, Visual Lisp, Fortran-77 and Clipper. Moreover, he is a world **expert** in **analysis** and **modelling** of **fractured prospects** and **reservoirs** and a **specialist** and **developer** of **fracture modelling software tools** such as FPDM, FMX and DMX Protocols.

During his career life, Dr. Petrus held significant positions and dedication as the **Executive Director**, **Senior Geoscience Advisor**, **Exploration Manager**, **Project Manager**, **Manager**, **Chief Geologist**, **Chief** of **Exploration**, **Chief** of **Geoscience**, **Senior Geosciences Engineer**, **Drilling Engineer**, **Reservoir Engineer**, **Senior Explorationist**, **Senior Geologist**, **Geologist**, **Senior Geoscientist**, **Geomodeller**, **Geoscientist**, **CPR Editor**, **Resources Auditor**, **Project Leader**, **Technical Leader**, **Team Leader**, **Scientific Researcher** and **Senior Instructor/Trainer** from various international companies and universities such as the Dragon Oil Holding Plc., ENOC, MENA, ENI Group of Companies, Ocre Geoscience Services (OGS), Burren RPL, Ministry of Oil-Iraq, Eni Corporate University, Standford University, European Universities, European Research Institutes, NorskHydro Oil Company, Oil E&P Companies, just to name a few.

Dr. Petrus has a **PhD** in **Geology** and **Tectonophysics** and **Master's** and **Bachelor's** degree in **Earth Sciences** from the **Utrecht University**, **The Netherlands**. Further, he is a **Certified Instructor/Trainer**, a **Certified Trainer/Assessor/Internal Verifier** by the **Institute of Leadership & Management** (**ILM**), a Secretary and Treasurer of Board of Directors of Multicultural Centre, Association Steunfonds SSH/SSR and Founding Member of Sfera Association. He has further published several scientific publications, journals, research papers and books 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: ***Monday, 05th of October 2026***

0800 – 0830	*Registration & Coffee*
0830 – 0845	*Welcome & Introduction*
0845 – 0900	***PRE-TEST***
0900 – 0915	***Introduction to Seismic Sequence Stratigraphy***
0915 – 0930	***Seismic Reflection Basics, Interpretation Difficulties, Time Sections Versus Depth Sections***
0930 - 0945	*Break*
0945 – 1030	***Unmigrated Versus Migrated Profiles, Lateral Arrivals, Multiples, Diffractions, Reflected Refractions***
1030 – 1100	***Static Corrections, Geological Models & Seismic Responses (Monoclines, Faults, Shale Domes, Reefs, Canyons, Freezing, Synforms)***
1100 - 1200	***Tying a Well Synthetic to a Seismic Line***
1200 – 1215	*Break*
1215 – 1300	***What is Sequence Stratigraphy, Seismic Sequence Stratigraphy***
1300 – 1330	***Sedimentary Analysis & Sequence Stratigraphy***
1300 - 1350	***Sequence Stratigraphy – The Process, 'Depositional' Sequence Vail Et Al 1971***
1350 – 1400	***Recap***
1400	*Lunch & End of Day One*

Day 2: ***Tuesday, 06th of October 2026***

0800 – 0830	***Establish a Framework of Genetically Related Stratigraphic Facies Geometries & Their Bounding Surfaces to Determine Depositional Setting***
0830 – 0900	***Coastal Elements, Clastic Depositional Systems***
0900 – 0830	***Sedimentary Analysis***
0930 – 0945	*Break*
0945 – 1030	***Power of Sequence Stratigraphy, Sedimentary Fill Hierarchy, Building Block***
1030 – 1100	***Seismic Sequence Analysis Exercise***
1100 - 1200	***Unconformities, Seismic Sequence Boundaries, Cyclic Sea Level, System Tracts as Templates & Geometry Predictions***
1200 – 1215	*Break*
1215 – 1300	***History of Sequence Stratigraphy***
1300 - 1350	***Outcrop Interpretation, Core & Well Log, Seismic Data***
1350 – 1400	***Recap***
1400	*Lunch & End of Day Two*

