



Public Training Program

The Principles of Oil & Gas Industry

(5 Days) Workshop

05 – 09 April, Abu Dhabi

11 – 15 Oct, AlAin

Fee: 3500 \$US

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The Principles of Oil & Gas Industry

The programme:

The Introduction Oil & Gas Industry training programme is aimed at improving the delegates knowledge and understanding of the various principles of operations and processes involved in exploration; drilling and producing, of oil and gas and associated fluids. In this programme you will learn how to:

- Increase learning and comprehension of the various systems,
- Contributing towards safe, efficient and economic operation of plant and equipment.

This workshop will improve delegates' knowledge about various aspects of the oil and gas operations. These include exploration and geology, drilling and preparation, production of gas and oil, and surface processing units and operations. Issues related to mid-stream and down-stream will be discussed as well.

WHO SHOULD ATTEND?

Production □ personnel; Operations and maintenance supervisors
Technicians □ and support engineers
but □ would also be of benefit to safety and other support staff who have an interest in increasing their understanding of hydrocarbon Production Operations.

PROGRAMME OBJECTIVES - Participants attending the programme will:

1. Accurately describe the systems involved and their control
2. Learn about the important design principles of each system and operational characteristics
3. State the hazards associated with each key topic discussed within the process and utility systems
4. Understand the basic concepts and principles of operation involved when dealing with equipment used in Oil, Gas, Water Injection and Produced Water Systems
5. List the precautions taken when dealing with chemical and toxic substances and in particular
6. demonstrate an awareness of the hazards associated with Hydrocarbons



Course outline

● Day One

Introduction

- How to find oil & gas
- Oil and gas terms and definitions
- Oil and gas units and applications
- Oil and gas market and process
- Hydrocarbon & Reservoir Fluids
- API gravity factor
- Exploration Technology
- Seismic techniques
- Offshore and onshore exploration methods
- Seismic maps
- 2-D; 3-D and 4-D studies

● Day Two

Petroleum Geology,

- Rocks types and properties
- Oil and gas traps types and specifications
- Oil and gas fields
- Petroleum Reservoirs
- Reservoir rocks
- Porosity and permeability laws and calculations
- Faults types
- Naturally Fractured reservoirs
- Rocks mechanics and strengths
- Oil source rocks
- The salt domes

● Day Three

Petroleum Reservoirs,

- Oil in place calculations
- Gas in place calculations
- Formation volume factors
- Reservoir driving mechanisms (types and comparisons)
- Oil recovery factors
- Reservoir pressure and reservoir temperature variations and calculations
- Overpressure reservoir
- Sub pressure reservoirs
- Darcy law

Reservoir Development

- Well loggings
- Water injection
- Gas injection
- Steam injection
- Reservoir stimulation (hydraulic fracturing; acid injection)



● Day Four

Drilling Engineering & Operations

- Oil well drilling technology
- Drilling string
- Drilling fluid
- Casing of well
- Cements techniques
- Drilling rigs components
- Hoisting system
- Vertical drilling
- Directional drilling
- Horizontal drilling
- Multi lateral drilling
- Gas well drilling
- Drilling calculations
- Drilling problems

Well Completion Technology

- Completion fluid
- Well- head assembly (x-mass tree)
- Perforation techniques

● Day Five

Production Technology

- Production tubing
- Packer assembly
- Wellhead control
- The choke valves
- The flow line
- The separators
- Well test
- Artificial lift technology (ESP; Beam –Pump; Gas lift)

Surface Processing of Produced Fluids

- The separators
- The tanks
- The pipelines
- Oil treatment (de hydration)



Case studies and group discussion & sharing views
(trainees and instructors workshop)

Great opportunities for group discussion and sharing views and real case studies will be discussed and analysed.

It is friendly training course with very relaxing environment you will enjoy it for sure.



Instructor's Profile

Dr Hussain H Ahmed, MBE
BSc, MSc, PhD, PGCE, MChemE, MSPE

Dr. Hussain Ahmed is International Training Manager working at a large size technical College in the UK specialising in the development, management and delivery of a wide range of courses strongly related to Oil & Gas Industry, Petrochemical, Oil Refineries, Health & Safety, Environmental and Pollution Control.

QUALIFICATIONS AND DEGREES:

2002/04: PG Dip in Management, University of Liverpool.

I had studied for education management; it was part time course in the department of education in Liverpool University.

2002/03: BTEC Award in Distance Learning Support.

It is part-time studies with Network Training Publishing , North Yorkshire.

1997/99: PGCE in FE/HE , Manchester Metropolitan University.

Teaching methods, Assessing units (D32 and D33), applications of New Technology in education, Marketing of courses, Open/Flexible Learning, Learning Materials...etc.

