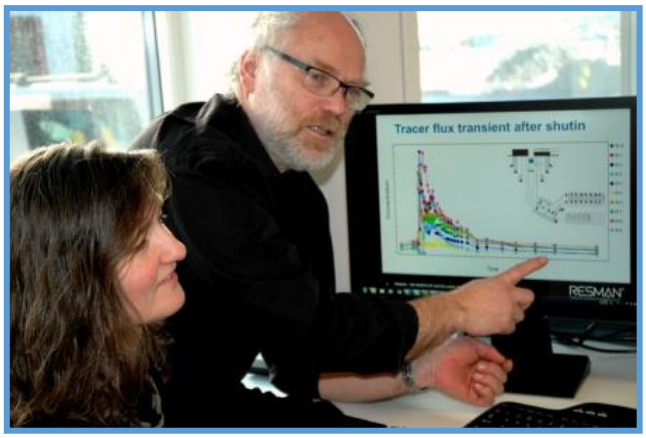
COURSE OVERVIEW DE0881
Production Logging
(E-Learning Module)

Course Title
Production Logging
(E-Learning Module)



Course Reference
DE0881

Course Format & Compatibility
SCORM 1.2. Compatible with IE11, MS-Edge, Google Chrome, Windows, Linux, Unix, Android, IOS, iPadOS, macOS, iPhone, iPad & HarmonyOS (Huawei)

Course Duration
30 online contact hours
(3.0 CEUs/30 PDHs)

Course Description

This E-Learning is designed to provide participants with up-to-date overview of production logging. It covers the various types of logs including the applications and special conditions, gamma ray principles and auxiliary tools; the calipers, fluid density measurements and the main purposes for making a density measurement; the two major types of fluid density tools, other effects, nuclear fluid density tool, capacitance tool schematic and pressure & temperature measurements; the pressure measurements techniques, temperature applications, cased hole and production log evaluation and reservoir monitoring; and the thermal neutron decay measurement and the operation principle of thermal neutron decay measurement.

During this interactive course, participants will learn the time lapse technique for saturation monitoring from thermal neutron decay measurement;' the fluid front advance detection and monitoring; the new technology for cased hole logging for formation evaluation; the pressure measurements techniques, temperature applications, log interpretation and logging and interpretation procedures; the result of a production log interpretation; and the logging and interpretation procedures.

Course Objectives

After completing the course, the employee will:-

- Apply and gain systematic techniques on production logging
- Measure zonal inflows in producing wells using temperature measurements
- Measure multi-phase flow using temperature, spinner (flowmeter), and fluid holdup measurements
- Define injection profiles using temperature, radioactive tracer, and spinner (flowmeter) measurements
- Identify flow behind pipe with temperature, radioactive tracer, or noise logs- Interpret cement bond logs and ultrasonic logs to determine cement quality
- Measure flow inside and outside casing with pulsed neutron tools
- Apply specialty tools (array holdup and spinners and pulsed neutron tools) for flow profiling in high angle/horizontal wells
- Confirm the location of some types of completion components using pulsed neutron measurements
- Design a logging program using the appropriate production logging services for well diagnosis and reservoir surveillance
- Identify the various types of logs including the applications and special conditions, gamma ray principles and auxiliary tools
- Discuss calipers, fluid density measurements and the main purposes for making a density measurement
- Recognize the two major types of fluid density tools, other effects, nuclear fluid density tool, capacitance tool schematic and pressure & temperature measurements
- Employ pressure measurements techniques, temperature applications, cased hole and production log evaluation and reservoir monitoring
- Apply thermal neutron decay measurement and the operation principle of thermal neutron decay measurement
- Carryout time lapse technique for saturation monitoring from thermal neutron decay measurement as well as fluid front advance detection and monitoring and the new technology for cased hole logging for formation evaluation
- Illustrate pressure measurements techniques, temperature applications, log interpretation and logging and interpretation procedures
- Interpret data, review the result of a production log interpretation and discuss pin-point accuracy, ghost measurement principle and direct measurements for production logging
- Identify some of the potential problems in horizontal wells, scanning capability, production logging measurements and typical production log
- Employ logging and interpretation procedures and identify some of the potential problems in horizontal wells

Who Should Attend

This course is intended for petroleum engineers, production engineers, drilling engineers, reservoir engineers, petrophysicists, log analysts, and anyone interested in understanding what production logs and cased-hole surveys.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations: -

- USA International Association for Continuing Education and Training (IACET)

  Haward Technology is an Authorized Training Provider by the International Association 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 1-2013 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 1-2013 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 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.

