

## **MODULE OVERVIEW**

This module provides an overview of the pipeline industry. Topics covered include basic functions and purposes of pipelines and facilities, roles of control personnel, and operations procedures.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Explain the basic functions and purposes of pipelines and facilities and identify the characteristics and hazards of common pipeline products.
2. Identify maps and drawings used to depict pipelines and facilities.
3. Explain the roles of control personnel and equipment in the overall operation of a pipeline.
4. Explain liquid pipeline hydraulics and gas pipeline pneumatics.
5. Explain the types and purposes of pipeline equipment.
6. Explain pipeline electrical power systems and corrosion control.
7. Review operations, maintenance, and emergency procedures and perform documentation required for pipeline operations.

## **PERFORMANCE TASKS**

This is a knowledge-based module – there is no performance testing.

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives, Performance Tasks, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies	Posterboard or other large sheets of paper
Markers/chalk	Colored markers
Blank acetate sheets	Assorted valves
Transparency pens	Copies of <i>API 650</i> and <i>API 653</i>
Pencils and scratch paper	Copies of <i>API 510</i> and <i>2510</i>
Copies of Quick Quiz*	Assorted fittings
Module Examinations**	Copies of <i>49 CFR Part 192 (Gas)</i> and/or <i>49 CFR Part 195 (Liquid)</i> , including <i>Parts</i> <i>192.327</i> and <i>195.248</i>
Overhead projector and screen	Assorted corrosion coupons
Whiteboard/chalkboard	Various examples of documentation, including:
Appropriate personal protective equipment	Operations logs
Copies of your company's policy and procedures manual	Work orders
Samples of P&IDs, blueprints, and strip maps/alignment sheets	Event logs

\* Located in the Annotated Instructor's Guide for this module.

\*\* For information and updates about accessing the Module Examinations, visit [www.nccer.org/testing](http://www.nccer.org/testing).

**Course Planning Tools****MODULE OVERVIEW**

This module introduces the tools and equipment used by pipeline maintenance technicians, such as specialized hand and power tools, welding equipment, meters and testers, nondestructive testing tools, and heavy excavating equipment. The module explains how to use, care for, and maintain such tools and also reviews inspection and safety guidelines.

**PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02; Pipeline Maintenance, Level One, Module 62103-02

**OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Use and maintain hand and power tools.
2. Identify and explain the use of welding equipment.
3. Explain the use of meters and testers.
4. Explain the use of nondestructive testing tools.
5. Identify and explain the use of lifting and excavation equipment.

**PERFORMANCE TASKS**

Under the supervision of the instructor, the trainee should be able to:

1. Identify a given hand tool, state its application, and describe its safe use and maintenance.
2. Demonstrate the use of a given hand tool according to standards given by the instructor.
3. Identify a given power tool, state its application, and describe its safe use and maintenance.
4. Demonstrate the use of a given power tool according to standards given by the instructor.
5. Identify a given beveling machine, state its application, and describe its safe use and maintenance.
6. Identify a given meter or tester, state its application, and describe its safe use and maintenance.
7. Identify various nondestructive examination methods and tools and state their applications.
8. Identify a given kind of lifting or excavation equipment, state its application, and describe its safe use.

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives, Performance Tasks, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies	Assorted types of wrenches, including bolt-thru ratchets and hammer/slug wrenches
Felt-tip markers/chalk	Banding tool and band
Blank acetate sheets	Rotary pipe cutter
Transparency pens	Flange spreaders
Pencils and scratch paper	Line plugging/stoppling equipment
Copies of the Quick Quiz*	Assorted pit gauges
Module Examinations**	Assorted lengths of pipe of different thicknesses
Performance Profile Sheets**	Hand drilling and tapping machines
Overhead projector and screen	Multi-gas monitor
Whiteboard/chalkboard	Line locator
Appropriate personal protective equipment	Dye penetrant
Probe rod	

\* Located in the Annotated Instructor's Guide for this module.

\*\* Performance Sheets for this module are available from NCCER's Instructor Resource Center at [www.nccerirc.com](http://www.nccerirc.com).

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## **MODULE OVERVIEW**

This module introduces trainees to the various reports and methods used to document the location and condition of pipelines. Topics covered include pipeline maps and drawings, documentation, and documentation management.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02; Pipeline Maintenance, Level One, Module 62103-02

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Read alignment sheets.
2. Identify and explain documentation processes and forms.

