

Oil and Gas Titles

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Basic Gas Chromatography - Principles and Applications

Course Introduction:

The course contents and the manual will serve as a guide for the attendees having insufficient knowledge of Gas Chromatography and for those who feel that a Gas Chromatography refreshing training is essential.

Great attention is given to those subjects where knowledge is critical for chromatography activities in refinery or process laboratories.

Course Objectives:

This program is designed to give the participants the capability to:

- Gain the basic theoretical aspects of Gas Chromatography.
- Communicate practical information, capabilities and limitations of Gas Chromatography and gain confidence about the technique available
- To be able to carry out analyses, trouble shooting and evaluate analytical results

Course Duration: Four days

Course Contents:

- Course Introduction and Principles
- Theory of Gas Chromatography
- Instrumentation and System Parameters
- Types of Columns and Detectors
- Qualitative Analysis
- Quantitative Analysis
- Trouble Shooting; Methods and Techniques
- Peak Identification
- Results Calculation / Correction
- Practical Applications
- Problem Solving
- Case Studies
- Discussions
- Course Summary
- Course Evaluation

Who Should Attend:



This course is intended for Laboratory operatives, Technicians and Chemists and those who are involves with the Gas Chromatography Processes.

Advanced Geosteering

Course Objectives:

On completion of the course the trainee/s will be competent in:

- The principle and techniques of horizontal drilling operations.
- Maximum utilization of horizontal drilling and the problems associated with this technology.

Course Duration: Five Days

Course Contents:

- Introduction to Geosteering
- Horizontal well planning
- Geosteering tools, advantages and disadvantages
- Problems encountered in Geosteering and how to overcome them
- Geological and reservoir concepts in horizontal drilling
- Drilling concepts
- Logging while drilling
- Softwares used in Geosteering
- Case studies, exercises and discussions

Who should attend:

Drilling and Horizontal Drilling personnel who have at least five years drilling experience.

An Introduction to Petroleum Exploration for Non-Geologists

Course Objectives:

Designed for those involved or interested in exploration and development, to whom, a broad overview of what it entails would be useful. No technical or scientific knowledge is assumed.

Course Duration: Three days

Course Contents:

- The philosophy of exploration
- Some basic geology relevant to petroleum
- The nature, formation and entrapment of petroleum and their applications to exploration
- The world-wide habitat of petroleum
- Geological and geophysical exploration techniques
- Drilling and logging of wells
- Reservoir development and production
- Reserves estimation and risk assessment
- A review of the North Sea as a case history

Who Should Attend:

Of benefit to technicians, secretaries, draftspeople, personnel and administrative staff, engineers and computer specialists, lawyers, economists, bankers, stockbrokers and government officers.

Basic Drilling Technology

Course Objectives:

This program will enable Junior Drilling Personnel in the operation, and staff who are administratively supporting the Drilling Operations and enable them to:

- State the major components of the art and science of Basis Drilling.
- Identify and Differentiate Onshore/ Offshore Drilling Techniques

Course Duration: Five Days

Course Contents:

➤ An Introduction to The Rig and its Component Systems

Objectives – Identify and locate the major component systems in a modern rotary drilling rig

- The Hoisting system
- The Circulating system
- The Power system
- The Well Control system

➤ Preparations for Drilling

Objectives – Identify and describe the Procedures Followed when setting up a modern rotary drilling complex.

- Site preparation
- Drilling crew is assigned

- Rig preparation
- Support equipment brought in and assembled
- Final preparations completed

➤ **The Drilling Operation**

Objectives – Describe the general characteristics of an oil or gas well, and the basic drilling operations which are practiced.

- Drilling for oil and gas
- 'Making Hole'
- Straight hole drilling
- Directional drilling
- Controlling drilling operations
- Special drilling operations

➤ [Drilling the Well - The Process](#)

Objective – Identify and sequence the routine drilling operations carried out by a drilling crew as a well is drilled.

- Starting the drill stem
 - Adding drill collars
 - Attaching the Kelly
 - Adding drill pipe
 - Tripping in and out of the hole
 - Running casing
 - Cementing
 - Drilling to final depth
 - Basic Drilling Treatment
 - Add
 - Intro
 - Pipe Racking
 - B.O.P.
 - Prep
 - Safety Systems
-
- **Discussions and Case Studies**
 - **Course Evaluation & Summary**

Who Should Attend:

Junior Drilling Personnel in the operation, and staff who are administratively supporting the Drilling Operations.

Bulk Distribution and Handling of LPG

Course Objectives:

On completion of this program the trainee/s will be competent in:

- Understanding of theory and practical LPG distribution, operation, storage and handling.

Course Duration: Three Days

Course Contents:

- Distribution Methods
- Considerations in Transmission Over Land and by Sea
- Road Transportation
- Types of Storage
- Pressurized Storage
- Storage Vessel Design
- Bulk Installation Components
- Installation Design
- Pipework Design
- Commissioning and Decommissioning
- Cylinder Filling Plant
- Fire Precautions
- Hazard Analysis
- Vapor Clouds
- Methods and precautions in Vapor Cloud Dispersal
- Loading and Unloading Procedures
- Case studies and practical exercises

Who should attend:

Engineers and technicians who distribute and handle LPG and who also have one year of experience of LPG operations.

Practical Sulphonation and Sulphation Technology

David – Not completed

Course Description:

Sulphonation and sulphation processes are widely used in industry to make products such as water-soluble detergents, emulsifiers, penetrating and solubilizing agents, lubricating oil additives and rust inhibitors. These materials are used in household and commercial detergent applications, cosmetics manufacturing, dyes and metal treating compounds.

This course will mainly discuss SO_3 /air sulphonation and sulphation for the detergents and cosmetic industries and provide an understanding of the chemistry and reaction mechanisms involved, the organic feedstock characteristics and specifications, technical plant management, product quality, analytical methods and plant safety.

Learning Objectives:

Upon completion of this course, participants will have gained an understanding of the overall process operation of an integrated SO_3 /air based modern sulphonation plant. Participants will also gain knowledge about the chemistry involved, chemical reaction engineering aspects, plant construction materials, plant safety and plant management.

Who Should Attend:

This course should be of value to chemists and engineers who are, or will be, involved with the application of sulphonation and sulphation processes in R&D or manufacturing situations in the detergents, cosmetics, and other



industries. Technical service and product management personnel should also benefit from this course.

Daily Course Contents:

First Day:

Introduction to Industrial Sulphonation Processes

Manufacturing and Specification of Organic Feedstocks for Sulphonation

Chemical Reaction Engineering Aspects of SO³/Air Sulphonation in Falling Film Reactors

Neutralization and Post-Sulphonation Chemistry and Processes

Second Day:

Equipment for Sulphur Burning Gaseous SO³ Sulphonation

Sulphonation of Linear Alkyl Benzene

Manufacture of Alcohol Ether Sulphates

Manufacture of Alpha Olefin Sulphonates and Methyl Ester Sulphonates

Third Day:

Use of Detergent Range Sulphonates and Sulphates

Technical Management of a Sulphonation Plant

Summary and Conclusions

Fourth Day:

Fifth Day:

Corrosion in the Oil & Gas Industry

Course Description:

Corrosion problems have always presented a severe challenge to oil and gas producing operations. Operators plan for long periods of continuous production with maintenance schedules for the prescribed shutdown periods. Unfortunately, corrosion does not always respect these schedules, resulting in severe economic penalties due to loss of production. In addition, the risk of pollution and hazards to safety are other important reasons for adequate corrosion engineering.

The course considers external protection using corrosion resistant materials, coatings, and cathodic protection. The importance of internal corrosion and its prevention will be examined with emphasis on material selection, coatings and use of corrosion inhibitors. The contribution of inspection (non-destructive testing), and corrosion monitoring to the overall operation will be considered in detail. Corrosion problems concerning "risers" and subsea-lines will be considered together with methods for protection

Learning Objectives:

Upon completion of this course, you will gain an understanding of corrosion engineering in oil and gas production involving the various methods available for corrosion control, regulatory and safety matters, and the contribution of an integrated monitoring and inspection programme for operations and diagnosis of problems.

Who Should Attend:

The course is designed essentially for process and mechanical engineers employed by the operating companies engaged in oil and gas production. The material is also appropriate for those personnel concerned with specialist functions in the oil industry including inspection, material selection, and corrosion control, as well as those involved in R&D. Staff of service companies providing corrosion inhibitors and overall corrosion services should also find this course beneficial, together with companies or manufacturers marketing materials, coatings and equipment for cathodic protection, inspection (NDT) and corrosion monitoring.

Daily Course Contents:

First Day:

Overview – Corrosion in Oil and Gas Production

Economics of Corrosion Damage:

- Loss of production
- Repair costs
- Material choice
- Corrosion control methods – Relative costings
- Management of corrosion control
- Political considerations
- Safety
- Environment

Introduction to Corrosion and Corrosion Control:

- Definitions
- Materials Involved
- Environments
- Corrosion Damage
- Metallurgy
- Methods for Protection

Basic Corrosion Principles:

- Corrosion Rate
- Electrochemical Reactions
- Electrode Potentials
- Kinetics
- Passivity
- Temperature
- Pressure
- Velocity
- Conductivity
- pH

- Dissolved Gases

Forms of Corrosion:

- Uniform
- Pitting
- Crevice
- Galvanic
- Erosion
- Intergranular
- Weld Corrosion
- Selective Leaching
- High Temperature
- Turbulence
- Fretting
- Stress Corrosion
- Hydrogen Embrittlement
- Fatigue

Corrosion Aspects – Oxygen:

- Role of Oxygen in Oilfield Corrosion
- Downhole and Surface Equipment
- Waterflood
- Removal of Oxygen
- Analysis and Criteria for Control

Corrosion Aspects – Sour:

- Role of Hydrogen Sulphide
- Corrosion in Downhole, Surface, Storage and Pipelines

Second Day:

Corrosion Aspects – Sweet:

- Role of Carbon Dioxide
- Effect of Temperature and Pressure
- Corrosion of Well Tubing and Other Equipment

Corrosion Aspects – Bacterial:

- Effect on Corrosion Situation
- Micro-Organisms
- Techniques for Control
- Monitoring

Corrosion Prevention – Inhibitors:

- Types of Corrosion Inhibitors
- Choice and Selection
- Quality Assurance
- Logistics
- Criteria for Effectiveness

