**E&P Project Development Workshop: From Concept to Production**

**Program Objectives**

This workshop teaches the commercial, technical, economic, and project management processes used by today’s Exploration and Production (E&P) specialists, as they explore and develop a challenging deepwater offshore field. It covers all aspects of a petroleum upstream project including concession terms, seismic program design and analysis, exploration drilling decisions, well and reservoir performance, field development planning covering resource estimation, uncertainty management, and project economics within the confines of the classical upstream project decision-making process. This program is ideal for technical and commercial specialists who wish to learn the integrated project management approach to developing major E&P projects.

**Who Should Attend**

This program is ideal for commercial and technology specialists who seek a practical understanding of the processes required to explore for and develop a challenging exploration prospects through field development and production.

**Instructional Format**

In this program, learning takes place in a lecture and mentor-facilitated workshop environment where teams of participants methodically manage the exploration and development decisions of a deepwater offshore prospect in West Africa. During the business game, teams make sequential decisions to move the prospect along a simulated timeline, from the execution of the exploration agreement to EPC construction, and an overview of the production life cycle. Presentations are made by the participants to the IHRDC course mentors at key decision points during the week; on the final day, a comprehensive team presentation is made on their overall decisions, recommendations, and expectations for field performance.

**Lecture Sessions**

Lectures are limited and are meant to provide overview, guidance, and subject reference materials for discussion as participant teams make decisions in the various workshop sessions. The following pages outline the lecture and workshop sessions in detail and demonstrate how they are integrated in the Workshop Schedule.

**Program Location and Schedule**

Daily sessions will start at 8:00 AM and run until 5:00 PM. Participants will receive further information on location and schedule upon registration.
Lecture Sessions

- Hydrocarbon Properties
- Overview of the Energy Industry and Oil and Gas Value Chain
- Host Country and JOA Exploration Agreements (Overview)
- The E&P Stage-Gate Process
- Petroleum Project Economics Investment Criteria and Risk Analysis
- Petroleum Geology, Geophysics, and Exploration Process
- Formation Evaluation Methods
- Drilling and Well Completions
- Reservoir Characterization, Resources, and Reserves Estimation
- Planning for Development: Subsurface Plan
- Surface Facilities Plan Alternatives: Oil, Gas, and Gas Liquids
- Market Plan Alternatives: Crude Oil, Products, Natural Gas and Gas Liquids
- Estimating CAPEX and OPEX/Sources of Capital
- Preparing Optimal Development Plan: Subsurface Lockdown, FEED, and FID
- EPC Management of Projects and Negotiation with Contractors
- Management of Producing Assets: Reservoir, Wells, Surface Facilities and Markets
- Measuring Company Financial Performance

WORKSHOP SETTING

Atlantica: West Africa Offshore E&P Project Business Game

IHRDC’s highly regarded all-digital project management workshop simulates the processes followed as teams of specialists evaluate an exploration and development opportunity and manage it through abandonment. Participants explore a deep offshore license area in the Republic of Atlantica, West Africa. A production-sharing contract (PSC) has been negotiated with the Ministry and your team has just been informed that it is to explore and, if feasible, develop, and manage viable prospects through their life cycle.

Your team has access to two seismic lines across the license area that indicate the presence of some possible structures at the target formation. An analog field, just across the border in Nigeria, came on stream last year, and you have substantial information on its reservoir properties, well performance, development plan, production levels, and capital and operating costs. You are given financial models and other technical tools to perform the necessary analyses on both deterministic and probabilistic bases. Now it is up to your team to use available capital, technology, market information, and analysis tools, following the best practices of the E&P Stage-Gate project management process. You are asked to perform high level analyses to make the sequential decisions necessary to reach an optimal development plan for this deepwater opportunity.

The workshop sessions include:

- Introduction to the Atlantica Workshop
- Review of the E&P Economic Model and Atlantica PSC Agreement
- Seismic Exploration Decision
- Atlantica Exploration Well Decision
- Atlantica Appraisal Well Program
- Estimating Contingent Resources
- Team Presentation to Mentor
- Establishing Commercial Viability
- Atlantica Field Development Plan and Market Options
- Comparison of Development Alternatives for Atlantica
- Prepare Optimal Plan for Atlantica
- Finalize Oil and Gas Market Contracts
- Atlantica Field Development and Facilities Construction
- Review of Atlantica Performance after 20 Years
- Team Presentation to Mentors and Company Managers
WORKSHOP SCHEDULE

DAY ONE

Welcome, Program Overview & Participant Introductions

BACKGROUND TOPICS

Hydrocarbon Properties
Overview of the Energy Industry and the Oil and Gas Value Chain
Host Country and JOA Exploration Agreements (Overview)

Introduction to the Atlantica Workshop
The E&P Stage-Gate Process
Petroleum Project Economics Investment Criteria and Risk Analysis

Review of the E&P Economic Model & Atlantica PSC Agreement

STAGE ONE: Assess Exploration Opportunity
Petroleum Geology, Geophysics, and Exploration Process

Seismic Exploration Decision

DAY TWO

Formation Evaluation Methods
Drilling and Well Completions

Atlantica Exploration Well Decision

Atlantica Appraisal Well Program
Reservoir Characterization, Resources and Reserves Estimation

