

Oil and Gas Production I

Session Objectives

SESSION	TOPIC	OBJECTIVES
1	Course Overview and The Job of the Oil and Gas Production Technician	<ol style="list-style-type: none"> 1. Describe the various jobs an oil and gas production technician may perform. 2. Discuss the global differences in equipment and systems between facilities. 3. Discuss the global differences in working environments between facilities. 4. Discuss the global differences in weather and climate between facilities.
2	Marketing Petroleum and Petroleum Products	<ol style="list-style-type: none"> 1. Discuss recent changes in the petroleum market. 2. Describe the role of research and planning in the marketing of petroleum. 3. Summarize the process of buying and selling petroleum in a world market. 4. Outline the factors that affect petroleum product consumption. 5. Describe the role of advertising and public relations in the marketing of petroleum. 6. Discuss the role of the production technician in the marketing of petroleum. 7. Outline the lifting costs associated with the production of a barrel of oil in various regions of the United States.
3	Petroleum Geology; Review for Test #1	<ol style="list-style-type: none"> 1. Discuss the basic concepts of geology related to oil and gas exploration and production. 2. Describe the origin, migration and accumulation of oil and gas. 3. Discuss the principles of fluid flow in porous media. 4. Characterize the composition of reservoirs and composition of reservoir fluids. 5. Discuss the pressure variables associated with reservoirs. 6. Discuss basic reservoir economics.
4	Test #1; Petroleum Exploration	<ol style="list-style-type: none"> 1. Identify data sources used in oil and gas exploration. 2. Explain the purpose and importance of surface geographic studies to the field of oil and gas production. 3. Discuss the purpose and importance of geophysical surveys to the field of oil and gas exploration. 4. Describe the reservoir development tools used during oil and gas exploration. 5. Differentiate between the types of private mineral (oil and gas) resource ownership.

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		<ol style="list-style-type: none"> 6. Discuss the legal aspects associated with mineral leases (privately versus publicly owned lands). 7. Discuss safety, health and environmental considerations associated with oil and gas exploration.
5	Drilling Operations	<ol style="list-style-type: none"> 1. Briefly trace the history of onshore and offshore drilling. 2. Briefly describe the various types of drilling rigs. 3. Discuss the relationship between the oilfield operator, drilling contractor, the service and supply companies, the well completion contractor and other parties involved during drilling operations. 4. Briefly describe the downhole drilling systems, equipment and processes. 5. Discuss the disposal of drill cuttings. 6. Explain the purpose of, and methods used for, sidetracking. 7. Explain the purpose of, and methods used for, horizontal drilling. 8. Explain the importance of well control. 9. Describe methods for evaluating the pay zone.
6	Well Completion, Workover and Servicing	<ol style="list-style-type: none"> 1. Describe the activities associated with completing a well. 2. Briefly describe the various completion processes and equipment. 3. Identify the major components of a flowing well. 4. Discuss the purpose, design and operation of each component. 5. Summarize the instruments and techniques used when logging and testing a well during drilling and completion. 6. List the conditions that would warrant the servicing or workover of a well. 7. List the factors that are analyzed when studying a poorly producing well. 8. Name the responsibilities of those who may be involved in well service and/or workover. 9. Describe the techniques used to stimulate a well.
7	Well Workover and Servicing; Review for Test #2	<ol style="list-style-type: none"> 1. Discuss the different types of service and workover rigs. 2. Discuss the use of coiled tubing units in workovers. 3. Discuss the major components of a service and workover rig. 4. List the auxiliary equipment and tools used for service and workover. 5. Discuss the typical types of service and repair performed on beam pumping equipment. 6. Discuss the typical types of service and repair performed on production tubing and packers.