Corrosion Prevention – Design:

- Environmental Effects
- Consideration of Geometry
- Elimination of Stress
- Different Metals
- Velocity of Corrodent
- Temperature
- Design Codes
- Codes of Practice
- Standards

Corrosion Prevention – Cathodic Protection:

- Principles of Operation
- Applications
- Surveys
- Engineering in the Field
- Galvanic Systems
- Impressed Current Systems
- Criteria for Effectiveness

Corrosion Prevention – Materials and Selection:

- Carbon, Low Alloy, Stainless and Duplex Steels
- Non-Ferrous Metals
- Non-Metallic Materials

Corrosion Prevention – Coatings and Linings:

- Inorganic and Organic
- Metallic
- Surface Preparation
- Quality Assurance
- Inspection during Application

Third Day:

Corrosion Monitoring:

- Philosophy
- Objectives
- Methods
- Application
- Design Considerations
- Liaison with Inspection
- Integrated Systems
- Management
- Data Handling and Presentation

Water Chemistry:

- Scaling Properties
- Disposal
- Microbiology
- Corrosion Aspects

Manufacturers' Demonstration:

- Corrosion Control Equipment

Inspection and Nondestructive testing (NDT):

- Inspection Function
- Calipers for Downhole Tubing
- Ultrasonic systems
- Radiography
- Intelligent Vehicles
- Other Methods
- Management of Contracts

Failure Analysis:

- System Approach
- Investigation of Corrosion Failures

Pipelines and Risers:

- Corrosion Hazards
- Methods for Control of Corrosion
- Inspection and Monitoring
- Coatings and Cathodic Protection
- Pressure Testing

Fourth Day:

Oil Treatment Corrosion:

- Crude Oil Properties
- Desalting
- Distillation and Other Processing

Case Histories Workshop

Sweetening Processes –Corrosion

Fifth Day:

Quality Assurance:

- Philosophy
- Planning
- Quality Profile
- Role of Certifying Authorities

Subsea Systems – Corrosion:

- Ramifications Infrastructure
- Inspection and Corrosion Monitoring

Case History – Oil Storage Tank Corrosion

Oilfield and Oil Treating Facilities:

- Offshore Platforms
- Downhole Equipment
- Surface Equipment
- Terminals

- **Course Discussions**
- **Course Evaluation**
- **Course Summary**

Corrosion in the Oil & Gas Industry

Course Description:

Corrosion problems have always presented a severe challenge to oil and gas producing operations. Operators plan for long periods of continuous production with maintenance schedules for the prescribed shutdown periods. Unfortunately, corrosion does not always respect these schedules, resulting in severe economic penalties due to loss of production. In addition, the risk of pollution and hazards to safety are other important reasons for adequate corrosion engineering.

Governmental legislation concerning oil and gas extraction is becoming more stringent in order to minimise these risks. Furthermore, corrosion hazards have intensified with extraction in deeper waters and in more hostile environments. Innovations aimed at reducing offshore field development costs involving reductions in platform weight, increasing use of satellite wells and subsea manifolds require specific attention to corrosion prevention.

The course considers external protection using corrosion resistant materials, coatings, and cathodic protection. The importance of internal corrosion and its prevention will be examined with emphasis on material selection, coatings and use of corrosion inhibitors. The contribution of inspection (nondestructive testing), and corrosion monitoring to the overall operation will be considered in detail. Corrosion problems concerning "risers" and subsea-lines will be considered together with methods for protection. Various corrosion-orientated software, including *CorsurTM* and *Corsur 2TM* will be demonstrated and available for use by participants.

(*CorsurTM* and *Corsur 2TM* are trademarks of the National Association of Corrosion Engineers – NACE International.)

Learning Objectives:

Upon completion of this course, you will gain an understanding of corrosion engineering in oil and gas production involving the various methods available for corrosion control, regulatory and safety matters, and the contribution of an integrated monitoring and inspection programme for operations and diagnosis of problems.

Who Should Attend:

The course is designed essentially for process and mechanical engineers employed by the operating companies engaged in oil and gas production. The material is also appropriate for those personnel concerned with specialist functions in the oil industry including inspection, material selection, and corrosion control, as well as those involved in R&D. Staff of service companies providing corrosion inhibitors and overall corrosion services should also find this course beneficial, together with companies or manufacturers marketing materials, coatings and equipment for cathodic protection, inspection (NDT) and corrosion monitoring. The course is also intended for government agencies and process plant contractors involved with oil and gas production. A prior knowledge of corrosion is not a prerequisite to attendance, as a short introduction to the subject will be presented.

Daily Course Contents:

First Day:

Overview – Corrosion in Oil and Gas Production

Economics of Corrosion Damage:

- Loss of production
- Repair costs
- Material choice
- Corrosion control methods – Relative costings
- Management of corrosion control

- Political considerations
- Safety
- Environment

Introduction to Corrosion and Corrosion Control:

- Definitions
- Materials Involved
- Environments
- Corrosion Damage
- Metallurgy
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- Electrochemical Reactions
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- Micro-Organisms
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Corrosion Prevention – Design:

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- Different Metals
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- Design Codes
- Codes of Practice

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- Principles of Operation
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- Surveys
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Corrosion Prevention – Coatings and Linings:

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- Surface Preparation
- Quality Assurance
- Inspection during Application

Third Day:

Corrosion Monitoring:

- Philosophy
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- Methods
- Application

- Design Considerations
- Liaison with Inspection

- Integrated Systems
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Water Chemistry:

- Scaling Properties

- Disposal

- Microbiology

- Corrosion Aspects

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Corrosion Control Equipment

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- Ultrasonic systems

- Radiography

- Intelligent Vehicles

- Other Methods

- Management of Contracts

Failure Analysis:

- System Approach

- Investigation of Corrosion Failures

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Oil Treatment Corrosion:

- Crude Oil Properties
- Desalting
- Distillation and Other Processing

Case Histories Workshop

Sweetening Processes –Corrosion

Quality Assurance:

- Philosophy
- Planning
- Quality Profile
- Role of Certifying Authorities

Subsea Systems – Corrosion:

- Ramifications Infrastructure
- Inspection and Corrosion Monitoring

Case History – Oil Storage Tank Corrosion

Oilfield and Oil Treating Facilities:

- Offshore Platforms
- Downhole Equipment
- Surface Equipment
- Terminals

Fifth Day:

Course Speaker:

Distributed Electronic Control System (DCES)

Synopsis:

This workshop Will be two parts: Theoretical and Practical.

In the lecture room there will be demonstrations using OHP Transparencies/Slides etc. In the lab, there will be Practical and Hands-on Training Theoretical & Practical Sessions are 50/50.

Participants will go through theoretical and practical experience on Distributed Control System, Upgrade their information on DCS hardware and software and have hands-on /troubleshooting session to consolidate their knowledge.

Who Should Attend:

Operators, Technicians, Engineers who are directly involved with Process Control, Automation Control, Instrumentation, Utilities, Safety Systems, Production

Maintenance and Electronic Systems.

Major topics

Advantages of DCS over other control systems

- Features
- Comparison
- Applications
- Troubleshooting

Available DCS Systems and comparison among them inclding:

- Honeywell's TDS 3000
- Honeywell's Plantscape
- Faxboro's I/A
- Bailey's Infi 90

MVC (Multi-Variable Controllers)

- Applications
- Features & Advantages
- Parameters Monitoring & Control
- Practical Parameters Limitations
- Building Models
- MVC troubleshooting
- MVC Practical Limitations & Boards

DCS' Control during Major and Minor Units Upset

- Effective operating conditions adjustment based on priority
- Display groups building
- Possible & Practical DCS application during Emergencies, Start-Up and Shut Down (Total control)

Troubleshooting Techniques and Prevention Maintenance applied to DCS including

- Redundancy checks
- Cleaning
- Data back up
- UPS (Uninterruptable Power Supply)

Drilling and Completion Chemicals In the Oil Industry

Course Description:

Learning Objectives:

Daily Course Outline:

Day One:

- Introduction
- Drilling Chemicals and Completion Chemicals Market: Size, Suppliers, Buyers, The Future
- Functions of Drilling Chemicals, Field Checks and Mud Report Forms
- Laboratory Mixing and Evaluation Methods
- Rheological Measurement and its importance
- Drilling Fluids Hydraulics
- Solids Control and Contaminants
- Water - Based Mud Systems : The chemicals used in these systems, their effects, inorganic chemicals to complex polymers

Day Two:

- Water Based Mud Systems (continued)
- Organic Based Mud Systems: Advantages and Disadvantages
- Minerals and Synthetics: Surfactants, organoclays, polymers, filtration reducers

- Completion Brines: Fluid formulations and applications

Day Three:

- Introduction to Production Chemicals: Market size, suppliers, buyers, overview of production chemicals
- Flow Improvement - Wax Control: Wax inhibitors, pour point, depressants, wax solvents, non-chemical option, evaluation methods
- Flow improvement -Drag Reducers, Crude and water drag reduction, recent developments
- Asphaltene control: Formulation of Asphalts, inhibitors, solvents
- Scale Control (1) Prevention of scale, formulation of scale, types of scale, inhibitors, evaluation methods, development options, absorption and precipitation squeeze techniques
Non -chemical treatment for scale and wax deposition problems
magnetic and electronic devices (this is offered as an optional extra presentation if time permits).

Day Four:

- Petroleum Microbiology : Introduction
- Water Injection Systems: Biocides, oxygen scavengers, filter aids
- Produced Water Systems
- Reservoir Souring
- Cooling Potable Water Systems
- H₂S Scavengers

Day Five:

- Antifoams
- Hydrate inhibitors: Thermodynamic and threshold inhibitors
- Demulsification of Code: Demulsifiers, reverse demulsifiers
- Corrosion Control: Types of Corrosion, inhibitors, test methods

- Scale Control (2) - Scale Removers, Types of scale removers, carbonate scale removal, radioactive scales
- Combined Scale / Corrosion Products: Incompatibilities

Who should attend:

Drilling Operations for Non Drilling Specialists
Seminar Content

Seminar on Drilling Operations for Non-Drilling Specialists
14th to 17th October 2000 Held in Abu Dhabi

What is the Seminar about?

