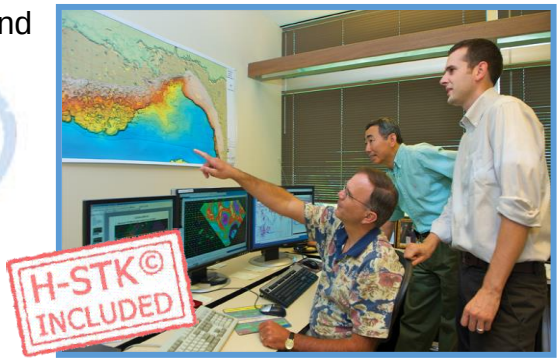
COURSE OVERVIEW DE0043
Seismic Inversion Techniques, Methods and Application

Course Title
Seismic Inversion Techniques, Methods and Application



Course Reference
DE0043

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

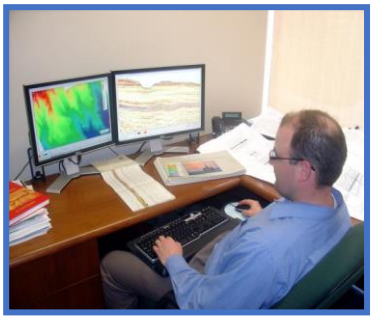
Course Date/Venue

Session(s)	Date	Venue
1	June 30-July 04, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
2	July 21-25,2024	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
3	September 22-26,2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
4	December 09-13, 2024	Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

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 detailed and up-to-date overview of Seismic Inversion Techniques, Methods and Application. It covers the purpose of seismic inversion; the and evolution of seismic inversion techniques and the relationship between seismic data and subsurface properties; the seismic data processing and preparation for inversion; the quality control and correction techniques and pre-stack and post-stack data preparation; the basic and advanced seismic inversion techniques; and the amplitude versus offset inversion, reflectivity inversion, AVO inversion, full waveform inversion and joint inversion.



During this interactive course participants will learn the subsurface rock properties and fluid properties using seismic inversion; the well log data in seismic inversion and fluid property estimation and geological structure analysis in hydrocarbon exploration and production; the subsurface geological structures and reservoir properties using seismic inversion; and the seismic inversion with other geophysical and geological data for reservoir characterization.

Course Objectives

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

- Apply and gain a comprehensive knowledge on seismic inversion techniques, methods and application
- Discuss the purpose of seismic inversion as well as the evolution of seismic inversion techniques and the relationship between seismic data and subsurface properties
- Illustrate seismic data processing and preparation for inversion
- Carryout data quality control and correction techniques and pre-stack and post-stack data preparation
- Employ basic and advanced seismic inversion techniques and discuss amplitude versus offset inversion, reflectivity inversion, AVO inversion, full waveform inversion and joint inversion
- Estimate subsurface rock properties and fluid properties using seismic inversion
- Integrate well log data in seismic inversion and fluid property estimation and geological structure analysis in hydrocarbon exploration and production
- Estimate subsurface geological structures and reservoir properties using seismic inversion
- Integrate seismic inversion with other geophysical and geological data for reservoir characterization

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, sample video clips of the instructor's actual lectures & practical sessions during the course conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of seismic inversion techniques, methods and application for geophysicists, geologists and reservoir engineers.

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.

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: -

- 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:

Mr. Konstantin Zorbalas, MSc, BSc, is a **Senior Petroleum Engineer & Well Completions Specialist** with over **25 years** of **offshore** and **onshore** experience in the **Oil** & **Gas**, **Refinery** & **Petrochemical** industries. His wide expertise includes **Workovers & Completions**, **Petroleum Risk & Decision Analysis**, **Acidizing Application** in **Sandstone** & **Carbonate**, **Well Testing Analysis**, **Stimulation Operations**, **Reserves Evaluation**, **Reservoir Fluid Properties**, **Reservoir Engineering & Simulation Studies**, **Reservoir Monitoring**, **Artificial Lift Design**, **Gas Operations**, **Workover/Remedial Operations** & **Heavy Oil Technology**, **Applied Water Technology**, **Oil & Gas Production**, **X-mas Tree** & **Wellhead Operations** & **Testing**, **Artificial Lift Systems** (**Gas Lift**, **ESP**, and **Rod Pumping**), **Well Cementing**, **Production Optimization**, **Well Completion Design**, **Sand Control**, **PLT Correlation**, **Slickline Operations**, **Acid Stimulation**, **Well testing**, **Production Logging**, **Project Evaluation** & **Economic Analysis**. Further, he is actively involved in **Project Management** with special emphasis in production technology and field optimization, performing conceptual studies, economic analysis with risk assessment and field development planning. He is currently the **Senior Petroleum Engineer & Consultant** of **National Oil Company** wherein he is involved in the mega-mature fields in the Arabian Gulf, predominantly carbonate reservoirs; designing the acid stimulation treatments with post-drilling rigless operations; utilizing CT with tractors and DTS systems; and he is responsible for gas production and preparing for reservoir engineering and simulation studies, well testing activities, field and reservoir monitoring, production logging and optimization and well completion design.