Estimating Contingent Resources. Review of Atlantica Project Economics

Team Presentation to Mentor
Establish Commercial Viability

STAGE TWO: Analyze Development Options
Planning for Development: Subsurface Plan

DAY THREE

Surface Facilities Plan Alternatives: Oil, Gas, & Gas Liquids
Market Plan Alternatives: Crude Oil, Products, Natural Gas and Gas Liquids
Estimating CAPEX and OPEX/Sources of Capital

Atlantica Field Development Plan and Market Options

Comparison of Development Alternatives for Atlantica

STAGE THREE: Optimize Development Plan

Prepare Optimal Development Plan: Subsurface Lockdown, FEED and FID
Prepare Optimal Plan for Atlantica
Finalize Oil and Gas Market Contracts

STAGE FOUR: Execute Development Plan
EPC Management of Projects and Negotiation with Contractors

Atlantica Field Development and Facilities Construction

STAGE FIVE: Manage Production Life Cycle
Management of Producing Assets: Reservoir, Wells, Surface Facilities and Markets

DAY FIVE

Measuring Company Financial Performance

Review of Atlantica Performance after 20 Years
Preparation of Presentations

Team Presentation to Mentors and Company Managers
For this program there will be a senior lecturer. He will be assisted by a Workshop Facilitator who will direct the simulation sessions. Their backgrounds are as follows:

**Dr. Y. Serdar Dogulu** is Director of Innovative Learning Solutions at IHRDC. He is involved in the content and interface development of interactive Learning Simulators and other associated training products. Dr. Dogulu has been very active in building and teaching company-specific technical and project management programs for IHRDC clients and is the principal developer and instructor for IHRDC’s highly regarded E&P Learning Simulators. For the Arlington Group, an IHRDC affiliate, he was also actively involved in technical and financial modeling studies of underground gas storage projects. After earning his Ph.D. in Petroleum and Natural Gas Engineering from Pennsylvania State University, Dr. Dogulu held a postdoctoral researcher position with the Energy and Geo-Environmental Engineering Department at Penn State. His areas of interest include numerical simulation and reservoir management. Dr. Dogulu spent a summer as a Research Technologist at the Chevron Petroleum Technology Company developing reservoir simulation and management tools, including stream-tube simulation techniques for modeling large oil reservoirs.

**Dr. Erhan Aslan** is a Learning Simulator Specialist and Program Facilitator at IHRDC. Dr. Aslan began his career in Abu Dhabi as a reservoir engineer at Kelkar and Associates and was involved in multiple projects on reservoir development and characterization for fields in the Middle East and Russia. In 2006, he relocated to Tulsa, Oklahoma for his M.S. in Upscaling of Tight Gas Reservoirs within the Petroleum and Natural Gas Engineering department at the University of Tulsa. He then attended Pennsylvania State University, graduating in August 2013 with a Ph.D. in Petroleum and Natural Gas Engineering. His thesis was entitled Development of an Advanced Coalbed Methane (CBM) Numerical Reservoir Simulator. During his studies at Penn State and the University of Tulsa, he taught classes on Drilling Fluids, Production Engineering, Well Testing and Evaluation, Numerical Reservoir Simulations, and Rock and Fluid Properties for graduate and undergraduate students. He received the Outstanding Graduate Assistant Award from Penn State in April 2013. Currently, he is working on the development of Interactive Learning Simulators at IHRDC. His areas of interest include reservoir characterization, development of numerical reservoir simulators, unconventional gas reservoirs, parallel programming, and static and dynamic reservoir simulation modeling.

**Piers Cooke-Yarborough** is a Subject Matter Expert and Senior Competency Specialist for the subsurface technical disciplines, particularly Geology, Petrophysics, and Geophysics. He worked for ConocoPhillips and its predecessor companies for 30 years in a succession of exploration and production subsurface technical, asset management, and senior management roles in each of the Europe-Africa, Asia-Pacific, and North American divisions, prior to a global geoscience managerial role at company headquarters. He has a B.S. in Geology from the University of Bristol, an M.S. in Petroleum Engineering from Heriot Watt University, and an MBA from Henley Management College. Piers has worked on a number of projects in IHRDC’s business lines of Instructional Programs, Competency Management, and e-Learning Solutions. He has more than 20 technical publications and has taught many courses in Africa, Europe, Asia, and the Americas.

**Bob Pearson** is a Petroleum Engineering Advisor and Managing Director of E&P Technologies - Training, a Singapore-based company focused on three core areas: unconventional oil and gas E&P technology transfer, Business Opportunities involving state-of-the-art productivity or recovery enhancement technologies, and provision of Technical Training Services. He began his career in 1970 as a Production and Well Engineer with Shell International in Southeast Asia and the North Sea, and later worked for Petro-Canada in Western Canada and the Canadian Frontiers. In 1983, he began consulting with APA Petroleum Engineering Inc (now part of RPS Energy Canada Ltd). In 2007, Bob returned to Singapore, first as the Operational Director of the RPS Energy consulting team and then for CBM/CSG Services before establishing E&P Technologies – Training in late 2009. In recent years, he has been heavily involved in subsurface peer reviews and development plan audits for major Unconventional and Frontier Projects on behalf of both operators and lenders. He has been a Distinguished Lecturer for the SPE and the Canadian Section (formerly the Petroleum Society of CIM) and is a Registered Professional Engineer with APEGGA in Alberta, Canada; and a member of the SPE.