A comprehensive short seminar designed to introduce and explain drilling operations and terminology to non-drilling and non-technical personnel. This includes the drilling practices, equipment and operations. Some basic aspects of theory will be explained but the main emphasis will be on the methods used to execute field-drilling operations both on and offshore. Extensive use of images and pictorials are used in the presentation to describe and identify wellhead equipments and materials used in operations. A detailed and explanatory reference manual will be provided to delegates.

Who Should Attend?

This course targets non-technical personnel who support the day-to-day drilling operations, generally without field visits. Included are Personnel Managers, Human Resources Staff, Accountants, Clerks, Materials and Procurement, Secretarial Staff and Transportation. It will also be of great interest to persons inside and outside of the oil and gas industry including those who are considering working in these particular operations.

What is included?

The seminar explains and includes a brief description of drilling rig components and equipment used, an overview of drilling fluids including system types, basic rheology, contaminants and applications. Basic explanation on pressures and well control requirements, a brief outline on down hole tools including drill bits and drill string needs, an introduction to directional drilling. Operations such as, fishing, coring, drill stem testing, logging, casing and cementing, an overview of completion, tubing, perforations and wellhead requirements.

Seminar Outline:

Day One:

Introduction:

Instructor, Students, Seminar Overview.

Operations:

Drilling Program, Rig and Site Selection.

Drilling Rig Components:

Explanation on rig types, on or Offshore, Main components,

Day Two:

Drilling Fluids:

An Explanation on what drilling fluids are and what they do.

Solids Control:

Explanation on what type of solids control equipment there are on a mud system & what their functions are.

Pressure Prediction and Blow-out Prevention:

Kick Warning Signs, Kick Prevention, Hydrostatic pressures, Formation Pressures, Well control equipment.

Day Three:

Tubular Goods and Bha's:

Types of Drill Pipe, Collars, Stabilizers, Configurations.

Bit selection and running:



Roller Cone Bits, Diamond bits, PDC bits, Wait on bit & what it does, Rotation & how it affects different types of bits.

Horizontal Drilling:

Drill string types, effects and reasons,

Down Hole problems:

Key seats, hole cleaning, and types of hole sticking, formation problems, lost circulation and its problems.

Wire line Logging:

Brief explanation on different types of Logging, open hole tools, brief outline on equipment used.

Day Four:

Casing and Cementing:

Functions, Design, Running equipment, cement crews and companies and their duties.

Drill Stem Testing:

Surface Equipment used, Information gained for who and why?

Contractor Cost Control:

Well planning, drilling contract, Completion, Well site Supervision, Expenditure Tracking.

Completion Technology:

Brief explanation on what happens once the well is completed and all records have been made.

Seminar Summary

Seminar Speaker:

Harry Cooper is a British Drilling Operations Specialist with excellent qualifications and over thirty years experience of drilling operations in the North Sea and in the Gulf Community Countries including, Kuwait and The Kingdom of Saudi Arabia. His experience covers On Shore and Off Shore Operations and he has had detailed involvement in well capping, Tower Pushing and Top Drive Training and Operations. Harry has been training multicultural students and has consulted to major drilling organizations.



His impeccable Vocational Qualifications include:

Personnel Management & Administration ICS, IWCF (Driller Level), Second Line Supervisors Well Control exp. 2000, H2S Alive. H2S Offshore Supervisory & Management Skills, Rig Safety Course, Training the Trainers to Competency Based Standards, Computer literacy, Arabic Speakers Courses. Hary is also a member of the Institute of Supervisory Manager (ISM)

Engineering Design for Process Safety

Course Overview:

The goal of this course is to provide basic concept, codes and methodology adopted for the design of relief systems and other protective systems required for safe operations.

Course Objectives:

On completion of the course the trainees will understand:

- Engineering Practices followed for the design of process plant
- Codes and Standards for the Design of relief protective system
- Other Design considerations.

Course Duration: Four days

Course Outline:

➤

Who should attend:

Design Engineers, Plant Unit In- Charge, Process Engineers & Maintenance Engineers.

GAS CONDITIONING AND PROCESSING COURSE FOR JUNIORS

Aims and Objectives:

The aims of the course are to give an understanding to the technology of gas processing and sulphur recovery systems. General as well as specific concepts will be introduced which will enable all participants to have a basic comprehension of the needs and requirements of gas sweetening systems, and sulphur recovery processes in Gas conditioning.

Who Should Attend:

All those working in the petrochemical, oil and gas process industries with a need to understand the process gas conditioning. The course will serve as an introduction to gas technology for those who are unfamiliar with it but will also assist those who need the ability to progress to a further understanding of some part of the gas processing technologies. These will include geoscientists, petroleum engineers, production engineers, trainee process engineers, plant operators and economists.

Course Duration: Five days

Course Outline:

The Origins Of Natural Gas

- Exploration Principles, Tools, And Techniques
- How Natural Gas Is Trapped Underground
- Exploration Techniques
 - i. Geochemical methods
 - ii. Geophysical methods

Drilling Production And Processing

- Evaluating and Completing a Well

Basic Gas characteristics and Behavior Of Natural Gas

- Compressibility Of Gases:
 - i. Pure Gases
 - ii. Gas Mixtures

- Hydrocarbon Liquid Densities
- Boiling Points
- Critical Properties
- Acentric Factor
- Vapor Pressure
- Viscosity
- Thermal Conductivity
- Transport Property References
- Surface Tension
- Gross Heating Value Of Natural Gases

Natural Gas Production

Gas / Recovery

- Hydrocarbon Recovery
- Gas Composition
- Dew Point Control

Gas Liquefaction Processes

- Refrigeration
- Absorption
- Ethane Recovery
- Turbo expander Processing
- Mixed Refrigerant Process
- Liquefied Natural Gas Production
- Nitrogen Rejection
- Enhanced Oil Recovery

Hydrocarbon Treating

- Types Of Contaminants
- Gas Treating – Process Selection
- Chemical Reaction Processes
- Physical Solvent Processes
- Combination Processes
- Alkaline Salt Process (Hot Carbonate)
- Batch Processes
- Iron Chelate Processes
- Membrane Separation Process
- Equilibrium Data For Amine-Sour Gas Systems

Liquid Hydrocarbon Treating

- Gasoline And LP-Gas Treating
- Continuous Processes
- Batch Processes

Natural-Gas Transmission And Distribution

- Transmission as Gas

- Transmission as Liquid

Natural-Gas Storage

- Storage in the Gaseous Phase
- Storage of Liquefied Natural Gas

Future Supply And Demand For Natural Gas

Case Studies, Exercises with Group Discussions

Course Evaluation

Course Summary

Gas Fluidization Technology

Course Description:

Gas fluidization is an important industrial technique used in a wide variety of applications ranging from the coating of metals with polymers to catalytic cracking of petroleum and coal combustion.

The aims of this course are to provide participants with an understanding of fundamentals and to acquaint them with the current state of knowledge so that innovation may be stimulated and design and operation of gas fluidized systems improved.

The technology is in a gradual but constant state of change, and the content of the course reflects this since all the faculty are active researchers and/or practitioners. The detailed and comprehensive course manual contains all the lecture material and more.

The program provides adequate time for participants and faculty to meet and interact informally. Lectures will be complemented by informal discussions on the fluidization problems of participants.

Learning Objectives:

Upon completion of this course, participants will have gained an understanding of the basic theory of bubbling and circulating fluidized bed systems, and will have learned how to apply it to the solution of problems in a wide variety of industrial applications.

Who Should Attend:

The course is intended for engineers and physical scientists who are concerned with the use of fluidized bed technology in research and development, design and production processing. This includes mechanical, chemical and industrial engineers, and chemists and physicists in operational and supervisory positions involved in industrial applications such as pharmaceuticals, catalysis, coal, petrochemicals, ceramics, plastics and fertilizers.

Daily Course Contents:

First Day:

- Overview of Applications of Fluidization
- Critical Parameters: Particle size and Density; Velocities of Minimum Fluidization;
- Minimum Bubbling and Complete Fluidization
- Bubbling, Slugging and Spouting
- Experimental Techniques, Instrumentation, Effects of Temperature and Pressure

Second Day:

- Fundamentals of Solids Mixing and Demixing
- Gas/Solid Contacting – Hydrodynamics and Kinetics
- Scaling Laws and Scale-Up
- Bed Expansion and Bed Density

Third Day:

- Gas Distribution Design
- Entrainment
- Heat Transfer and Drying in Fluidized Beds
- Pneumatic Conveying
- Catalytic Fluidized Bed Reactors

Fourth Day:

- Gas Cyclones and Diplegs
- Circulating Fluidized Beds – Theory and Applications
- Non-Catalytic Fluid Bed Processes – Case studies of Combustion, Incineration, Calcination

Fifth Day:

- Process Measurement and Feedback
- Formulating and Recording Results
- New Technologies
- Case Study
- Discussion
- Summary

Gas Processing and Process Control

Course Background:

Natural gas must be processed to convert it into a commercial commodity and stabilize its form into a stored or transportable liquid. The process must be fully understood and each part of the process as to the removal and separation of certain elements and the conversion specifications for plant operators.

The process control systems will be explained and give a working knowledge of the design aspects and functions that are involved in the applied and associated equipments and instrumentation.

Course Learning Objectives:

This course is designed to give theoretical and applicatory knowledge about the principles and equipment involved in the gas processing and basic principles of process control instrumentation

Course Duration: Five Days

Course Outline Contents:

Day One:

Introduction to natural gas processing:

- Nature of raw gas compound present
- Natural gas specifications
- Plant processes used; inlet separation, gas sweetening, dehydration etc.
- LPG and gasoline recovery
- Propane and butane treating etc.

Day Two:

Physical Properties and phase behavior of hydrocarbons:

- Physical properties of hydrocarbon systems, the gas laws, how to determine the 'Z' factors, gas mixtures, specific gravity, sour gas compressibility factor, Daltons law of particle pressure, transport properties of fluid, gas viscosity, liquid viscosity, thermal conductivity, surface tension, thermodynamic properties etc.

Day Three:

Properties:

- Estimation of water content of natural gases, sweet gas, sour gas, Maddox method
- Equation of state: hydrates, where can hydrates form, hydrates structure types, what type of gases form hydrates, formation of hydrates etc.

Dehydration of natural gas:

Dehydration process, dehydration with liquid desiccants, equipment required, etc.