Training Methodology

This Trainee-centered course includes the following training methodologies:-

- Talking presentation Slides (ppt with audio)
- Simulation & Animation
- Exercises
- Videos
- Case Studies
- Gamification (learning through games)
- Quizzes, Pre-test & Post-test

Every section/module of the course ends up with a Quiz which must be passed by the trainee in order to move to the next section/module. A Post-test at the end of the course must be passed in order to get the online accredited certificate.

Course Fee

As per proposal

Course Contents

- Organizational Impact
- Tool Limitations
- Types of Logs
- Applications and Special Conditions
- Production Logging
- Gamma Ray Principles
- Auxiliary tools
- Calipers
- Fluid Density Measurements
- Main purposes for making a density measurement
- Two major types of fluid density tools
- Other Effects
- Nuclear Fluid Density Tool
- Capacitance Tool Schematic
- Pressure & Temperature Measurements
- Pressure measurements techniques

- Temperature Applications
- Cased Hole and Production Log Evaluation
- General
- Open Hole Logging: Tools and their applications
- Reservoir Monitoring
- Production Logging
- Workshop on Production logging
- Well Integrity
- Workshop on leak detection, corrosion monitoring and cement evaluation
- Sonic measurement of the bond between casing and cement
- Slim Array Sonic Tool
- SlimXtreme Sonic Logging Tool
- Digital Sonic Logging Tool
- Hostile Environment Sonic Logging Tool
- Slim Cement Mapping Tool
- Memory Slim Cement Bond Logging Tool
- Thermal Neutron Decay Measurement
- Main Objective of Thermal Neutron Decay Measurement
- Basic Principle of Thermal Neutron Decay Measurement
- Thermal Neutron Absorption or Capture
- Fast Neutron Absorption or Capture
- Elastic Scattering
- Inelastic Scattering
- Life of a Neutron
- Hydrogen Index (HI)
- Capture Cross Section (∑)
- Operation Principle of Thermal Neutron Decay Measurement
- Thermal Decay Time Log (TDT)
- Pulsed Neutron – Neutron Log (PNN)
- Saturation Interpretation Theory
- Volumetric Method of Interpretation
- Standard Quantitative Interpretation Model

- Graphical Determination of Total Water Saturation (S_{WT}) from Thermal Neutron Decay Measurement
- Time Lapse Technique for Saturation Monitoring from Thermal Neutron Decay Measurement
- Fluid Front Advance Detection and Monitoring
- New Technology for Cased Hole Logging for Formation Evaluation
- Reservoir Saturation Tool (RST) C/O
- Cased Hole Formation Resistivity
- Log Examples and Case Study
- Tool Limitations
- Types of logs
- Production logging
- Applications and special conditions
- Gamma Ray Principles
- Basic Gamma Ray Uses
- Bed definition
- Computation of the amount of shale
- Auxiliary tools
- Calipers
- Fluid Density Measurements
- Other Effects
- Nuclear Fluid Density Tool
- Capacitance Tool Schematic
- Pressure & Temperature Measurements
- Pressure Measurements Techniques
- Temperature Applications
- Log Interpretation
- A Typical Production Log
- Logging and Interpretation Procedures
- Interpreting the Data
- The Result of a Production Log Interpretation
- Spinner Pitch vs Slope of Calibration Plot
- Cable Speed Convention
- Velocity Profile Correction Factor VPCF

- Relationship of Reynolds Number to Flow Rate
- Flowmeters Measure Different Flowrates Depending
- GHOST and PS Platform Overview
- Flowview Probe Principal
- Pin-Point Accuracy
- GHOST Measurement Principle
- Direct Measurements for Production Logging
- GHOST Log Output
- SPRINT “Classic” Computations
- Bubble Rate Equation
- 3-Phase Flow Profile
- Unique Applications of Ghost
- Some of the Potential Problems in Horizontal Wells
- Production Logging
- ‘Flagship’ Tool String: PSP Architecture
- PL Application: TPHU Theory
- Three-Phase Hold-ups
- “Global” hold-up tools
- “Local” hold-up tools
- Horizontal Multiphase Flow
- Production Logging
- FSI Sonde Structure
- FloScan Imager * Holdup Sensors
- FloScan Imager * Sonde Design
- Scanning Capability
- Log Interpretation
- Production Logging Measurements
- A Typical Production Log
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