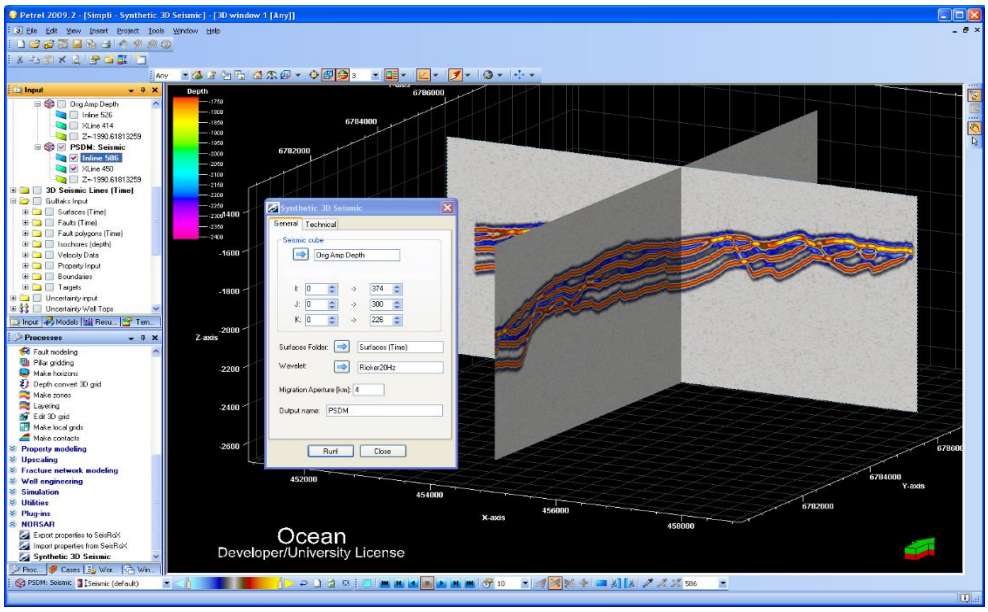
Day 3:	Wednesday, 07th of October 2026
0800 – 0830	Outcrop & Vertical Seismic Resolution, Lithostratigraphic Modeling
0830 – 0900	Seismic Facies Analysis Exercise
0900 – 0830	Sequence Stratigraphy Analysis Defined
0930 – 0945	Break
0945 – 1030	Sequence Stratigraphic Analysis
1030 – 1100	Unconfined Geometric Architecture-Prograding, Retrograding & Aggrading
1100 - 1200	Carbonate Tidal Flats, Stacking Patterns
1200 – 1215	Break
1215 – 1300	Confined Sedimentary Fill-Channels
1300 - 1350	Geometric & Stacking Patterns
1350 – 1400	Recap
1400	Lunch & End of Day Three

Day 4:	Thursday, 08th of October 2026
0800 – 0830	System Tracts & Relative Sea Level
0830 – 0900	Stacking, Surfaces & System Tracts-Lowstand, Transgression, Highstand
0900 – 0830	System Tracts & Relative Sea Level
0930 – 0945	Break
0945 – 1030	Surfaces, System Tracts & Sequences
1030 – 1100	Maximum Flooding Surfaces (MFS)
1100 - 1200	Transgressive Surfaces (TS)
1200 – 1215	Break
1215 – 1300	Sequence Boundaries (SB)
1300 - 1350	Characteristics of Sequence Boundary (SB) from Seismic
1350 – 1400	Recap
1400	Lunch & End of Day Four

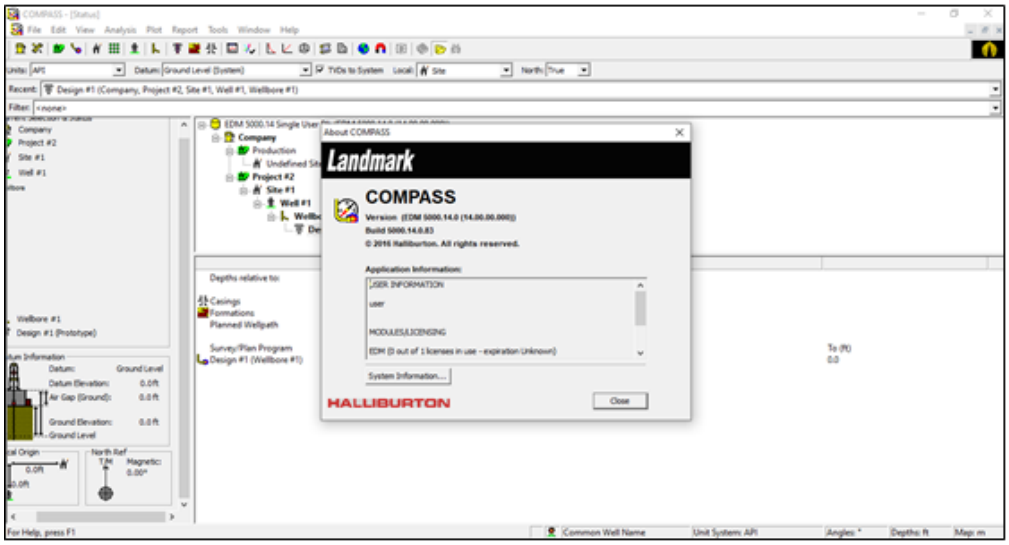
Day 5:	Friday, 09th of October 2026
0800 – 0830	Boundary Surfaces
0830 – 0900	Lithofacies & Lithofacies Codes
0900 - 0930	Facies Assemblage
0930 – 0945	Break
0945 – 1030	Clastic Sequence Stratigraphic Hierarchies
1030 – 1100	Seismic Facies Mapping Exercise
1100 - 1200	Sedimentary Facies
1200 – 1215	Break
1215 - 1315	Surfaces, System Tract, Conceptual Models, Subaerial Unconformity, Correlative Conformity, Regressive Surface, Maximum Regressive Surface, Maximum Flooding Surface, Transgressive Ravinement Surfaces
1315 – 1330	Course Conclusion
1330 – 1345	POST-TEST
1345 – 1400	Presentation of Course Certificates
1400	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