The PGCE research was in '*marketing of the HE & chemical engineering courses*' nationally and internationally.

1996/97 Vocational Training (NVQ) Certificate, City & Guilds, London Institute.

To assess the vocational competence of candidates working in chemical, petrochemical, oil & gas industry.

**1988/92: Ph.D. from Department of Petroleum Engineering
@ Heriot-Watt University-Edinburgh-Scotland, UK.**

(Research by experimental work, computing programming and numerical modelling in particle transport in perforations and fluid flow through porous media during hydraulic fracturing of oil/gas reservoir, solid/liquid interaction)

It is in the area of interaction between rock particles and fluids.



The project was initially sponsored by British petroleum Co. (BP). At the end of the project I managed to establish a numerical model to predict the behaviour of particle flow through perforations in the production line. The model was tested against real field data from the North Sea oil/gas fields; the accuracy of the model is up to 98%.

1986/88 M.Sc. from Department of Mining and Petroleum Engineering @ University of Strathclyde-Glasgow- Scotland, UK.

Advanced course in Petroleum Engineering:

Topics covered are:

Reservoir Engineering, Drilling Engineering, Oil & Gas Production, Geophysics, Petroleum Geology, Well Logging, Economics and Rock Mechanics. Group Project to on how to develop an oilfield in North Sea.

Research dissertation in the dynamics and mechanics of ‘Multi-phase flow in pipelines during oil & gas production’. I studied the flow regimes and the types of flow.

1976/80 B.Sc. (Hon.) Petroleum Engineering -Baghdad University.
(I was the 3rd among 90 students.)

The course covered the following topics:

Fluid dynamics, Drilling Engineering, Reservoir Engineering , Fluid hydraulics, fluid mechanics, Petrochemicals, Applied Chemistry, Unit Operations, Plant Design, Math’s, Physics, Chemistry, Heat Transfer and Mass Transfer, Thermodynamics, Separation Processes, Instrumentation and Control.

The fourth year report was in "Friction losses of fluid flow in curved pipes".

1973/76 National Baccalaureate in Science. Basra High School

(I was the 17th among 56000 students).

Math (98%), Physics (96%), Chemistry (96%), Biology (91%), Languages (English and Arabic) (90%).

EMPLOYMENT AND EXPERIENCES:

2006-2007 : International Training manager - Technical College – UK;

lead and manage a tea of experts develop and deliver training skills and qualifications

**2002- 2006 to date: Course Team Leader & Training Advisor,
‘International Business Manager’ FE College UK.**

Deliver training courses in the chemical, petrochemical and oil& gas industry, leading and teaching Chemical process engineering courses, Develop and maintain the international business, Teaching in science school.



1996-2002: Learning Consultant: Process Industries Department
'International Business Co-ordinator' + Team Leader College- Cheshire UK.

Lecturing in BEng Chemical Process Engineering course, (Separation Processes, Heat Transfer and Fluid flow).

Lecturing in HND Sport Science course: *Mathematics and Statistics*.

Tutor in Open Learning Scheme in Process Plant Operation course for the employees in several industrial firms in the North West of England such as *Baker-Petrolite, British Gas, Lever Brothers, Elf Atochem, Cytec, Aventis, Croda Colloids, ZENECA, Eli-lilly, Steripak, Solvay Interlox, Clariant.....etc.*

NVQ assessor in Pharmaceutical/Chemical Industries, such as Eli Lilly, Aventis crosience.

Author & Assessor of training manuals in: *Steam Generation, Nitrogen Production, Solvent Extraction, Caustic System, Water Treatment, Compressed Air, Chilled Water, Cooling Towers.....etc.*

June 1994-June 96: Course Team Leader Chemical Process Eng., School of Science, FE College, UK.

Lecturing in B.Eng. course: *Separation Processes, heat transfer, fluid flow*.

Lecturing in BSc Environmental Science Course: *Environmental Chemistry and Environmental Geology*.

May93-June94: (P-T) Research Fellow in Gravel Sizing Project;

(Heriot-Watt University, Department of Petroleum Engineering.)

The project is mainly experimental work with some computing analysis.

This project also involved in water and oil flow through porous media and it is tightly linked with hydrology. The sand production is a common problem in most of oil and gas fields in North Sea and other part of the world.

To solve the problem there are many methods. Both mechanical and chemical techniques can be used. Gravel packing is one of the most popular mechanical techniques to solve the sand movement in crude oil and gas production.

Selecting the right size of the gravel to be used for this purpose is an important issue. The project involves great deal of sieve analysis and the interaction of fluid with sand beds. In this project, I managed to produce sand named after myself. We called it at that time *Hussain's sand*. The project was sponsored by several oil companies working in the North Sea, such as Chevron, Statoil, Mobil....etc.