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		<ol style="list-style-type: none"> 7. Discuss the typical types of service and repair performed on wellheads. 8. Discuss the types of fish and junk that are typically removed from wells. 9. Describe the purpose and design of the various tools and accessories used for fishing. 10. Describe the techniques used to free various types of fish and junk. 11. Explain the purpose of, and methods used for, sand cleanout. 12. Explain the purpose of, and methods used for, sand control. 13. Explain the purpose of, and methods used for, plug-back cementing.
8	Test #2; Introduction to Production	<ol style="list-style-type: none"> 1. Discuss multiphase flow of reservoir fluids: the behavior of oil, gas and water in tubing, flow lines and pipelines. 2. Identify the major systems and equipment used in the production of oil and gas. 3. Trace the process flow through the oil and gas production systems and equipment.
9	Wellhead Equipment	<ol style="list-style-type: none"> 1. Discuss the purpose of the wellhead. 2. Identify the major components of the wellhead. 3. Describe the purpose, design and operation of each wellhead component. 4. Compare and contrast the major differences in wellhead construction between onshore and offshore facilities, as well as between various regions within the United States. 5. Describe the safety, health and environmental concerns associated with working around a wellhead. 6. Discuss the safety systems associated with a wellhead.
10	Wellhead System Operation and Maintenance	<ol style="list-style-type: none"> 1. Explain how the wellhead system affects other production systems tied to the wellhead. 2. Describe the activities associated with monitoring and regulating well flow. 3. Explain the typical malfunctions associated with wellheads. 4. Describe the wellhead maintenance activities performed by the production technician. 5. Given a computer simulator, pilot plant or tabletop unit, operate and troubleshoot a wellhead.
11	Well Shut-In; Review for Test #3	<ol style="list-style-type: none"> 1. List the operating conditions that would warrant a manual or automatic shut-in of a well. 2. List the steps involved in a manual shut-in of a well. 3. Describe the safety, health and environmental concerns

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		<p>associated with shutting in a well.</p> <ol style="list-style-type: none"> 4. Compare and contrast the major differences involved when shutting in a well onshore versus offshore, as well as between shutting in a well located in various regions of the United States. 5. Given a computer simulator, pilot plant or tabletop unit, shut in and start up a well.
12	Test #3, Emulsion Separation and Treatment Overview	<ol style="list-style-type: none"> 1. Review the composition of the reservoir fluid (emulsion). 2. Identify the various techniques used to separate and treat emulsion. 3. Discuss the purpose of separation and treatment systems. 4. Define hydrocarbon nomenclature associated with separation and treatment. 5. Discuss hydrocarbon properties.
13	Emulsion Separation Systems	<ol style="list-style-type: none"> 1. Identify the major types of separation equipment. 2. Describe the purpose, design and operation of each type of separation equipment. 3. Discuss the safety and control components of a separator. 4. Describe the activities associated with monitoring and regulating the separation process. 5. Explain the typical malfunctions associated with separation systems. 6. Describe the separation system maintenance activities performed by the production technician. 7. Describe the typical safety, health and environmental concerns associated with working in the separation system.
14	Emulsion Chemical Treatment Systems	<ol style="list-style-type: none"> 1. Discuss when chemicals should be used to treat emulsion. 2. Describe the various sampling procedures and tests used during chemical treatment. 3. Identify the major components of the chemical treatment process. 4. Describe the purpose, design and operation of each piece of chemical treatment equipment. 5. Describe the activities associated with monitoring and regulating the chemical treatment process. 6. Discuss the safety systems associated with the chemical treatment process. 7. Describe the chemical treatment process, troubleshooting and maintenance activities performed by the production technician. 8. Describe the safety, health and environmental concerns associated with working with chemical treatment processes.

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15	Emulsion Heat Treatment Systems; Review for Test #4	<ol style="list-style-type: none"> 1. Identify the types of equipment used in the heat treatment process. 2. Describe the purpose, design and operation of each piece of heat treatment equipment. 3. Discuss the safety systems associated with the emulsion treatment process. 4. Describe the various sampling procedures and tests used during heat treatment. 5. Describe the activities associated with monitoring and regulating the heat treatment process. 6. Describe the heat treatment process maintenance activities performed by the production technician. 7. Describe the safety, health and environmental concerns associated with working with heat treatment processes. 8. Compare and contrast the major differences associated with emulsion separation and treatment systems between onshore and offshore facilities, as well as between various regions within the United States. 9. Given a computer simulator, pilot plant or tabletop unit, operate and troubleshoot an emulsion separation and treatment system.
16	Test #4	No new objectives are presented in this session.