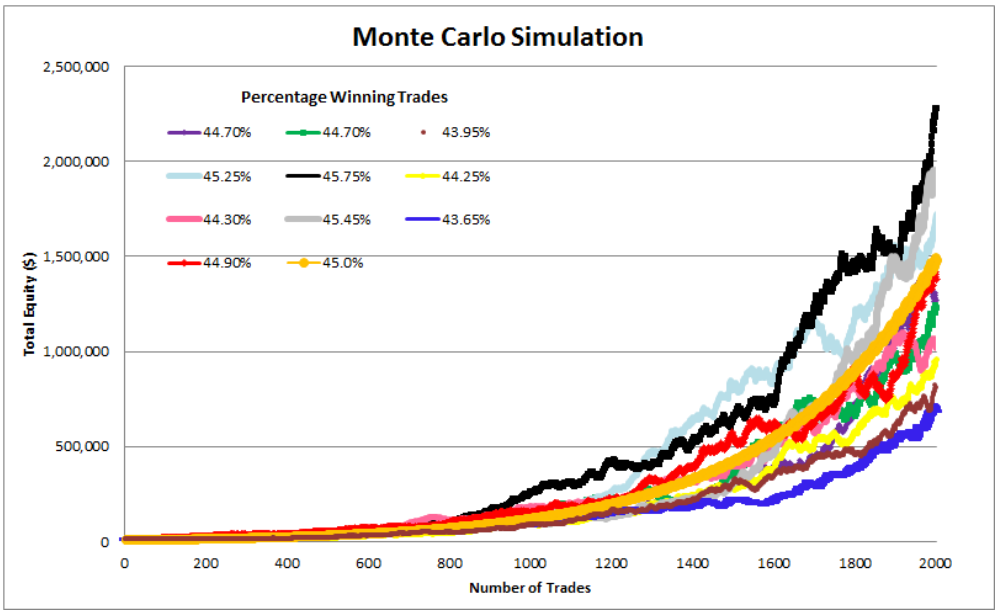
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "PyScripter with Python", "Petrel Software", "COMPASS", "Monte Carlo", "Interactive Petrophysics (IP)", "ECRIN", "PIPESIM", "Eclipse Software", "Three-Phase Black-Oil Reservoir Simulator", "PVTsim Software", "PETEX IPM Suite" software's and "*CEMPRO + Integrated Cementing*".