Design of glycol contactor

Determination of contactor diameter etc.

Day Four:

Refrigeration and Turbo expanders

- System components for mechanical refrigeration, Refrigeration plants, operating problems etc.
- Refrigeration by valve expansion
- The expander process: the expander calculation

Day Five:

Equipment used in gas processing industry

- Vessel rules, separators and filters
- Gas compression facilities and drivers, centrifugal compressors, different drivers application
- Pumps
- Heat exchangers
- Application of equipment

Case study and discussions

Course Summary and Evaluation

Who Should Attend:

Junior and Senior operators, process engineers involved in the operation or gas treatment plant and oil and gas plant.

Program Support:

This program is supported by videos and interactive activity and discussions to maximize the participant's involvement. Site visit if possibly arrange will be ideal to demonstrate processes and equipment used in the gas process and control procedure. There will be a balance of 60 % practical to 40 % theory to cover all the applicable technical content and obtain the best results from the participants.

GAS PROCESSING TREATMENT AND SULPHUR RECOVERY

Aims and Objectives:

The aims of the course are to give an understanding to the technology of gas processing. General concepts are introduced which enable all participants to have a basic comprehension of the needs and requirements of gas sweetening systems, sulphur recovery processes and natural gas production, purification, transportation and re-gasification.

Who Should Attend:

All those working in the petrochemical, oil and gas process industries with a need to understand the complete gas sweetening sulphur recovery and natural gas production. The course will serve as an introduction to gas technology for those who are unfamiliar with it but will also assist those who need the ability to progress to a detailed knowledge of some part of the gas processing technologies. These will include geoscientists, petroleum engineers, production engineers, trainee process engineers, plant operators and economists.

Course Duration: Five Days

Course Outline:

Gas Sweetening

- General Considerations
- Types of Contaminants
- Process Selection and Classification
- Chemical Reaction Processes
- Chemistry
- Process Flow

- General Design Criteria
- Design Guidelines
- Amine Processes
- Process Flow Differences
- Common Amine Solutions
- Physical Solvent Processes
- Combination (Chemical and Physical) Processes
- Alkaline Salt Processes Chemistry
- Batch Processes
- Iron Sponge
- ChemSweet
- Sulpha-Check
- Sulpha-Treat
- Zinc Oxide – PURESPEC
- Molecular Sieve
- Iron Chelate processes

- LO-CAT Process
- SulFerox Process
- Membrane Separation
- Liquid Hydrocarbon Treating
- Caustic Wash
- Operating Problems
- Selective Sweetening Systems
- New Technology Developments
- Materials for Sour Gas Service
- Review: Computer Simulation Programs
- Example Calculations and Problems

Sulphur Recovery

- Claus Process Considerations and Modifications
 - Reaction Furnace,
 - Waste Heat Recovery
 - Catalytic Converters
 - Sulphur Condensers
 - Reheat Methods
 - Process Control
 - Tail Gas Handling
- Incineration
- Clean-up
 - Continuation Process
 - SO₂ Recovery Process
 - H₂S Recovery Process
 - Direct Oxidation Process
 - Liquid Redox

- The EUROCLAUS Concept
- S ZORB Sulphur Removal Technology
- Sulphur Storage and Handling
 - Sulphur Properties
 - Sulphur Degassing
 - Sulphur Plant Testing and Optimization
- Claus Plant Start-up and Shutdown Procedures
- Claus Process Calculations and Problems
- Review: Computer Simulation Programs
- Safety in Gas Sweetening and Sulphur Recovery Operations

Natural Gas

- Origins and History Of Natural Gas
- The Nature of Natural Gas
- Exploration Principles
- Drilling Production and Processing
- Natural Gas Treatment and Sulphur Recovery
- Natural Gas Conditioning and Processing
 - Dehydration
 - Sour Gas Treatment
 - Hydrate Control
 - Stabilisation
- Natural Gas Transmission
- Natural Gas Storage and Distribution
- Natural Gas Use
- Future Supply and Demand for Natural Gas
- Case Studies, Exercises & Group Discussions
- Course Evaluation
- Course Summary

Gas Turbines

Course Objectives:

On completion of the course the trainee/s will be competent in:

- The identifying components and function of gas turbine technology.
- Turbine operating characteristics and decision of status.
- Maintenance requirements and overall scheduling.
- Safety rules applicable.

Course Duration: Five Days

Course Contents:

- Introduction to and expectations of Gas Turbine technology
- Safety rules applicable
- Component recognition and functional analysis
- Gas turbine cycle, Cross section analysis, Compressors
- Centrifugal Compressors, Axial flow compressors, Combustors
- Turbines, Accessory Components, Gas Turbine Engines
- Turbo Prop, Turbo Fan, Turbo Jet
- Gas turbine Operations: Technical Data, Compressor Characteristics, Turbine Characteristics, Component Losses, Component Matching, Specific Fuel Consumption Heat, Rate, Equivalent Speed and Flow
- Inspection and Maintenance: Methods and Techniques
- Tools and equipment: Inspection and Care
- Maintenance and Documentation: Scheduling and Recording Results
- Standards Operational Practices: Cleaning, Repair and Replacement
- Boroscope and Fibroscope Inspections
- Combustion Inspection and Analysis, Hot Gas Path
- Major Overall: Planning and implementing

- Case studies, discussions and exercises

Who should attend:

Engineers, operators and maintenance technicians with at least two years engineering experience and who will be expected to perform the maintenance tasks initially under supervision before attempting individual projects.

Gas Turbines Ops and Maintenance

Course Objectives:

On completion of the course the trainee/s will be competent in:

- The identifying components and function of gas turbine technology.
- Turbine operating characteristics and decision of status.
- Maintenance requirements and unit overall scheduling, strip down and rebuild
- Safety rules applicable to start up and running operations.
- Specific areas applicable to Mark 5 & 6 and Speedtronics and the mechanical aspects of the turbines.

Course Duration: Five Days

Course Contents:

- Introduction to and expectations of Gas Turbine technology
- Safety rules applicable during start up and running operations
- Component recognition and functional analysis
- Gas turbine cycle, Cross section analysis, Compressors
- Centrifugal Compressors, Axial flow compressors, Combustors
- Turbines, Accessory Components, Gas Turbine Engines
- Turbo Prop, Turbo Fan, Turbo Jet
- Gas turbine Operations: Technical Data, Compressor Characteristics, Turbine Characteristics, Component Losses, Component Matching, Specific Fuel Consumption Heat, Rate, Equivalent Speed and Flow
- Inspection and Maintenance: Methods and Techniques
- Tools and equipment: Inspection and Care
- Maintenance and Documentation: Scheduling and Recording Results
- Standards Operational Practices: Cleaning, Repair and Replacement
- Tools and Equipment (applicable and usage), Testing and Repairs
- Boroscope and Fibroscope Inspections



- Combustion Inspection and Analysis, Hot Gas Path
- Major Overall: Planning and implementing
- Case studies, discussions and exercises

Who should attend:

The course is designed for Power Generation Operators and Mechanical Maintenance Engineers and Technicians. Also Instrumentation and Control Personnel with a minimum of four years experience in general Gas Turbine maintenance.

Advanced Direction & Horizontal Drilling

Course Learning Objectives:

This program would enable the participants to:

- State the major theoretical aspects of Horizontal Drilling.
- Select the horizontal well type for specific purposes: select appropriate down-hole tools.
- Demonstrate an understanding of the actions required for planning, designing and managing Drilling Projects, analyzing well shapes, interpreting survey and plotting positions on the well plan.

Course Duration: Four Days

Course Contents:

- Introduction
 - Scope
 - History
- **Recording the Wellpath, Doglegs, and Dogleg Severity**
- **Applications of Well Design**
- **Deviated Well Design:**
 - Horizontal Section
 - Vertical Section
- **Borehole Surveying:**

- Magnetic
- Factors affecting Magnetic Survey Data
- Correcting Azimuths

➤ **Fixing Hole Position by Calculation**

➤ **Drilling Telemetry : Measurement While Drilling:**

- Wireline Conductors
- Mud Pulse Systems

➤ **Deviation Control**

➤ **Drilling Problems in Deviated Holes:**

- Friction Effects
- Keyseating
- Differential Pressure Sticking

Who Should Attend:

Senior Drilling Personnel in the Operations

Hydrogen Sulphide (H₂S) Gas Awareness Program

Duration: Three Days

Course Outline:

General Introductions and Set Up

- Instructors Introduction
 - Qualifications and Comments
- Students
 - Company Assignments and Name Tags Completed
- Course Materials Handed Out
- Course Outline and Goals Explained
- Origins and Physiology of H₂S
- Hazards and Characteristics of H₂S
- Oral Test and Questions
- Explanation of Safety Systems of the Facility for H₂S
 - Fixed Detection and Alarms Systems, if any.
 - Portable Detection and Monitors, if any.
 - Location of Clinic inside and outside the facility.
 - Personal Protective Equipment Available in the
 - facility
 - Safe Briefing Areas and Warning Signs
- Explanation of Individual Responsibility
- Written Test and Questions

- Emergency Responsibilities
 - Who Does What and When
- Rescue and First Aid
 - Use of Resuscitator
 - Types of Egress, Manual and Stretcher

- Basic Cardio-Pulmonary Resuscitation - CPR
- CPR Practice Session

- Course Summary
- Confirm all forms and documents are completed.
- Students complete course evaluation form.
 - On Course Content and Instruction

Instrumentation

Course Objectives:

On completion of the course the trainee/s will be competent in:

- A complete understanding of Instrumentation Systems as related to production facilities
- Instrumentation controllers and controller theory.

Course Duration: Three Days

Course Contents:

- Introduction to Basics of Instrumentation
- Controllers and Control Theory
- Flow Instrumentation
- Level Instrumentation
- Temperature Instrumentation
- Pressure Instrumentation
- Relief Valves / Rupture Disks
- Distributed Control Systems
- Programmable Logic Controllers
- Safety Shutdown Systems
- Wellhead Shutdown Systems
- Case Studies based on scenarios, exercises and discussions

Who Should Attend:



Technicians and Engineers who are responsible for Instrument Flow Control Equipment and ideally have a minimum of two years background knowledge and experience in this technical area.