During his career life, Mr. Zorbalas worked as a **Senior Production Engineer**, **Well Completion Specialist**, **Production Manager**, **Project Manager**, **Technical Manager**, **Technical Supervisor** & **Contracts Manager**, **Production Engineer**, **Production Supervisor**, **Production Technologist**, **Technical Specialist**, **Business Development Analyst**, **Field Production Engineer** and **Field Engineer**. He worked for many **world-class oil/gas companies** such as **ZADCO**, **ADMA-OPCO**, **Oilfield International Ltd**, **Burlington Resources** (later acquired by **Conoco Phillips**), **MOBIL E&P**, **Saudi Aramco**, **Pluspetrol E&P SA**, **Wintershall**, **Taylor Energy**, **Schlumberger**, **Rowan Drilling** and **Yukos EP** where he was in-charge of the **design and technical analysis** of a gas plant with capacity **1.8 billion m3/yr gas**. His achievements include **boosting oil production 17.2% per year** since 1999 using **ESP** and **Gas Lift systems**.

Mr. Zorbalas has **Master** and **Bachelor** degrees in **Petroleum Engineering** from the **Mississippi State University**, **USA**. Further, he is an **SPE Certified Petroleum Engineer**, **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an active member of the Society of Petroleum Engineers (**SPE**) and has numerous scientific and technical publications and delivered innumerable training courses, seminars and workshops worldwide.

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 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 Seismic Inversion*** *Seismic Inversion and It's Purpose • History & Evolution of Seismic Inversion Techniques • The Relationship Between Seismic Data & Subsurface Properties*
0930 – 0945	*Break*
0945 - 1145	***Seismic Data Processing & Preparation for Inversion*** *Data Quality Control & Correction Techniques*
1145 -1230	***Seismic Data Processing & Preparation for Inversion (cont'd)*** *Pre-Stack & Post-Stack Data Preparation*
1230 - 1245	*Break*
1245 - 1420	***Seismic Data Processing & Preparation for Inversion (cont'd)*** *Pre-Stack & Post-Stack Data Preparation (cont'd)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 830	***Basic Seismic Inversion Concepts & Techniques*** *Basic Seismic Inversion Techniques • Amplitude Versus Offset Inversion • Reflectivity Inversion*
0830 - 0930	***Basic Seismic Inversion Concepts & Techniques (cont'd)*** *Reflectivity Inversion*
0930 –0945	*Break*
0945 – 1230	***Advanced Seismic Inversion Techniques*** *AVO Inversion • Full Waveform Inversion • Joint Inversion*
1230 - 1245	*Break*
1245 - 1420	***Seismic Inversion for Rock Property Estimation*** *Estimating Subsurface Rock Properties Using Seismic Inversion • Integration of Well Log Data in Seismic Inversion*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Seismic Inversion for Fluid Property Estimation*** *Estimating Subsurface Fluid Properties Using Seismic Inversion*
0830 - 0930	***Seismic Inversion for Fluid Property Estimation (cont'd)*** *Applications of Fluid Property Estimation in Hydrocarbon Exploration & Production*
0930 – 0945	*Break*
0945 – 1230	***Seismic Inversion for Geological Structure Analysis*** *Estimating Subsurface Geological Structures Using Seismic Inversion*
1230 - 1245	*Break*
1245 - 1420	***Seismic Inversion for Geological Structure Analysis (cont'd)*** *Estimating Subsurface Geological Structures Using Seismic Inversion (cont'd)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