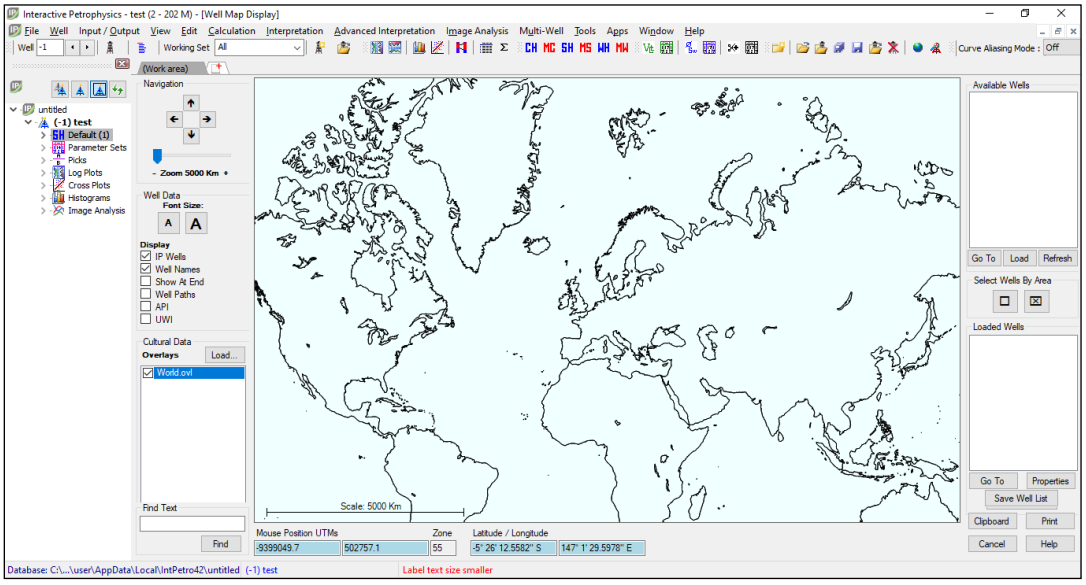
Petrel Software



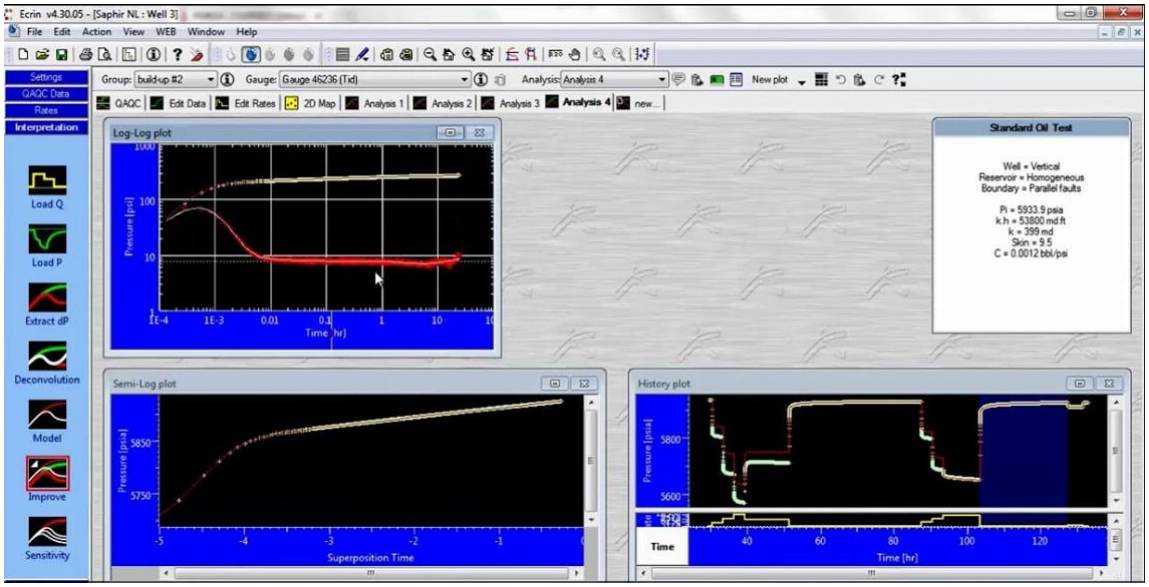
COMPASS



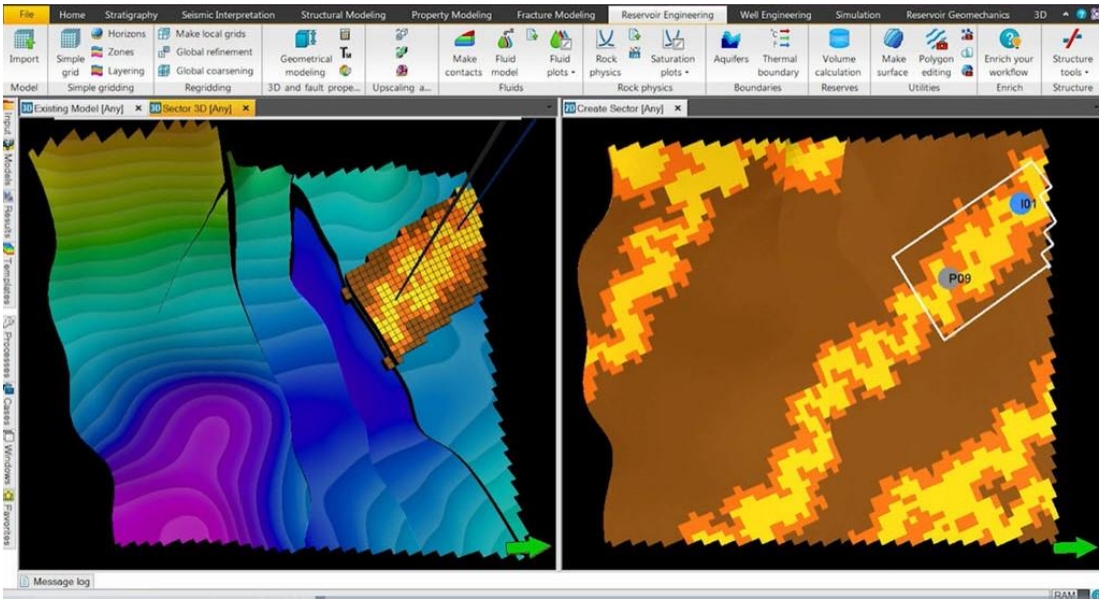
Monte Carlo Simulation



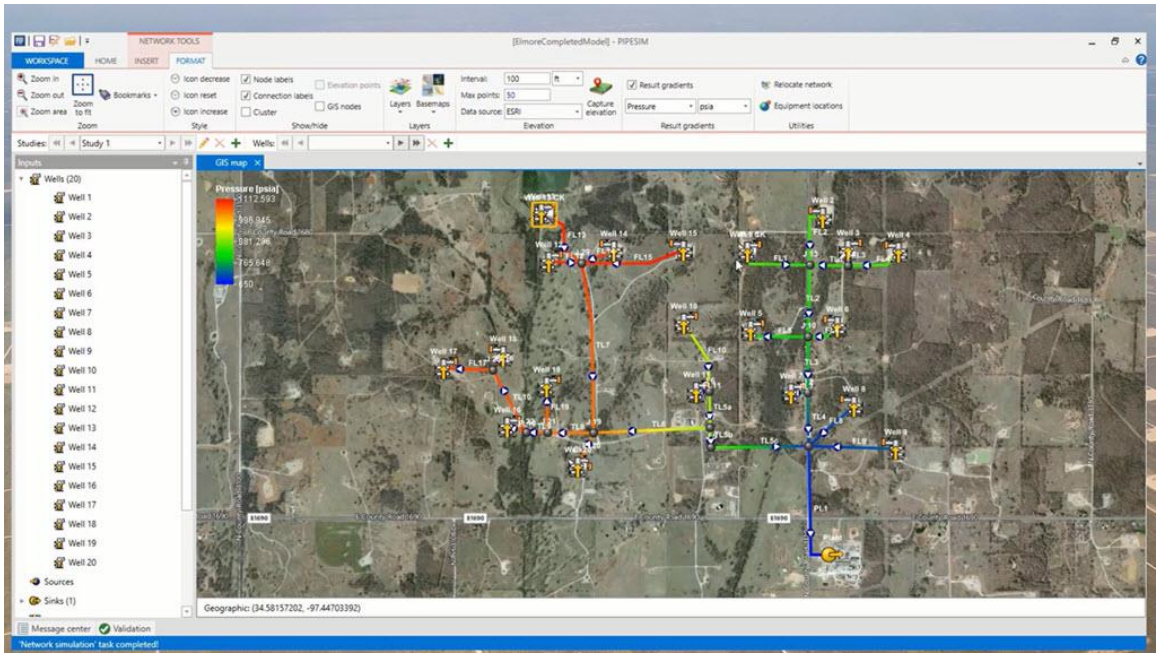