June 92-June93: (P-T) Computer programmer in Water injection project.

Heriot-Watt University, Dept. of Petroleum Engineering.

(Scale-up project in North Sea) The aim of the project is to find out the maximum super saturation, for Each ion in every oil and gas reservoir in the North Sea. Also, to determine the maximum Precipitation of ions for every reservoir.

All the North Sea oil and gas reservoirs were considered and studied.

Jan-Sep 1992: (P-T), Data-base Operator:

Department of Petroleum Engineering at Heriot-Watt University.

(PVT. project)

The aim of this project was to determine the chemical and physical properties of the crude oil from the North Sea and to find the percentage of C₁ to C₁₂ in the crude oil, the bitumen and tar produced from North Sea.

We managed to establish database records for these properties. Also to record physical properties of the crude oil including the viscosity, the density, the surface tension, the percentile ratio of each component.

1988-92: PhD Research, Heriot-Watt University, Edinburgh, Scotland.

(Research by experimental work, computing programming and numerical modelling in particle transport in perforations and fluid flow through porous media during hydraulic fracturing of oil/gas reservoir, solid/liquid interaction)

The project was initially sponsored by British Petroleum Co, (BP). During the research I managed to establish a numerical model to predict the behaviour of particle flow through perforations in the production line. The model was tested against real oil/gas field data in the North Sea; the accuracy of the model is up to 98%.

1986-88: Post Graduate studies, MSc course and research, University of Strathclyde, Glasgow, Scotland.

Research dissertation in the dynamics and mechanics of Multi-phase flow in pipelines during oil & gas production. I studied the flow regimes and the types of flow.

1984-86: Petroleum Engineer @ Basra Oil Co. (BOC):

I worked in Rumaila oilfield, which is the second largest field in the area and the fifth largest oilfield in the world. The field was developed by several oil companies among them were British Petroleum and British Gas.



I was the process engineer in the Gas dehydration project which is located in Rumaila oil field. It is a major project with a production rate up to 17 billions ft³ per day of associated gas and around 600,000 bbl/day of crude oil.

1982-84: Water Injection Process Engineer at BOC:

I worked at Rumaila oil reservoir, which were the second largest field in the area and the fifth largest field in the world. The reservoir was developed in 1937 by several oil companies among them was the British petroleum and the British gas. I was the site engineer in the water injection project which is located in Rumaila oil field. It is a major project with a production rate up to 17 billions ft³ per day of associated gas and around 600,000 bbl/day of crude oil.

1980-82 Fuel Laboratory Officer, Basra Airport.

Daily experimental work in jet fuel labs to control the quality of the fuel. We used to test all the physical and chemical properties of the Aviation Turbine Kerosene (ATK), and other hydro-oil and loop-oil including the density, viscosity, lubrication ability, chemical compositions....etc. We used to run training courses for the employees in our labs. It was very useful experience.

AWARDS & PRIZES:

In 1998, I have been awarded 'Halton College Award for Quality Teaching'.

In 2000, I was short listed for 'Adult Tutor Award- NW sponsored by DFEE.

In 2003, I have received 'City & Guilds medal for excellence & Tutor Award'.

In 2006; I had been awarded with MBE award by her majesty the Queen for my excellent work in developing the international training and overseas business within the FE sector.

10 of my students got:

Medal for Excellence- City & Guilds London Institute (1996, 1997, 1998, 1999,2001)

Salter's Institute of Industrial Chemistry Prizes (1996, 1997, 1998, 1999, 2001)

OTHER SKILLS:

Chairman for engineers society NW England, IChemE membership, SPE membership, Full Driving License, Excellent Experience in research, Experimental Technique & Teaching, International business & marketing experience of training courses,Team leadership.

Industrial experience, in oil & gas industry, Computer Programming , Numerical modelling, Word processing, Design,

First aid certificate. (Health & Safety @ work) Fluent speaker of Arabic and English.

LEISURE AND ACTIVITIES:

Member in PTA school board

Gardening and DIY

Chairman of Engineering Society North West England.

Head teacher of private week-end (Alhuda school in Manchester).

Member in steering committee of IRG

Member of the a community board- North West England



PUBLICATIONS:

19 Training manuals for the chemical, Oil & gas industry.

6 Technical reports to oil/chemical companies.

15 Seminars and public lectures in technical issues.

7 Seminars in oil & gas industry, (North sea oil, Iraq oil, Mid. East oil)

2 articles in 'The environmental impact of oil & gas industry' (*article published in ISOCON Bulletin, Merseyside, February-2001, May 2002*)

4 technical papers in international conferences.