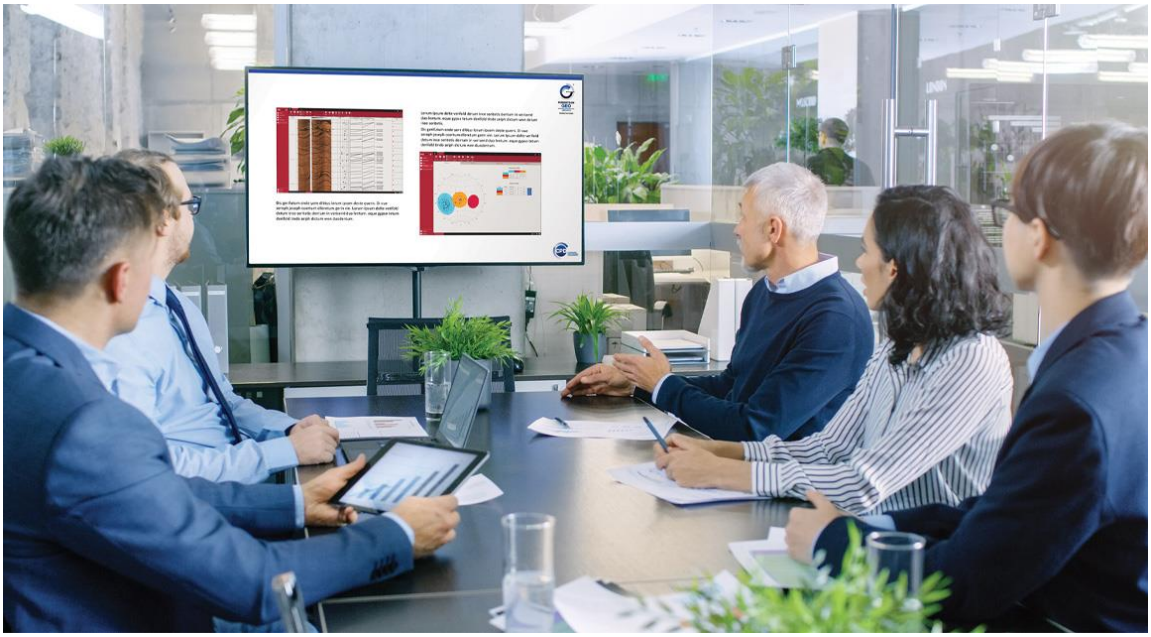
0730 – 0830	***Seismic Inversion for Geological Structure Analysis*** *Applications of Geological Structure Analysis in Hydrocarbon Exploration & Production*
0830 - 0930	***Seismic Inversion for Geological Structure Analysis (cont'd)*** *Applications of Geological Structure Analysis in Hydrocarbon Exploration & Production*
0930 – 0945	*Break*
0945 – 1230	***Seismic Inversion for Reservoir Characterization*** *Estimating Subsurface Reservoir Properties Using Seismic Inversion*
1230 - 1245	*Break*
1245 - 1420	***Seismic Inversion for Reservoir Characterization (cont'd)*** *Estimating Subsurface Reservoir Properties Using Seismic Inversion (cont'd)*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

0730 – 0830	***Seismic Inversion for Reservoir Characterization (cont'd)*** *Integration of Seismic Inversion with Other Geophysical & Geological Data for Reservoir Characterization*
0830 - 0930	***Seismic Inversion for Reservoir Characterization (cont'd)*** *Integration of Seismic Inversion with Other Geophysical & Geological Data for Reservoir Characterization (cont'd)*
0930 – 0945	*Break*
0945 – 1145	***Case Studies & Hands-On Exercises*** *Case Studies on Seismic Inversion in Various Geological Settings • Hands- On Exercises Using Seismic Inversion Techniques to Estimate Subsurface Properties*
1145 - 1230	***Case Studies & Hands-On Exercises (cont'd)*** *Hands- On Exercises Using Seismic Inversion Techniques to Estimate Subsurface Properties*
1230 - 1245	*Break*
1245 – 1400	***Conclusion & Wrap Up*** *Review of Key Concepts & Topics Covered in the Course • Discussion of the Best Practices & Limitations of Seismic Inversion Techniques*
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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