Interactive Petrophysics (IP) Software



ECRIN Software



Eclipse Software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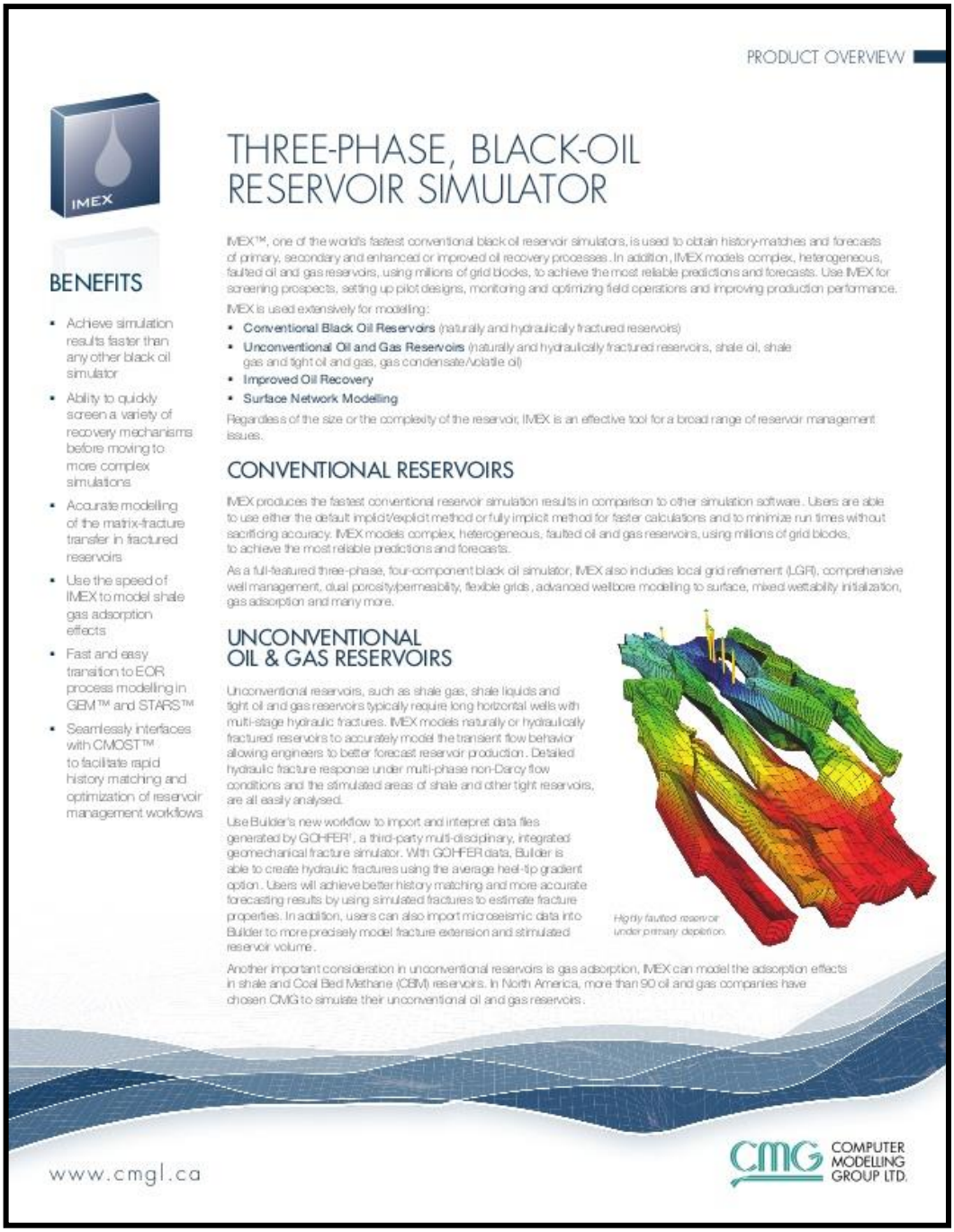
PIPESIM