## **PERFORMANCE TASKS**

Under the supervision of the instructor, the trainee should be able to:

1. Read and interpret alignment sheets.
2. Using a company's manuals or procedure books, identify and explain some of the company's required documentation and records.
3. Fill out, properly submit, and file a company maintenance document according to the company's documentation procedures (or simulate doing so).

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives and Performance Tasks, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies and blank transparencies	Overhead projector and screen
Markers/chalk	Whiteboard/chalkboard
Highlighter	Elevation scale
Pencils and scratch paper	Samples of topographic maps, strip maps, piping and instrumentation diagrams (P&IDs), and electrical blueprints
Masking tape or pushpins	Appropriate personal protective equipment
Graph paper	
Module Examinations*	
Performance Profile Sheets*	

\* Performance Sheets for this module are available from NCCER's Instructor Resource Center at [www.nccerirc.com](http://www.nccerirc.com).

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## **MODULE OVERVIEW**

This module introduces trainees to the components, operation, and design used in pneumatic systems. Trainees will also be introduced to the science of pneumatics, which governs the behavior of gases under different conditions.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Module 66101-02

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Explain pneumatic safety.
2. Explain the physical characteristics of gas.
3. Explain compressing gases.
4. Explain the pneumatic transmission of energy.
5. Explain the principles of compressor operation.
6. Identify and explain types of gas pipeline equipment.
7. Identify and explain pneumatic system components and symbols.
8. Demonstrate an understanding of the design limits of pipelines.

## **PERFORMANCE TASKS**

Under the supervision of the instructor, the trainee should be able to:

1. Identify and explain types of gas pipeline equipment.

## **SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment. Emphasize the importance of following all safety precautions and procedures when working with power tools.

## **PREPARATION**

Before teaching this module, you should review the Module Outline, Objectives, Performance Tasks, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## **MATERIALS AND EQUIPMENT LIST**

Transparencies	Appropriate personal protective equipment
Markers/chalk	Sample manufacturer's technical and operations manuals
Blank acetate sheets	Pictures of various types of flow controllers
Transparency pens	Sample blueprints of pneumatic systems
Pencils and scratch paper	Copies of 49 CFR 192
Module Examinations*	Copies of records of hydrostatic tests
Performance Profile Sheets*	Copies of your company's policies and procedures manual
Overhead projector and screen	
Whiteboard/chalkboard	

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## **MODULE OVERVIEW**

This module reviews basic hydraulic systems, hydraulics as applied to pipeline operations, and the operation of pumps in pipelines. Trainees will learn how to identify and explain basic types of hydraulic pumps and valves used in pipelines.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Explain basic hydraulic systems.
2. Describe hydraulics as applied to pipeline operations.
3. Identify and explain basic types of hydraulic pumps and valves.
4. Describe the operation of pumps used in pipelines.
5. Identify and explain basic types of valves used in pipelines.

## **PERFORMANCE TASK**

Under the supervision of the instructor, the trainee should be able to:

1. Identify and explain the types of valves used in pipelines.

## **SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment. Emphasize the importance of following all safety precautions and procedures when working with power tools.

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives, Performance Task, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies	Overhead projector and screen
Markers/chalk	Whiteboard/chalkboard
Blank acetate sheets	Appropriate personal protective equipment
Transparency pens	Copies of <i>49 CFR Part 195</i>
Pencils and scratch paper	Copies of your company's policy and procedures manual
Copies of Quick Quiz*	A variety of P&ID drawings
Module Examinations**	
Performance Profile Sheets**	

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\*\* Performance Sheets for this module are available from NCCER's Instructor Resource Center at [www.nccerirc.com](http://www.nccerirc.com).

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## **MODULE OVERVIEW**

This module reviews various types of communications required to operate a pipeline and pipeline facility successfully. Trainees will learn about internal and external communications responsibilities and procedures.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02; Liquid Pipeline Field Operations, Module 60102-02

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Identify and explain the internal communications requirements for operating the pipeline and the pipeline facility.
2. Explain the communications responsibilities of the pipeline facility scheduling department.
3. Identify and explain the external communications procedures that must be followed to inform and educate the general public on pipeline issues.

## **Performance Tasks**

This is a knowledge-based module – there is no performance testing.

## **SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment. Emphasize the importance of following all safety precautions and procedures when working with power tools.