Instrumentation (Offshore)

Course Objectives:

On completion of the course the trainee/s will be competent in:

- A complete understanding of Instrumentation Systems as related to production facilities with and emphasis on controllers and controller theory for Offshore Drilling Rig Facilities.
- Instrumentation Calibration, Measurement and Maintenance systems.

Course Duration: Five Days

Course Contents:

- Introduction to Basics of Instrumentation
- Controllers and Control Theory
- Flow Instrumentation
- Level Instrumentation
- Temperature Instrumentation
- Pressure Instrumentation
- Calibration and Measurement
- Maintenance: Tools and Scheduling
- Relief Valves / Rupture Disks
- Distributed Control Systems



- Programmable Logic Controllers
- Safety Shutdown Systems
- Wellhead Shutdown Systems
- Anti Corrosion
- Case Studies based on scenarios, exercises and discussions

Who should attend:

Technicians and Engineers who are responsible for Instrument Flow Control Equipment and ideally have a minimum of two years background knowledge from working with instruments in an Offshore Rig Facility.

Introduction to Instrumentation and Control

Course Objectives:

On completion of the course the trainee/s will be competent in:

- To provide an understanding and overview of Instrumentation and control in a process environment.
- To identify the expectancy and limitations of the instrumentation systems and the initial trouble shooting tools and techniques available.

Course Duration: Five Days

Course Contents:

- Symbols and Standards used for the interpretation of Pet IDS and PFDs
- Principles of Measurement Applied to Process
- Variable Applications of Typical Sensors used in the Process industry
- Calibration and Testing of Field Instrumentation
- The Operations of Final Control Elements
- The Effects of Closed Loop Control
- Limitations of the Systems
- Maintenance Elements
- Test Methods
- Trouble Shooting
- Equipment and repair Tools
- Case studies based on scenarios, discussions and summary

Who Should Attend:

Personnel working in onshore or offshore process industries requiring background knowledge of instrumentation and process control and introduction to the techniques involved with troubleshooting.

Introduction to Petrochemicals

Course Objectives:

This course is designed to provide the participants with:

- An introduction to the Petrochemicals Industry and the associated Technology and Petrochemical Products
- The basic Petrochemical Feedstock
- An Introduction to Petrochemical Processes the Chemical reactions during processes
- The Downstream and Value added Benefits

Course Duration: Five Days

Course Contents:

- Where the industrial organic chemicals come from
- The Petroleum Refinery
- The Petrochemical Industry's basic raw materials seven major groups
- Ethylene – Sources and Reactions
- Propylene – Sources and Reactions
- C4 unsaturates – Sources and reactions
- Toluene – Sources and Reactions
- Benzene – Sources and Reactions
- Xylenes – Sources and Reactions
- Methane
- Specialities

- Quality in Petrochemical Processing
- The Future
- Case Studies
- Discussions & Exercises
- Course Evaluation and Summary

Who Should Attend:

Chemical engineers new to the Petrochemical processing industry and require fundamental knowledge of Petrochemical Industry and processing.

Introduction to the Oil & Gas Exploration & Industry.

Course Introduction.

Without oil and gas exploration and production the World would literally grind to a halt. The dependency on oil & gas products, the everyday materials and resources from oil and gas are evident in all aspects of our daily lives. How are oil and gas deposits located? How are they safely and efficiently extracted for onward processing without detrimental environmental impacts.

This is a short but comprehensive course designed to give an overview and to introduce oil & gas operations to personnel who are new to the industry. It includes videos and interactive sessions to explain and discuss the impacts of the oil & gas industry and future industrial demands

Who Should Attend?

This course is designed for new graduates and new employees with little or no previous knowledge of the oil & gas industry.

Course Objectives.

The primary objectives of this short course are to:

- Understand the source of hydrocarbons.
- Appreciate how hydrocarbon deposits are found and extracted.
- to understand an outline of the hydrocarbon drilling industry both on and offshore.

- Gain knowledge in the initial treating and subsequent refining of crude hydrocarbons.
- Appreciate the vast range of products which are obtained from hydrocarbons.
- Become aware of some of the necessary precautions when dealing with hydrocarbons.
- Understand why various precautions are taken to avoid environmental damage.

Course Methodology:

The course speaker utilizes Interactive methods to involve all participants and also uses visual explanations and techniques to ensure full understanding of the subject contents. It also includes:

Videos case studies, exercises, review, feedback and group discussion to give emphasis to support to the subject learning objectives.

Day One.

- Introductions. Session timings. Refreshment intervals. In-house arrangements.

Course Material.

- How were hydrocarbon deposits formed?
- Why are they only found in certain areas of the world?
- How are hydrocarbon deposits located?
- An overview of the drilling industry and how it operates.
- The oil well.
- What is down the hole?

Day Two.

- How a hydrocarbon find is developed.
- Enhanced recovery methods.
- The initial treatment of crude hydrocarbons.
- The refining process.

- The many products from hydrocarbons.

Day Three.

- The major associated risks and how they are addressed.
- Environmental protection.
- Examples of common oil and gas industry terminology.
- Course Review & Evaluation
- Course Summary

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Day Three.

- The major associated risks and how they are addressed.
- Environmental protection.
- Examples of common oil and gas industry terminology.
- Course Review & Evaluation
- Course Summary

Jacking and Skidding System (Maintenance and Troubleshooting)

Course Objectives:

This program will enable the Mechanical Engineers, Mechanical Supervisors and Rig Mechanics to:

- State the theoretical and practical aspects of the major components of the Jacking and Skidding System.
- Perform maintenance tasks on the Jacking and Skidding System and be able to trouble shoot system failures or breakdowns.
- Demonstrate and understanding of the actions required for administratively organizing procedures for documenting and conducting routine maintenance operations of the system

Course Duration: Five Days (3 Batches)

Course Contents:

-
- Case studies and discussion on real life scenarios

Who should attend:

Mechanical Engineers, Mechanical Supervisors and Rig Mechanics.

L.P.G. Engineering Course

Course Objectives:

- LPG characteristics, the safety/ emergency procedures and the hazards involved handling of LPG products.
- Basic Technical Design and installation of LPG systems to customer requirements.
- The maintenance involved with LPG systems and trouble shooting techniques.

Course Duration: Six days

Course Outline:

Characteristics/properties & Hazards

- LPG Definition.
- LPG types available.
- Colour.
- Odour.
- Density.
- Vapour Pressure.

- Boiling Point.
- Latent heat at Evaporation.
- Calorific value.
- Identification of LPG mixture.

L.P.G Compound & Routine Inspection

- Siting.
- Fencing
- Ground conditions/levels.
- Pipework-supports
- Earthing
- Warning notices
- Routine Inspection report.

Vessel fittings & Inspection

- Filling valves
- Vapour take off valve (multivalve)
- Pressure Relief valve
- Content Gauge
- Liquid Withdrawal valve
- Drain
- Filling procedure of L.P.G. vessels
- Purging of L.P.G. storage vessel-Practical

Pipeline Installation

- Piping
- Underground pipes
- Hydrostatic relief valves
- Flexible connections
- Electrofusion welding of PE pipes
- Testing, purging & flaring of pipeline
- Commissioning.

L.P.G. OPSO/UPSO Regulators

1. 1st Stage OPSO Regulator
2. 2nd Stage OPSO/UPSO Regulator
3. Calibration & Testing.

Vapouriser

- General
- The necessity of using Vapouriser
- Types of vapourisers
- Instrumentation
- Installation distances from L.P.G. vessels & fencing.
- Commissioning.
- Inspection & Testing.

Design of a typical L.P.G. installation

Commissioning of an L.P.G. installation

Safety & Emergency Precautions and Procedure.

- Health & Safety
- Fire protection
- Fire precaution & procedures
- Fire control

Who should attend:

Trainees must be Engineers or Foremen familiar at least with the relevant subjects such as P.O.L., Boiler & Pressure or vessels.

L.P.G. Design & Installation of Systems

Course Objectives:

- LPG characteristics, the safety/ emergency procedures and the hazards involved handling of LPG products.
- Basic Technical Design and installation of LPG systems to customer requirements.
- The maintenance involved with LPG systems and trouble shooting techniques.

Course Duration: Six days

Course Outline:

Characteristics/properties & Hazards

- LPG Definition.
- LPG types available.
- Colour.
- Odour.
- Density.

- Vapour Pressure.
- Boiling Point.
- Latent heat at Evaporation.
- Calorific value.
- Identification of LPG mixture.

L.P.G Compound & Routine Inspection

- Siting.
- Fencing
- Ground conditions/levels.
- Pipework-supports
- Earthing
- Warning notices
- Routine Inspection report.

Vessel fittings & Inspection

- Filling valves
- Vapour take off valve (multivalve)
- Pressure Relief valve
- Content Gauge
- Liquid Withdrawal valve
- Drain
- Filling procedure of L.P.G. vessels
- Purging of L.P.G. storage vessel-Practical

Pipeline Installation

- Piping
- Underground pipes
- Hydrostatic relief valves
- Flexible connections
- Electrofusion welding of PE pipes
- Testing, purging & flaring of pipeline
- Commissioning.

L.P.G. OPSO/UPSO Regulators

4. 1st Stage OPSO Regulator
5. 2nd Stage OPSO/UPSO Regulator
6. Calibration & Testing.

Vapouriser



- General
- The necessity of using Vapouriser
- Types of vapourisers
- Instrumentation
- Installation distances from L.P.G. vessels & fencing.
- Commissioning.
- Inspection & Testing.

Design of a typical L.P.G. installation

Commissioning of an L.P.G. installation

Safety & Emergency Precautions and Procedure.

- Health & Safety
- Fire protection
- Fire precaution & procedures
- Fire control

Who should attend:

Trainees must be Engineers or Foremen familiar at least with the relevant subjects such as P.O.L., Boiler & Pressure or vessels.

Quality Control in Oil and Gas Production

Course Objectives:

On completion of the course the trainee/s will be competent in:

- The techniques in quality control in the oil and gas processes.
- Quality standards applicable in the production processes.