PRODUCT OVERVIEW

IMEX

THREE-PHASE, BLACK-OIL RESERVOIR SIMULATOR

IMEX™, one of the world's fastest conventional black oil reservoir simulators, is used to obtain history-matches and forecasts of primary, secondary and enhanced or improved oil recovery processes. In addition, IMEX models complex, heterogeneous, faulted oil and gas reservoirs, using millions of grid blocks, to achieve the most reliable predictions and forecasts. Use IMEX for screening prospects, setting up pilot designs, monitoring and optimizing field operations and improving production performance.

IMEX is used extensively for modelling:

- **Conventional Black Oil Reservoirs** (naturally and hydraulically fractured reservoirs)
- **Unconventional Oil and Gas Reservoirs** (naturally and hydraulically fractured reservoirs, shale oil, shale gas and tight oil and gas, gas condensate/volatile oil)
- **Improved Oil Recovery**
- **Surface Network Modelling**

Regardless of the size or the complexity of the reservoir, IMEX is an effective tool for a broad range of reservoir management issues.

BENEFITS

- Achieve simulation results faster than any other black oil simulator
- Ability to quickly screen a variety of recovery mechanisms before moving to more complex simulations
- Accurate modelling of the matrix-fracture transfer in fractured reservoirs
- Use the speed of IMEX to model shale gas adsorption effects
- Fast and easy transition to EOR process modelling in GEM™ and STARS™
- Seamlessly interfaces with CMOST™ to facilitate rapid history matching and optimization of reservoir management workflows

CONVENTIONAL RESERVOIRS

IMEX produces the fastest conventional reservoir simulation results in comparison to other simulation software. Users are able to use either the default implicit/explicit method or fully implicit method for faster calculations and to minimize run times without sacrificing accuracy. IMEX models complex, heterogeneous, faulted oil and gas reservoirs, using millions of grid blocks, to achieve the most reliable predictions and forecasts.

As a full-featured three-phase, four-component black oil simulator, IMEX also includes local grid refinement (LGR), comprehensive well management, dual porosity/permeability, flexible grids, advanced wellbore modelling to surface, mixed wettability initialization, gas adsorption and many more.

UNCONVENTIONAL OIL & GAS RESERVOIRS

Unconventional reservoirs, such as shale gas, shale liquids and tight oil and gas reservoirs typically require long horizontal wells with multi-stage hydraulic fractures. IMEX models naturally or hydraulically fractured reservoirs to accurately model the transient flow behavior allowing engineers to better forecast reservoir production. Detailed hydraulic fracture response under multi-phase non-Darcy flow conditions and the stimulated areas of shale and other tight reservoirs, are all easily analysed.

Use Builder's new workflow to import and interpret data files generated by GOHFER®, a third-party multi-disciplinary, integrated geomechanical fracture simulator. With GOHFER data, Builder is able to create hydraulic fractures using the average heel-tip gradient option. Users will achieve better history matching and more accurate forecasting results by using simulated fractures to estimate fracture properties. In addition, users can also import microseismic data into Builder to more precisely model fracture extension and stimulated reservoir volume.

