DIGITAL ENERGY ASIA
TRAINING COURSE | 2018

INTRODUCTION TO

UPSTREAM OIL AND GAS

INDUSTRY IN DIGITAL ERA

Instructor :

Salis S. Aprilian, Ph.D.

25 - 27 July 2018

at The Royal Ambarrukmo Hotel, Yogyakarta

INTRODUCTION TO

UPSTREAM OIL AND GAS INDUSTRY IN DIGITAL ERA

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BONUS
City Tour by Jeep

FREE
Pick-up/Drop-off at the Airport

OVERVIEW OF UPSTREAM OIL AND GAS BUSINESS, BASICS OF SUBSURFACE ENGINEERING, AND WELL DRILLING PRACTICES	DAY 1
BASICS OF FORMATION AND RESERVOIR EVALUATION, PRODUCTION TECNOLOGY AND OPTIMIZATION.	DAY 2
BASICS OF ENHANCED OIL RECOVERY, UNCONVENTIONAL OIL AND GAS, ECONOMICS, FIELD DEVELOPMENT, INTRODUCTION TO DIGITAL OIL FIELDS, AND CASE STUDIES.	DAY 3

ABOUT SALIS S. APRILIAN, PH.D.

Salis accomplished Ph.D degree in Petroleum Engineering from Texas A&M University in 1998, and obtained his Bachelor and Master degrees in Petroleum Engineering from Bandung Institute of Technology (ITB) in 1987 and 1993. Before he took early retirement from Pertamina on April 2018, he was Technical Expert/Strategic Adviser to Gas Directorate, PT Pertamina (Persero). He joined with Pertamina on September 1989, and has been assigned in various technical and managerial key positions in Pertamina Upstream and Downstream business. He has written tens of technical papers and some articles (opinions) about oil, gas, LNG, and energy in several professional journals, technical conference proceedings, magazines and newspapers. He published the book with a title of "MEMBANGUN(KAN) PERUSAHAAN ENERGI NASIONAL" in 2012. He is very active in professional organizations, such as SPE, IATMI, IPA, IGS, METI, and IAGI. He has shared and taught various subjects in reservoir engineering, production optimization, oil/gas field development, gas & LNG, new renewable energies, and practical/strategic management.

SUMMARY

This course is designed to provide an introduction to oil and gas industry in Digital Era with a thorough overview of the most key aspects of Petroleum Engineering, technology and its applications in the Upstream Oil & Gas activities. The course addresses engineering issues ranging from initial involvement with explorationists, reserves evaluation and field development, well drillings, and all the aspects of production optimization. The sessions will focus on relevant and practical issues; including real case studies.

WHO SHOULD ATTEND

This course is aimed to enhance the knowledge of energy professionals at any managerial and technical levels (Managers, Assistant Managers, Specialists, Young Engineers, etc.) to make a broader view of the Upstream Oil and Gas Industry in the Digital Era.

DIGITAL ENERGY ASIA

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DIGITAL ENERGY ASIA

TITLE	:	**INTRODUCTION TO UPSTREAM OIL AND GAS INDUSTRY IN DIGITAL ERA**
INSTRUCTOR	:	**Salis S. Aprilian, Ph.D.**
DURATION	:	**3 Days, 25 – 27 July 2018**
VENUE	:	**The Royal Ambarrukmo Hotel, Yogyakarta**
COURSE FEE	:	**Rp. 10.000.000,-** *(Discount 20% for 2 or more participants from the same company/institution)*

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LEARNING OUTCOMES

- Understand the various petroleum engineering functions
- Obtain a basic knowledge of the physical properties of hydrocarbons and how they affect production.
- Gain an understanding of the basics of drilling engineering, system, and operations
- Gain an understanding of the reservoir engineering and what occurs in the reservoir in relation to drive mechanisms resulting recovery, and reservoir characterization in resource/reserve calculations.
- Gain an understanding the basics of how to estimate oil/gas in place more accurately with several calculation methods.
- Gain an understanding of the production engineering and operations.
- Gain an understanding the basics of field development and conduct simple quantitative calculations of the entire data acquisition operation of petroleum engineering (production geology, formation evaluation, reservoir data, drilling data, and production data management).
- Obtain a basic understanding of economic evaluation through the use of cash-flow.
- Understand the opportunities and challenges the upstream oil and gas industry in the Digital Era.
- Learn from the real experiences through Case Studies.
- Gain Managerial Tips from ex-CEO to pursue a brighter carrier in Oil and Gas industry.

WHO SHOULD ATTEND

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AGENDA

DAY 1 : OVERVIEW OF UPSTREAM OIL AND GAS BUSINESS, BASICS OF SUBSURFACE ENGINEERING, AND WELL DRILLING PRACTICES

DAY 2 : BASICS OF FORMATION AND RESERVOIR EVALUATION, PRODUCTION TECNOLOGY AND OPTIMIZATION.