Course Duration: Five Days

Course Contents:

- Introduction to Quality Systems and Methods
- Production of High Octane Fuels
- Sample Taking and Methods of Testing
- Transportation Requirements and Certification
- Bulk Carriage Handling Land and Sea
- Safety Implications in Transit
- Delivery to Destinations

- Terminal Requirements, Receipt Requirements
- Storage and Transit Requirements of LP Products
- Methods of Containing Products by Barrels
- Contamination and Controls
- Jet Fuel Impurities
- Techniques for Dealing With Impurities
- Limitations of Quality Control
- Methods of Water and Methanol Mixing
- Physical and Chemical Properties of Aviation and Diesel Fuels
- Quality Control of LP Products
- Case studies and discussion periods

Who should attend:

Quality control specialists and supervisors who are responsible for processing in petroleum companies.

Oil and Gas Operations: Environmental Concerns and Solutions

Course Description:

With continual pressure from environmentalists and the general concern for the global effects of pollution from all industries, the oil and gas companies have been under scrutiny to take more responsibility for their part in issues such as oil spills, air pollution and onshore and offshore contamination. New legislation and the penalties imposed are financially onerous, along with the resulting bad publicity. Visible leaks in the form oil spills are the most notable but attention is increasing on monitoring of less visible contaminants from drilling wastes, processing chemicals and heavy metals e.g. mercury. Invisible contaminants causing greenhouse gases from processing and burn off are of great concern. Production facilities abandonment such as the Brent Spar

has become a major management issue leading to a rethink on disposal and the impacts on the environment.

These critical issues and high profile concerns will be discussed at a technical level and will include the effects of poor environmental management and the how to build in control and monitoring systems for effective solutions. The course covers the oil and gas industry, both onshore and offshore, with the emphasis on upstream operations i.e. oil and gas production facilities and terminals.

A key part of this course is a detailed study and discussion of ISO 14001 and Environmental Management Systems (EMS) auditing, plus the stringent legislation involved and the operators control and legal requirements.

Learning Objectives:

On completion of this course participants will have gained an understanding of the potential sources of environmental damage from oil and gas operations and how they may be controlled and monitored technically and will comply to ISO 14001.

Course Outline:

Day One:

- Industry Discharges – Effects on the Ecosystem
- Environmental Systems Overview
 - Air Quality Management
 - Water Quality Management
 - Solid Waste Management
- Environmental Management Systems: ISO 9000, ISO 14001, EMAR
- Environmental Legislation and Regulations

Day Two:

- Industry Codes of Practice
- Air Pollution Control :
 - Control of Volatile Organic Compounds
 - Control of Sulfur Oxides
 - Control of Nitrogen Oxides
 - Control of Primary Particulates

- Water Pollution Control

Day Three:

- Solid Waste Treatment
- Oil Spill Control and Treatment
- Emissions Monitoring

Day Four:

- Environmental Processes
- Process and System Condition Monitoring
- Prevention Pollution Plans – A Dynamic Iterative Cycle

Day Five:

- Environmental Auditing
 - Strategic Environmental Issues
 - Environmental Aspects Identification
 - Environmental Impacts Assessment of Significance
- Future Trends
- Discussion Periods and Case Studies

Who should attend:

This course will benefit a wide audience of oil field production technologists, engineers, supervisors and managers, environmental scientists and engineers, chemical suppliers and facilities design engineers. Also those involved in the air the development, manufacture and marketing of process plant and instruments for pollution control who need to learn more about pollution and control methods and solutions. In addition those who are involved in legal and insurance aspects of pollution may benefit from the cross- disciplinary content of the course and its intended audience.

Oil Field Operations

Course Objectives:

On completion of this course the trainee/s will be competent in:

- Understanding of onshore oil field operations and procedures.
- How the onshore site can realize the most production
- The environmental aspects for consideration

Course Duration: Five Days

- This course is supported by interactive discussions, case studies and videos

Course Contents:

- Oilfield Geology
- Basic Reservoir Traps
- Reservoir Fluids
- The Oil and Gas Flowing Principle
- Wellhead Compilations
- Oil and Gas Metering
- Furnaces
- Wax Removal
- Artificial Lifting
- Water Injection
- Oil and Gas Gathering and Transportation
- Basic Phase Behavior
- Monitoring and Instrumentation
- Gas Compression
- Case studies and discussion
- Exercises
- Course Evaluation and Summary

Who Should Attend:

Engineers, Technicians and Supervisors involved in oil production with ideally a minimum of one year of experience in general oil field exploration and operations.

Pipe Manufacturing and Pipeline Materials

Course Objectives:

- Gain understanding of Metallic pipe Manufacturing, The specifications and Materials.
- Understanding Of Alloys and Alloying Materials.
- Technical appreciation in Altering of the Crystal Structure of Pipeline Materials.

Course Duration: Three Days

Course Contents:



- Pipeline Materials.
- Alloys and Alloying.
- Changing of the Physical Properties.
- Seamless Pipe Manufacturing and Testing.
- Seam welded pipe manufacturing and Testing.
- Pipe Specifications.

Who Should Attend:

This course is intended for Pipe Engineers, Engineers and Technicians who are responsible for Pipeline Fabrication and Maintenance.

Pipe Preparation and Pipe Welding

Course Objectives:

On completion of this program the trainees will be competent in:

- Pipe preparation using Oxy – Acetylene And Power tools
- Welding Techniques in Manual Metal Arc, Tungsten, Inert Gas & Metal Inert Gas Processes.
- Safety procedure applicable to handling welding equipment and the hazards involved.

- Carry out basic welding jobs on welding of the most common and commercially used metals in a variety of positions using the recommended techniques.

Course Duration: Four Days

Course Contents:

- Safety Aspects: Equipment, Protective Clothing
- Oxy- acetylene: Safety and Hazards
- Use of Oxy - acetylene cutting equipment for Pipe Preparation
- Use of ancillary equipment (e.g. power tools For Pipe preparation.)
- Review of Welding Equipment
- T.I.G welding Theory
- M.M.A. Welding Theory
- M.I.G. Welding Theory
- Practical 'Hands On ' Training at Site.
- Discussions Periods

Who Should Attend:

Trainees who have little or no knowledge of pipe preparation and welding skills who will be expected to work initially under supervision.

Pipeline Design and Fabrication Techniques

Course Objectives:

- Gain understanding of the physical phenomena which affect the design of
- piping systems determining & evaluating stresses.
- Methods of fabricating, inspecting and testing piping systems.
- Additional requirements needed in fabrication/ installation specification to
- ensure adequate & proper installation.

Course Duration: Four Days

Course Contents:

- Overview of Piping Codes : Standards and structure design specifications
- Historical Developments of Codes for Pressure Piping.Current ASME B31;
- Codes ASME Section III, Piping Portion
- Design Methods: Pressure Design, Stress and Pressure loads
- Code Requirements; Design Methods for Pressure, Flow, Rate, Volume & System
- Sizing, Piping Systems Analysis / Static Loading, Types of Static Loads; System
- Expansion; Computer Analysis Supports; Weight Analysis; Wind Loading
- Piping Deadweight & Thermal Analysis using PC based software
- Piping System Materials, High temperature; Corrosion; Fracture Mechanics &
- related specs, Fabrication & Inspection practices
- Case Studies with practical wherever facilities exist
- Group Discussions
- Course Evaluation
- Course Summary

Who Should Attend:

Plant & Pipeline Fabrication Engineers, Supervisory and Technical Staff of Maintenance and Operation and Technical Service Departments.

Pipeline Fabrication Technology

Course Objectives:

- Gain understanding of the technology which affects the methods and techniques used for Pipeline piping systems determining & evaluating stresses
- Understanding Piping issues as they relate to production and process facilities.
- Technical appreciations in operations relating to piping and pipeline systems.

Course Duration: Three Days

Course Contents:

- Pipe Technology Review
- The basic Principles of Pipe Extrusion
- Review the Various Types of Equipment in Pipe Application
- Key Factors in Pipe Extrusion Process
- Optimization Pipe Extrusion Cycle
- Key Quality on Process Considerations
- Troubleshooting of the Process
- Pipe Applications
- Critical Physical Properties and Testing
- Exercises and Case Studies
- Course Summary and Evaluation

Who Should Attend:

This course is intended for Pipe Engineers, Engineers and Technicians who are responsible for Pipeline Fabrication and Maintenance.

Pipeline Fabrication Technology

Course Introduction:

A good pipeline system is vital for the movement of heavy fluids and other industrial elements etc. They are required to be fabricated according to the specific materials applicable to the Industry concerned and in accordance to the design specifications to operate efficiently and with utmost safety. It is therefore essential that during the fabrication process that all specifications and standards are applied and rigorously adhered to.

This course is designed to help participants understand the requirements involved and the process, maintenance and inspection systems applicable in pipeline fabrication technology. It also includes practical elements to reinforce learning.

Course Objectives:

- Gain understanding of the technology which affects the methods and techniques used for Pipeline piping systems determining & evaluating stresses
- Understanding piping issues as they relate to production and process facilities.
- Technical appreciations in operations relating to piping and pipeline systems.
- Inspection, safety and maintenance systems
- Practical appreciation and applications required

Course Duration: Five Days

Course Contents:

Day One:

- Pipe Technology Review
- The basic Principles of Pipe Extrusion
- Review the Various Types of Equipment in Pipe Application
- Key Factors in Pipe Extrusion Process

Day Two:

- Optimization Pipe Extrusion Cycle
- Key Quality on Process Considerations
- Troubleshooting of the Process

Day Three:

- Pipe Applications
- Critical Physical Properties and Testing
- Overview of Piping Codes: Standards and structure design specifications ASME's and other standards required
- Determining Wall Thickness
- Choosing a Line Diameter

Day Four:

- Pipeline Materials and Corrosion
- Pipeline Inspection and Testing
- Maintenance Techniques and Methods

Day Five:

- Pipeline Welding: Methods, Testing and Inspections (Including practical)
- Pipeline repair and maintenance (Including practical)
- Discussions and Review
- Course Summary and Evaluation

Who Should Attend:

This course is intended for Pipe Engineers, Engineers and Technicians who are responsible for Pipeline Fabrication and Maintenance.

Pipeline Fabrication Technology

Course Objectives:

- Gain understanding of the technology which affects the methods and techniques used for Pipeline piping systems determining & evaluating stresses
- Understanding Piping issues as they relate to production and process facilities.
- Technical appreciation's in operations relating to piping and pipeline systems.