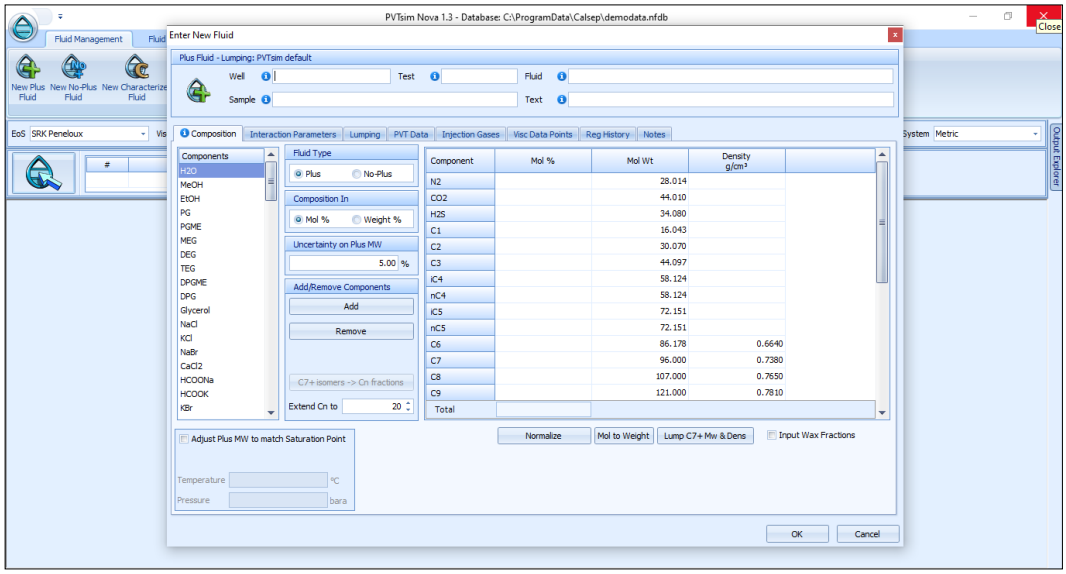
Highly faulted reservoir under primary depletion.

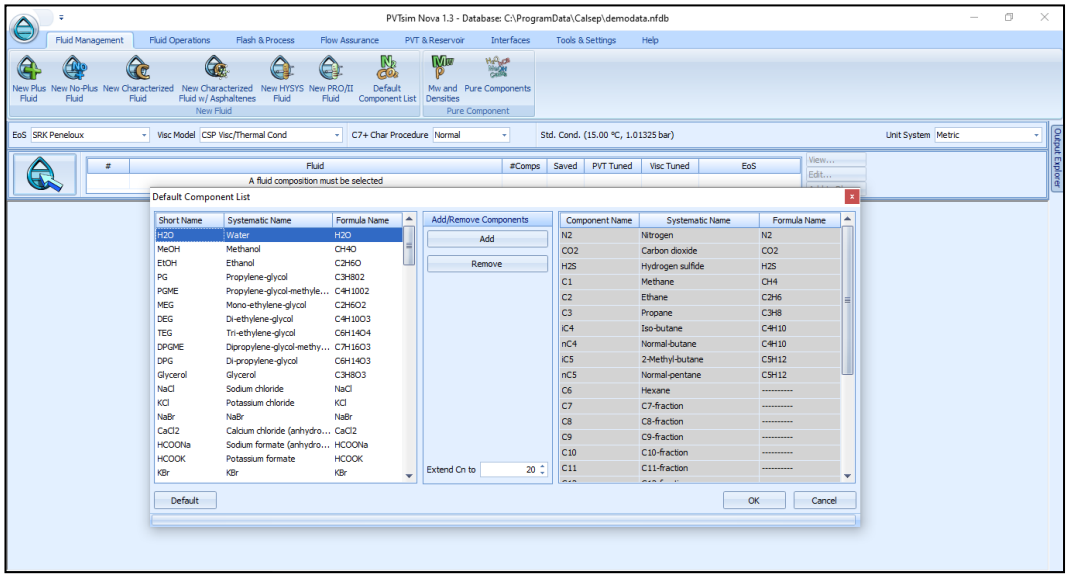
Another important consideration in unconventional reservoirs is gas adsorption, IMEX can model the adsorption effects in shale and Coal Bed Methane (CBM) reservoirs. In North America, more than 90 oil and gas companies have chosen CMG to simulate their unconventional oil and gas reservoirs.

