



Fundamentals of Petroleum Drilling

2-day interactive short course:

COURSE HIGHLIGHTS

- * Presented by an active industry consultant with over 30 years upstream experience
- * Gain the added dimension of a geologist's view of the impact drilling practices have on data collection and quality, and ultimately the bottom line: reserves estimation
- * Extensive use of diagrams, models, demonstrations and short videos to clarify complex concepts
- * Hands-on class exercises and case studies are used to reinforce learning
- * An experienced and professional presenter who makes the course interesting and fun!
- * Detailed course materials, including glossaries of terms and drilling abbreviations for ongoing future reference

WHO SHOULD ATTEND?

- New graduates entering the E&P business: geologists, geophysicists, engineers who want to know how the drilling process works
- Accountants, contracts, procurement specialists etc dealing with rig operations who want to understand the equipment and terminology
- Managers whose responsibilities include drilling operations but who have little or no drilling background and want to get up to speed quickly and easily
- Professionals working in E&P who want to understand more about the drilling side of the business
- Personnel who work in one part of the drilling business but want to gain an overview of the whole process from start to finish



Adrian Williams is an Explorationist who has over 30 years experience in the upstream oil & gas industry, having worked for a variety of companies, large and small, including Shell Australia, Bond Energy, Delhi Petroleum, Apache Energy, Petroleum GeoServices, various E&P subsidiaries of Mitsubishi Corporation, Kufpec Australia and Woodside Energy. He has extensive experience gained through a variety of career functions including Wellsite Geologist, Offshore Rig Positioning Bird-dog, Wellsite Geophysical Supervisor, Senior Explorationist, Chief Geophysicist and Exploration Supervisor, to cite just a few. He has worked on virtually all of the basins in Australia, as well as parts of New Zealand, Indonesia, Malaysia, India, Cambodia, Philippines, China, Vietnam and the Gulf of Mexico. Prior to that, Adrian spent a number of years in research and teaching at the University of Newcastle (New South Wales, Australia) and in an underground nickel mining operation. He was also an honorary member of staff at the Department of Geology & Geophysics, Curtin University (Western Australia) where he spent a number of years part-time teaching post-graduate students. Over the past 16 years, through his private company PetroSearch, he now presents a range of oil and gas training courses and consulting services throughout Australia and Southeast Asia.

Adrian has an Honours degree in geology (BSc(Hons)), a Masters degree in Business Administration (MBA), and a Diploma of Education (Dip Ed). He has published a number of technical papers in Australian and international journals and is the founding editor of the Petroleum Exploration Society of Australia's (PESA's) national newsletter.

COURSE OUTLINE

DAY ONE

1. Introductions
 2. Historical background to the industry
 3. How drilling fits into the E&P process
- ✓ **Exercise: Prospect mapping and selecting well locations**
1. Pre-drill preparation: budgets, AFEs, long lead items
 2. The drilling team, personnel logistics, contract services
- ✓ **Exercise: Drilling Time-Depth plots & well prognosis**
1. The rig fleet – specs, photos, videos
 2. Drilling equipment: fundamental components and their functions
 3. Process of drilling – step by step operation
- ✓ **Hands-on demonstrations & videos**

DAY TWO

1. Drilling fluid: Properties and critical importance
 2. Evaluation techniques: mudlogging, wireline, MWD/LWD, testing
- ✓ **Exercise: Estimating Net:Gross reservoir from logs**
1. Drilling profiles – vertical through to horizontal
 2. Safety and environmental issues
- ✓ **Case histories – successes and failures!**
1. Risk management – control and recovery, fishing
 2. Advanced drilling techniques: multi-laterals, extended reach, casing drilling, deepwater
 3. Appraisal, development and reserves estimation
- ✓ **Exercise: Understanding Reserves: Beans, beans & more beans**

BY ATTENDING THIS COURSE, PARTICIPANTS WILL:

- Gain a comprehensive overview of drilling processes and the technical functions of drilling equipment
- Learn drilling terminology and jargon by seeing the equipment and how it is used
- Understand current drilling procedures and practices in both onshore and offshore environments, shallow and deep water
- Gain an appreciation of the risks and uncertainties involved in drilling, how these can impact the bottom line and how they can be managed
- Reinforce new-found learnings through analysis of various drilling reports and other drilling related documents
- Gain insight into the latest technological developments and their impacts on future work programs

Detailed Course Outline

- Overview of drilling activities
 - The historical record and current worldwide activity levels
- Rules and regulations
 - Who controls the drilling process; safety and environmental constraints
 - Reporting requirements

EXERCISE: Decoding a drilling report
- Pre-drill preparations
 - Selecting a drilling location
 - Rig types and characteristics
 - Well planning, procedures and budgets

EXERCISE: Constructing a time-depth well prognosis
EXERCISE: Budgeting a well
- Drilling the well
 - Components of a rig – hoisting, circulating, rotating and control systems
 - The mechanics of making hole
 - Special techniques - deviated and horizontal drilling

CASE STUDY: Intercepting a deviated wellbore
- Evaluating the well
 - Sources and reliability of well data
 - Mudlogging and coring
 - Oil and gas show analysis
 - Wireline logging
 - Measurement While Drilling
 - Flow testing

EXERCISE: Reading wellsite reports
EXERCISE: Working with well logs
- Completing the well
 - Well abandonment
 - Completion for production
- Drilling problems and remedies
 - Kicks, blowouts and oil spills
 - Loss of hole, loss of equipment and fishing
 - Workover and intervention techniques

CASE HISTORY: Repairing damaged well
- Fundamentals of Oil & Gas Production
 - Types and characteristics of reservoir drive mechanisms
 - Field development concepts
- Concepts of reserves
 - Categorisation of reserves and resources
 - Definitions: technical, proven, probable and possible
 - Approaches to reserves estimation: deterministic versus probabilistic
 - Measures of profitability: NPV and EMV

EXERCISE: Understanding press releases