Course Duration: Five Days

Course Contents:

- Pipe Technology Review
- Metallic Pipe Manufacturing
- Pipe Applications
- Critical Physical Properties and Testing
- Overview of Piping Codes : Standards and structure design specifications
- Determining Wall Thickness
- Choosing a Line Diameter
- Pipeline Materials and Corrosion
- Pipeline Inspection and Testing
- Understanding Isometric Drawings
- Methods of Pipeline Fabrication And Equipment Used
- Pipeline Welding: Methods, Testing and Inspections (Including practical)
- Pipeline Defects
- Pipeline repair and maintenance (Including practical)
- Course Summary and Evaluation

Who Should Attend:

This course is intended for Pipe Engineers, Engineers and Technicians who are responsible for Pipeline Fabrication and Maintenance.

Piping and Pipelines

Course Objectives:

On completion of this course the trainees will be competent in:

- Understanding Piping issues as they relate to production facilities.
- Technical appreciation's in operations relating to piping and pipeline systems.

Course Duration: Three Days

Course Outline:

- Introduction to current pipeline systems.
- Pressure Drop



- Determining Wall Thickness
- Choosing a Line Diameter
- Pressure Ratings / Pressure Breaks
- Pipe Valve and Fitting Specs
- Pipe Expansion and Support
- Facility Piping Details
- Pipeline and Gathering System Design
- Pipeline Pigging
- Pipeline Materials and Corrosion
- Pipeline Inspection and Testing
- Gas Disposal and Flare & Vent Systems
- Case Studies, Discussions and Summary

Who Should Attend:

Engineers who are responsible for installation and maintenance of pipeline systems and have at least one year of experience in the related industry.

Practical Well Controls

Course Introduction:

The practical and physical aspects before or when drilling is in operation need to be carefully considered and carefully analyzed. The role of the Driller Operator and Drilling supervisor is to calculate, advise and select the correct method for successful operations. Without this administration there may be a serious breach of safety plus and extensive loss of production capacity. These technicalities are addressed and explained in this course.

Learning Objectives:

This course is designed to cover the main aspects of the practicalities involved with the considerations and techniques of fluid control the calculations and analysis to be applied. The course will also cover the equipment associated with the operations, their recognition and features and effective usage.

Course Duration: Five Days

Who should attend:

Drillers and Well Control Supervisor who are responsible for the flow and pressure systems and have at least two years experience in onshore or offshore drilling operations. Also, those who are responsible for the design of control systems and equipment's.

Course Contents:

Day One:

- Introduction and Initial Terminology's
- Pressure Concepts: Origins, Hydrostatic Pressure, Calculation
- Causes and Warning Signs of Kicks: Characteristics, Types of Blowouts, Signs and Symptoms, Mud Management
- Shut -in Procedures and Shut - in Pressure: Hard, Soft and Special, Surface Pressure and Calculation, Gas Migration & Calculation

Day Two:

- Circulation and Well Control: Kill Rate, Pressure, Surface to Bit
- Formation and Fracture Gradient: Fracture Data, Leak Off Tests
- Well Control Methods: Drillers Method, Wait & Weight Method, Volumetric Method, Low Choke - Pressure Method
- Unusual Well - Control Operations: Drill String Holes, Plugged Bit, Stripping and Snubbing Operations, Lost Circulation, Barite Plugs, Excessive Casing Pressure, Bullheading, Snubbing into Drill System

Day Three:

- Well Control for Completion and Workover: Completion and Workover Fluids, Characteristics etc. , General Fluid Safety Remedial Operations, Perforating, Acidizing, Sand Control, Fracturing and Multiple Completions, Multiple Tubingless Completions

- Well control and Floating Drilling Rigs: Gas & Buoyancy, Diverter System, Deep Water Considerations, Riser Choke Line Effects, Choke Line Aspects, Blowout Preventer Control System, Detecting Kicks Preventer Operations, Marine Riser Disconnect, Killing Riser and Trapped Gas in BOP Stack, Detecting Kicks

Day Four:

- Blowout Preventative Equipment: Stack Arrangements, Closing and Opening Times, Ram Preventers, Drill stem Valves Inspecting & Testing Preventers, Adjustable Chokes, Accumulator Systems Calculating Usable Fluid Volumes, Pit Level & Pit Volume Indicators, Mud Return Indicators, Gas Detectors, Trip Tanks and Mud-Gas Separators, Degassers, Equipment Limitations

Day Five:

- Organizing and Directing, Well control Operations: Organizing Considerations, Drills, Pit Drills, H₂S Drills
- Case Studies based on Scenarios and Discussions
- Course Summary and Feedback

Principles of Auto Control

Course Objectives:

On completion of the course the trainee/s will be competent in:

- Understanding the philosophy, components and operability of process control systems including protection systems (ESD, F&G).
- The applicable safety rules.

Course Duration: Four Days

Daily Course Contents:

Day One & Two

- Introduction to the subject and the current level of understanding
- Areas of concern and basic explanations
- Description of Component, Features and Functions
- Components of typical process control systems, functions of each component: Pressure, Temperature and Level of Control Loop
- Explanation of Differences between On/ Off and Modulating Control Systems: Including Control Valves and their Variants.
- Control Valves design / performance
- Emergency Shut Down Systems

Day Three

- The Fundamentals of an E.S.D. System
- Safety of Personnel in the Plant and the Safety Rules / Procedure Applicable
- Review Examples of Client Process and Instrument Diagrams (P+I.D.'s)
- Coaching of students through System Design and Philosophy
- Present the fundamentals of a Fire and Gas System (F+G) and Discuss client's system.

Day Four

- Review of previous three days for further points and clarification
- Visit Plant for On Site discussion (If possible)
- Process System Trouble Shooting Exercises in line with client's system



- Case studies, exercises and discussions on Plant Process (Electronic or Pneumatic, depending on client site systems)

Who should attend:

Process Operators, Utility Operators, Senior Utility Operators and Panel operators.

Process Operations

Course Objectives:

On completion of the course the trainee/s will be competent in:

- Detailed knowledge of factors affecting process performance of unit operations.
- Gain understanding of hydrocarbon mixture's behaviors.
- Ability to appreciate how changes occur with hydrocarbon process system.

Course Duration: Five Days

Course Contents:

- Description of various operations (Separator, Scrubber, Dehydrator, etc.)
- Hydrocarbon components and behavior
- Factors affecting design / performance
- Trouble shooting Oil & Gas process systems
- Case studies, exercises and discussions

Who should attend:

Process Operators and Panel Operators

Quality Control in Oil and Gas Production

Course Objectives:

On completion of this course the trainee/s will be competent in:

- Techniques in quality control in the oil and gas processes.

Course Duration: Five Days

Course Contents:

- Introduction to Quality Systems and Methods
- Production of High Octane Fuels
- Sample Taking and Methods of Testing
- Transportation Requirements and Certification
- Bulk Carriage Handling Land and Sea
- Safety Implications in Transit
- Delivery to Destinations
- Terminal Requirements, Receipt Requirements
- Storage and Transit Requirements of LP Products
- Methods of Containing Products by Barrels
- Contamination and Controls
- Jet Fuel Impurities
- Techniques for Dealing With Impurities
- Limitations of Quality Control
- Methods of Water and Methanol Mixing
- Physical and Chemical Properties of Aviation and Diesel Fuels
- Quality Control of LP Products
- Case studies, discussions based on scenarios

Who Should Attend:

Quality Control Specialists in Petroleum Companies

Rig Floorman

Course Objectives:

On completion of this course the trainee/s will be competent in:

- The responsibilities and role of the Rig Floorman
- Etc
- Etc
-
-
-

Course Duration: Five Days

Course Contents:

- Rig Routine
- Etc
- Etc
- Etc
- Etc
- Etc
- Etc
- Etc
- Etc
-
- Situations Handling
- Case studies, discussions based on scenarios

Who Should Attend:

Potential Rig Supervisors, who require rig experience. Etc

Rig Supervision

Course Objectives:

On completion of this course the trainee/s will be competent in:

- The responsibilities and role of the Rig Supervisor
- The routine involved with maintaining efficient Rig Operations
- How to anticipate potential problems and troubleshooting techniques to remedy problems
- Team Training and Supervision responsibilities

Course Duration: Five Days

Course Contents:

- Rig supervisors responsibilities and role
- Drilling concepts and principles: Making the hole, Rotation, Casing
- Drilling Tools Selection, Maintenance and Troubleshooting
- Fluids: Type, Applications and Measurement
- Drilling Drive and Power
- Cleaning the Annular, Hole and Tube
- Mud Logging - Basics
- Measurements
- Down Hole Practices - Outline
- Hydraulics
- Well pressure control
- Team Organisation
- Team Motivation
- Problems associated with Rig Routine
- Situations Handling
- Case studies, discussions based on scenarios

Who Should Attend:

Potential and Existing Rig Supervisors, with at least one year in On/Off-shore Oil / Gas Rig experience.

Roustabout

Course Objectives:

On completion of this course the trainee/s will be competent in:

- The responsibilities and role of the Roustabout
- Etc
-
-

Course Duration: Five Days

Course Contents:

- Rig supervisors responsibilities and role
- Etc
- Etc
- Etc
- Etc
- Etc
-

- Case studies, discussions based on scenarios

Who Should Attend:

Potential Roustabout Rig Operators etc etc .

Steam Turbines Operation & Trouble Shooting

Course Objectives:

On completion of the course the trainee/s will be competent in:

- The skills and knowledge required to operate and maintain Steam Turbines and the various characteristics associated with them.
- Trouble shooting methods and procedures for problem solving
- Inspecting and maintenance / repair program

Course Duration: Five Days

Course Contents:

- Introduction to the characteristics and the expected performance standards of Steam Turbines
- Components and parts identification: Casing, Rotors, Blades, Nozzle Rings, Journal Bearings, Thrust Bearings, Labyrinth Seals
- Lubricants and Special Tools
- Design and Principles
- Operation and Procedures
- Auxiliary Systems
- Configuration, Disassembly and Re-assembly
- Performance and Expectations
- Turbine Blades: Erosion and Inspection
- Valves: Composition, Inspection and Fault Finding
- Condition Monitoring: Inspections, Recording and Analysis
- Bearings: Lubricants and Inspections
- Alignment: Specifications and Checks
- 'Hands On' and Practical Exercises
- Scenarios based Case Studies and Discussions

Who should attend:

Engineers, Operators, Chemists and Technicians who are responsible for the operation, performance and maintenance of Steam Turbines and the systems involved.