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies	Blank work order forms (one per trainee)
Markers/chalk	Samples of nominations, product specs, product transfer orders, batch changes, and written confirmations
Blank acetate sheets	Copies of <i>Figure 1</i> or your company's call investigation report sheet
Transparency pens	A variety of educational brochures or items used to notify residents of pipeline systems
Pencils and scratch paper	Photos or pictures of various right-of-way markers
Module Examinations*	Copies of <i>49 CFR Part 195</i>
Overhead projector and screen	
Whiteboard/chalkboard	
Appropriate personal protective equipment	
Copies of your company's policy and procedures manual	

\* For information and updates about accessing the Module Examinations, visit [www.nccer.org/testing](http://www.nccer.org/testing).

### MODULE OVERVIEW

This module reviews pipeline system hydraulics, American National Standards Institute (ANSI) ratings and standards, and station control systems. Trainees will also learn to recognize abnormal operating conditions and explain pigging operations.

### PREREQUISITES

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02; Pipeline Electrical and Instrumentation Level One, Modules 64102-02 through 64105-02

### OBJECTIVES

Upon completion of this module, the trainee will be able to:

1. Explain pipeline system hydraulics.
2. Explain ANSI ratings and standards.
3. Explain station control systems.
4. Recognize abnormal operating conditions (AOCs).
5. Explain pigging operations.
6. Explain proving process meters.

### PERFORMANCE TASKS

This is a knowledge-based module—there is no performance examination.

### SAFETY CONSIDERATIONS

Ensure that the trainees are equipped with appropriate personal protective equipment. Emphasize the importance of following all safety precautions and procedures when working with power tools.

## PREPARATION

Before teaching this module, you should review the Module Outline, Objectives, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## MATERIALS AND EQUIPMENT LIST

Transparencies	Copies of <i>49 CFR Part 192</i> (Gas) and/or <i>49 CFR Part 195</i> (Liquid)
Markers/chalk	Colored markers
Blank acetate sheets	Posterboard or large pieces of paper
Transparency pens	Several kinds of scraper pigs or pictures of them
Pencils and scratch paper	One of each type of batch separator or pictures of them
Copies of the Quick Quiz*	Turbine meter or picture of one
Module Examinations**	Positive displacement meter or picture of one
Overhead projector and screen	Photo of a K-factor stamped on a meter
Whiteboard/chalkboard	Examples or photos of proving instruments
Appropriate personal protective equipment	
Copies of your company's policy and procedures manual, including responses to AOCs	

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## **MODULE OVERVIEW**

This module introduces trainees to the hazards associated with pipeline failure and the release of flammable, explosive, or toxic materials. Topics include company environmental manuals; government regulations; coordination of response to spills; spill prevention, reporting, and containment; soil contamination; and waste handling.

## **PREREQUISITES**

Please refer to the Course Map in the Trainee Module. Prior to training with this module, it is recommended that the trainee shall have successfully completed the following:

Core Curriculum; Pipeline Core, Modules 66101-02 and 66102-02

## **OBJECTIVES**

Upon completion of this module, the trainee will be able to:

1. Describe company environmental manuals and regulations.
2. Describe United States Coast Guard responsibilities.
3. Describe spill prevention.
4. Recognize soil contamination.
5. Explain spill reporting and spill containment.
6. Explain proper waste handling.

## **PERFORMANCE TASKS**

Under the supervision of the instructor, the trainee should be able to do the following using a company's manuals or procedure books:

1. Identify and explain the company's oil spill response plan and emergency procedures.
2. Identify and explain the company's policies on spill prevention.
3. Identify and explain the company's policies on spill reporting and spill containment.
4. Identify and explain the company's policies on proper waste handling.

## **SAFETY CONSIDERATIONS**

Ensure that the trainees are equipped with appropriate personal protective equipment. Emphasize the importance of following all safety precautions and procedures when working with power tools.

## **PREPARATION**

Before teaching this module, you should review the Module Outline, Objectives, Performance Tasks, and the Materials and Equipment List. Be sure to allow ample time to prepare your own training or lesson plan and gather all required equipment and materials.

## **MATERIALS AND EQUIPMENT LIST**

Transparencies and blank transparencies	Flexible plastic tubing
Markers/chalk	Small bottle of automobile oil
Pencils and scratch paper	Plastic trash bags
Plastic painter's drop cloth	Paper towels
Shoebox lined with heavy-duty plastic wrap or plastic box of similar size	Module Examinations*
Small bag of sand mixed with garden soil and rocks	Performance Profile Sheets*
Garden trowel	Overhead projector and screen
Wide, shallow plastic bowl	Whiteboard/chalkboard
Bottle of water	Appropriate personal protective equipment

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