DAY 3 : BASICS OF ENHANCED OIL RECOVERY, UNCONVENTIONAL OIL AND GAS, ECONOMICS, FIELD DEVELOPMENT, INTRODUCTION TO DIGITAL OIL FIELDS, AND CASE STUDIES.

DIGITAL ENERGY ASIA

COURSE AGENDA

DAY ONE – Morning

1. **OVERVIEW**
   a. Oil and gas reserves breakdown
   b. The main components of oil/gas field development plans
   c. Brief the role of each discipline (geophysicists, geologists, petrophysicts, reservoir engineers, production engineers, facility engineers, etc.)

2. **RESERVOIR GEOLOGY**
   a. Geologic cycle
   b. Depositional environment
   c. Types of reservoir rocks
   d. Main elements of petroleum reservoirs
   e. Geological maps

3. **ROCK PROPERTIES**
   a. Types of rock porosity and measurements
   b. Definitions of formation permeability and measurements
   c. Rock wettability and effect on field performance
   d. Capillary pressure

4. **FLUID PROPERTIES**
   a. Hydrocarbon classifications and fluid sampling
   b. Phase envelops description of oil and gas field
   c. Physical properties of oil and gas fields
   d. Methods of fluid sampling and PVT analysis

DAY ONE – Afternoon

5. **WELL DRILLING AND COMPLETION METHODS**
   a. Background history
   b. Well construction/drilling

6. **ROTARY DRILLING**
   a. Description of rotary systems
   b. Hoisting system
   c. Rotary system
   d. Pipe connection, BOP, tubing and casing hangers
   e. Top drive method

7. **DRILLING FLUIDS**
   a. Function of drill mud
   b. Physical properties of drill mud
   c. Water and oil base
   d. Mud weight, viscosity, fluid loss

8. **DRILLING BITS**

9. **OTHER DRILLING EQUIPMENT AND OPERATIONS**

10. **UNDERBALANCED DRILLING AND COILED TUBING DRILLING**

11. **HORIZONTAL/DIRECTIONAL WELL DRILLING**

12. **OFFSHORE DRILLING**

13. **WELL COMPLETION TECHNIQUES**

DAY TWO – Morning

14. **REFRESH (HIGHLIGHT) DAY-ONE'S MATERIALS**

15. **RESERVOIR ENGINEERING**
    a. Basic of Reservoir Engineering
    b. Reservoir drives
        i. Primary and secondary recoveries
        ii. Types of reservoir drives and impact on performance
    c. Reserves Estimation
        i. Reserves classification and definitions
        ii. Volumetric and material balance methods
        iii. Decline analysis
        iv. Probabilistic method
        v. Empirical method to estimate recoverable reserves

16. **RESERVOIR DELINEATION & DEVELOPMENT**
    a. Structure of oil companies (past and now)
    b. Field development considerations
    c. Micro aspects (well design)
    d. Macro aspects (number of wells, production profile)
    e. Commercial consideration (Economic evaluation)

DAY TWO – Afternoon

17. **PRODUCTION ENGINEERING**
    a. Basic of Production Engineering
    b. Types and applications of artificial lift
        i. Impact on field performance
        ii. Different techniques (advantages and disadvantages)
    c. Horizontal well applications
        i. Benefits of horizontal wells
        ii. Geological, completion, and drilling risks

18. **PRODUCTION OPERATIONS AND OPTIMIZATION**
    a. Methods estimating well performance
    b. Operational problems (diagnostic and remedy methods)

19. **WELL TESTING**
    a. Equipment used in well testing
    b. Objectives setting of well testing
    c. Types of well tests
    d. Flow/build-up test and analysis
    e. Formation damage
    f. Drawdown testing and reservoir limit testing (RLT)

DAY THREE – Morning

20. **WELL STIMULATION METHODS**
    a. Acidizing
    b. Fracturing

21. **ENHANCED OIL RECOVERY (EOR)**
    a. Oil recovery mechanisms
    b. Types of EOR and screening
    c. Planning of a waterflood design
    d. Monitoring of waterflood project
    e. Review chemical and CO_2 floods

22. **UNCONVENTIONAL OIL AND GAS**
    a. Oil sands and thermal recovery (steam injection and in-situ combustion)

b. Coal bed methane (CBM)
c. Shale gas and oil shale and the applications of horizontal wells with multi fracking

23. ECONOMICS
a. Input data to economic evaluation
b. The concept of discounting cash flow
c. Various economic profitability indices
d. Example of running economics of well drilling

g. Cyber Security
h. Collaboration and Process
i. Industrial Internet Of Things (IIOT)
j. Smart Oil Field

25. FIELD CASE STUDIES
a. A Carbonate-Reservoir (Mature Field) Further Development
b. A Green-Field Development
c. A Digital Offshore Oil Field
d. A Deep-Water Block Development

DAY THREE – Afternoon

24. INTRODUCTION TO A DIGITAL OIL FIELD
a. Sensors, Machine, Devices
b. End-to-End Solution
c. Cloud Platform, Network and Infrastructure
d. Big Data Analytic
e. Remote Automation and Visualization
f. Production Operation Management

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