www.cmgl.ca

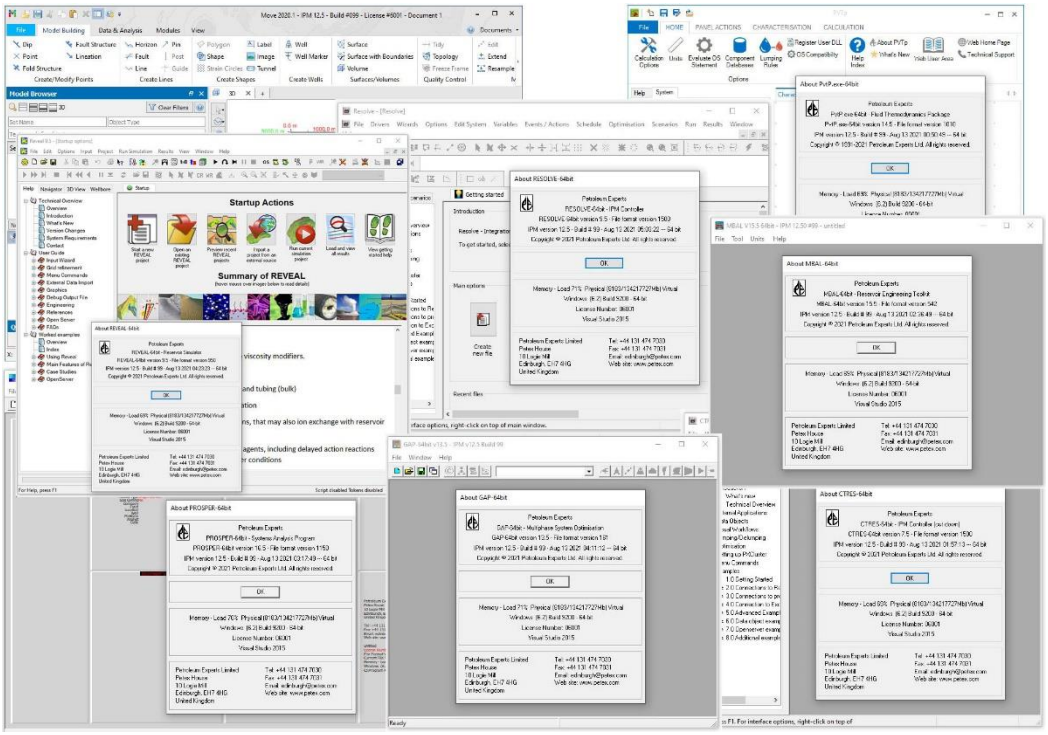
CMG COMPUTER MODELLING GROUP LTD.

Three-Phase Black-Oil Reservoir Simulator

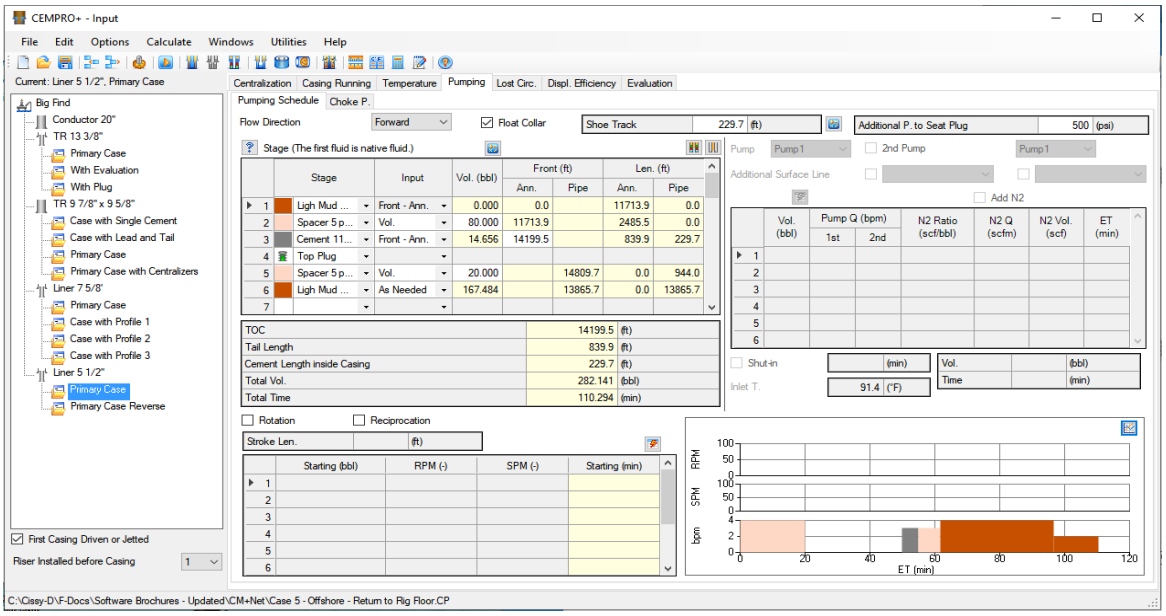




PVTsim Software



PETEX IPM Suite



CEMPRO+ Integrated Cementing Software

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org