Surface Production Operation Facilities.

Course Objectives :

- Provide a sound understanding of the equipment used in production operations.
- Promote the safe operation of the equipment and the production process.
- Understanding of production aspects such as well stimulation, secondary and tertiary recovery methods applied to reservoirs.

Course Duration: 5 Days

Course Contents:

The Front End.

- Formation of the Hydrocarbon Reservoir.
- Wellheads, Christmas Trees and Chokes.

Production Operations.

- Separators, horizontal, vertical multi-phase.
- Separator control systems.
- Separation by distillation.
- Piping and Instrument Diagrams (P+Ids).

Safety Aspects of Production Operations.

- Permit to Work System (PTW).
- Safety Procedures.
- Equipment Isolations, purging, flushing, venting and draining.
- Vessel entry procedures.
- Fire and Gas systems (F+G).
- Emergency Shutdown Systems (ESD).
- Hazardous area classification.

Production Operation Aspects.

- First line maintenance.
- Flow-line pigging, line sweeping / intelligent.
- Common valve types and their operation.
- Corrosion.
- Sweet / sour crude oils.
- Associated water treatment.

Enhanced Recovery.

- Well stimulation by gas lift.
- Water / gas injection.
- Injection water treatment.

Case studies.

Revision questions / answers / discussion.

Course assessment & Summary

Terminal Operations and Oil Movements

Course Objectives:

- Understanding of: the correct measurement and accurate sampling procedures
- To increase and confirm the knowledge and skills required for efficient terminal operations.

Course Duration: Five Days

Course Contents:

Tank Measurement and Control

- Introduction to Static Measurement
- Land Tank Calibration
- Production Level gauging

- Temperature Measurement
- Land Tank Sampling
- Effects of Measurement inaccuracies
- Static Quantity Calculations
- Metering and Meter Proving**
- Introduction to Dynamic Measurement
- Displacement Meters
- Turbine Meters
- Control Meters
- Prover Tanks
- Conventional Tank Provers
- Small Volume Provers Dynamic Quantity Calculations
- Ship Loading and Discharge**
- Ship Tank Design and Calibration
- Shipboard Measurement
- Pipeline Control
- Automatic Pipeline Sampling
- Shortage Claims
- Cargo Reconciliation (Core Studies)
- Calculation Workshops**
- Oil Quantities - Fixed Roof Tanks
- Oil Quantities - Floating Roof Tanks
- Metering Proving with a Prover Tank
- Meter Proving with a Pipe Prover

Who should attend:

Terminal and Oil Operations Staff

WATER TREATMENT AND INJECTION

INTRODUCTION

Secondary Recovery schemes, including pressure maintenance, have become almost standard in the development of oil fields throughout the world in an effort to increase recoveries at a minimum cost. The primary mechanism used is water injection - water is cheap, readily available and immiscible with the oil - but requires specific treatments to ensure reservoir problems are minimized. Furthermore as water is injected water will be produced in increasing amounts leading to additional (or different) treatment prior to injection or disposal.

WHO SHOULD ATTEND

This practitioner level course targets junior operating staff involved in the field operation of water treatment facilities, including development and operations petroleum and production engineers with up to five years experience including some hands on field exposure and an understanding of existing field operations.

The course will allow a better understanding of the reasons for water treatment, the options available including engineering needs to select and design the equipment and operation of the facility.

COURSE CONTENT

Water treatment is a five day practitioner course providing coverage of the theory and practice of water treatment for injection as part of a secondary recovery scheme or disposal of produced waters.

COURSE OUTLINE

Enhanced Oil Recovery Processes:

- Introduction,
 - Review of Geology and Hydrocarbon Accumulations
 - Surface Tension
 - Wettability
 - Capillarity
 - Saturation
 - Fluid Displacement
 - Reservoir Drive Mechanisms
 - Oil Recoveries
 - Production Engineering Overview
 - Decline Analysis
-
- Pressure Maintenance Schemes
 - Line Drive Water Floods
 - Pattern Water Floods
 - Other Tertiary Schemes

Injection Water Sources:

- Produced Water
- Quantities
- General Impurities
- Treatment Overview
- Fresh Water
- Quantities
- Treatment Overview
- Sea Water
- General Impurities
- Treatment Overview

Injection Water Quality Requirements:

- Solids,
- Dissolved Solids
- pH
- Basic Review of Chemical Calculations
- Precipitate Reactions and Their Significance
- Introduction to Clay Mineralogy and Its relationship to Formation Damage and Solids Control

Produced Water Handling:

- Inlet Separation
- CPIs
- Filtration
- Skim Tanks
- Oil in Water Emulsions
- Treating
- Polishing Equipment
- Flotation
- Disposal Options
- Regulatory Requirements

Biological Water Treatment:

- Introduction
- Problems Caused by Organisms in Water
- Plugging

- Types of Microorganisms
- Problem Definition and Scope
- Sampling, Monitoring
- Treatment for Control
- Biological
- Lagoons
- Biological Tower
- Bio-Disc

Corrosion: Water Treatment:

- Introduction
- Principles: Subsidence
- Filtration
- Dissolved Gas Removal
- Coagulation
- Chlorination
- Iron Removal
- Water Softening
- Silica Removal
- TDS Removal
- Application to Sea Water

Operations and Operating Problems:

- Skim and Settling Tanks
- Parallel Plate Separators
- Filters, Gas Flotation Units
- Lime Soda Process
- Coalescers
- Ion Exchange Unit
- Electrostatic Treaters

Design Considerations:

- Water Source,
- Water Problems,
- Water Quality Needs,
- Compatibility,
- Scales,
- Corrosion Control

- **Recycling Economics**
- **Discussions**
- **Case studies**
- **Course Evaluation and Summary**

Well Completion

Course Objectives:

On completion of this course the trainee/s will be competent in:

- Decision making process for stimulation and workover techniques.
- Evaluations of well performance and the equipment required.

Course Duration: Five Days

Course Contents:

- Well Status Prior to Completion
- Down hole practices
- Hydraulics
- Perforation
- Amortization
- Well pressure control
- Completion
- Logging practices
- Non electrical logging
- Surface and down hole valves
- Sand Control
- Stimulation
- Workovers
- Program Supervision
- Case studies, discussions based on scenarios

Who Should Attend:

Petroleum engineers, Senior Operators and Supervisors involved in production Operations. Also useful to Petroleum Geologists, Reservoir Engineers, Drilling Engineers and Senior Drillers.

Well Control & KICKS

Course Objectives:

On completion of the course the trainee/s will be competent in:

- An understanding of well control systems related to drilling operations
- The equipment and fluids involved in Drilling techniques
- The problems caused by Kicks and the appropriate measures to be taken

Course Duration: Ten Days (Intensive)

Course Contents:

- Introduction to Basics involved in Well Control
- Rules and Regulations Applicable Internationally & Locally
- Well Control Equipment and Drilling Fluids
- Signs and Causes of KICKS
- Initial Actions to KICKS
- Introduction to Well Control Procedures
- Closing in the Well as a Control Procedure
- Well Control Operations
- Methods of Control
- Shallow Gas KICKS
- Unusual Well Control Operations
- BOP Diverter and Closing Systems
- Equipment Limitations
- Mechanics Involved in Difficult Well Control Situations
- Abnormal Pressure and Means of Detection
- Well Control Drills
- Lost Circulation
- Abnormal & Maximum Annular Surface Pressure
- Problems Associated with Well Control (Pipe off Bottom)
- Hole in Drill Pipe or Collar
- More than Anticipated KICKS
- Standpipe Shut in Pressure with a Float Valve in String
- Handling of Contaminates on Surface
- Small influx into Bore and Trip Gas
- Washing out or Plugging within the Circulating System
- Failures of Blowout Prevention Equipment.
- Mud Changes.
- Fishing inside tubing with hydrocarbon zone exposed.
- Assuming a well is safe when a liner has been run before drilling out.
- Assuming the people understand what they are supposed to do while controlling a kick is extending complacency
- Assuming a kick is salt water and circulating out at constant pit level.
- Pulling pipe into casing when a kick is detected.
- Killing the well with excessive mud weight.
- Circulating the contaminant out prior to raising mud weight.
- Accepting data from others after a well is in trouble.
- Casing protector rubbers swelling due to gas.
- Well is shut in with a pit volume gain and annular pressure but zero pressure on the standpipe.
- Re-entering a well, which has blown out and bridged over.
- The exposed formations will not support kill mud and a trip is needed to run protective casing.
- Pressure on annulus between casing strings.
- Cement liners.
- Reverse circulating a kick.
- Tripping while drilling under-balanced.

- Pit volume gain & zero pressure on standpipe and annulus.
- Pit volumes gain & standpipe & annular pressures equal.
- Trying to outrun a kick without shutting the well in.
- Drilling with improper weighting material.
- Fluctuating pump rate while holding drill pipe pressure constant.
- Shortages of materials.
- Gas cap drilling
- Drilling in sour gas formations
- Underground Blowouts
- Casing failure during production testing
- Closing bops with short surface string
- Liner collapse in deep wells
- Casing collapse from running drill stem test.
- Excessive annulus pressure.
- Killing a well with drill pipe float in upside down.
- Excessively fast “Slow circulating rates” for well killing.
- Blowout cases histories associated with gas cap drilling.
- Abnormal pressure detection.
- Case Studies based on scenarios, exercises and discussions

Who Should Attend:

Technicians and Engineers who are responsible for Instrument Flow Control Equipment and ideally have a minimum of two years background knowledge and experience in this technical area.

Well Logging

Course Objectives:

On completion of this course the trainee/s will be competent in:

- Appreciation of well logging specifications and technology
- The associated technology tools to complete tasks

Course Duration: Five Days

Course Contents:

- Down hole practices
- Hydraulics
- Sand control
- Well pressure control
- Well completion's
- Surface and down hole valves
- Packers (construction operation and maintenance)
- Perforators
- Logging practices
- Non electrical logging
- Natural gamma ray spectrometry
- Lithological density measurement
- Engineering logging
- Compensated neutron logging
- Production well logging
- Dip measurement
- Case studies, discussions based on scenarios

Who Should Attend:

Technicians, supervisors and engineers working in oil fields and oil and gas production industry with a minimum of two years experience in oil field operations.