

MODULE OVERVIEW

This module introduces trainees to quality control and field measurement. Trainees will learn how to test product, identify and verify the accuracy of meters, and monitor odorant level.

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; Gas Pipeline Operations, Modules 67102-02, 67103-02, and 67104-02 or 67105-02

OBJECTIVES

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

1. Take product samples.
2. Perform product testing.
3. Identify types of meters.
4. Define measurement and understand how and why gas is measured and how to interpret measurements.
5. Verify the accuracy of meters and test gauges.
6. Explain the reasons for injecting and monitoring odorant.

PERFORMANCE TASKS

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

1. Take samples.
2. Use tube testing kits.
3. Inspect orifice meter plates.
4. Identify types of meters.

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	Gas chromatograph
Markers/chalk	Sampling and testing equipment
Blank acetate sheets	Product to test (or access to it)
Transparency pens	Orifice meters and equipment required for inspection
Pencils and scratch paper	Equipment required for meter inspection and transmitter calibration
Module Examinations*	Copies of sample daily measurement statements
Performance Profile Sheets*	Copies of <i>49 CFR Part 192</i>
Overhead projector and screen	Sample material safety data sheets
Whiteboard/chalkboard	
Appropriate personal protective equipment	
Copies of your company policy and procedures manual	

* Performance Sheets for this module are available from NCCER's Instructor Resource Center at www.nccerirc.com.

For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.

MODULE OVERVIEW

This module teaches the process of tracking line inventory, identifying interface changes, and tracking pigs.

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, Modules 60102-02 and 60103-02

OBJECTIVES

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

1. Track line inventory to ensure product quality.
2. Identify interface changes to isolate batches.
3. Track pigs to clean or inspect the pipeline.

PERFORMANCE TASKS

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

1. Track line inventory to ensure product quality.
2. Identify interface changes to isolate batches.
3. Track pigs to clean or inspect the pipeline.

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	Whiteboard/chalkboard
Markers/chalk	Appropriate personal protective equipment
Blank acetate sheets	Copies of your company's policy and procedures manual
Transparency pens	Sample pig-launching report form (one copy per trainee)
Pencils and scratch paper	Sample pig-unloading report forms (several different forms, if possible)
Module Examinations*	
Performance Profile Sheets*	
Overhead projector and screen	

* Performance Sheets for this module are available from NCCER's Instructor Resource Center at www.nccerirc.com.

For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.

MODULE OVERVIEW

This module reviews techniques for maintaining field quality. Trainees will learn how to perform product testing, pipeline switching, and blending 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; Liquid Pipeline Field Operations, Modules 60102-02 through 60106-02

OBJECTIVES

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

1. Activate tank mixing devices.
2. Take product samples.
3. Perform product testing.
4. Perform pipeline switching.
5. Perform blending operations.
6. Explain the use of and inject appropriate additives.

PERFORMANCE TASKS

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

1. Activate tank mixing devices.
2. Take product samples.
3. Perform product testing.
4. Perform pipeline switching.
5. Perform blending operations.
6. Explain the use of and inject appropriate additives.

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	Whiteboard/chalkboard
Markers/chalk	Appropriate personal protective equipment
Blank acetate sheets	Copies of your company's policy and procedures manual
Transparency pens	Assorted centrifuge tubes, including tubes used in the grind out and tubes that have not yet been tested
Pencils and scratch paper	Draeger tube test unit with a selection of tubes
Copies of Quick Quiz*	Fuel samples and strips of copper to conduct a corrosion test
Module Examinations**	
Performance Profile Sheets**	
Overhead projector and screen	

* 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.

For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.

MODULE OVERVIEW

This module reviews measurement components, the types of meters, and the types of provers. Trainees will learn how to maintain accurate measurements, verify meter accuracy, and perform waterdraws.

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, Modules 60102-02 through 60107-02

OBJECTIVES

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

1. Identify types of meters.
2. Explain how to maintain accurate measurement on all custody receipts and deliveries.
3. Explain how to verify meter accuracy.
4. Explain the need and frequency of performing waterdraws on provers.
5. Use tank strappings.

PERFORMANCE TASKS

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

1. Identify types of meters.
2. Maintain accurate measurement on all custody receipts and deliveries.
3. Verify meter accuracy.
4. Explain when and how to flush turbine meters.
5. Explain the need and frequency of waterdraws using provers.

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	A variety of orifice plates, including:
Markers/chalk	Concentric orifice plates
Blank acetate sheets	Eccentric orifice plates
Transparency pens	Segmental orifice plates
Pencils and scratch paper	Copies of the API Manual of Petroleum
Module Examinations*	Measurement Chapter 12, Section 2, Part 4
Performance Profile Sheets*	Copies of API Chapter 2 and API Standards 2550
Overhead projector and screen	and 2551
Whiteboard/chalkboard	Some of the tools and equipment that may be
Appropriate personal protective equipment	used for general strapping procedures,
Copies of your company's policy and procedures	including:
manual	Reels, handles, clamps, and ropes
Sample custody tickets	Jointed poles and ladders
Sample proving schedules for a variety of meters	Gauges, straightedges, and calipers
Small volume pipe prover	Rules, shovels, levels, awls, scribes, and
	brushes
	Copies of API standards for strapping tanks and
	preparing documentation

* Performance Sheets for this module are available from NCCER's Instructor Resource Center at www.nccerirc.com.

For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.

MODULE OVERVIEW

This module addresses the equipment and methods necessary for ensuring accurate measurement in a liquid pipeline. The module also reviews quality control throughout all operations of the pipeline.

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; Liquid Pipeline Control Center Operations, Modules 65102-02 through 65106-02

OBJECTIVES

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

1. Activate tank mixing devices.
2. Perform product testing.
3. Perform pipeline grade changes and tank capacity operations.
4. Explain the use of and inject appropriate additives.
5. Identify types of meters.
6. Maintain accurate measurement on all custody receipts.
7. Explain the meter proving process.

PERFORMANCE TASKS

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

1. Activate tank mixing devices.
2. Perform product testing.
3. Perform pipeline grade changes and tank capacity operations.
4. Inject appropriate additives.
5. Identify types of meters.
6. Maintain accurate measurement on custody receipts and deliveries.
7. Verify meter accuracy.

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	Overhead projector and screen
Markers/chalk	Whiteboard/chalkboard
Blank acetate sheets	Appropriate personal protective equipment
Transparency pens	Copies of your company's policy and procedure book
Pencils and scratch paper	Assorted Draeger tube unit and tubes
Module Examinations*	Sample custody tickets
Performance Profile Sheets*	

* Performance Sheets for this module are available from NCCER's Instructor Resource Center at www.nccerirc.com. For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.

MODULE OVERVIEW

This module provides a comprehensive overview of the Supervisory Control and Data Acquisition (SCADA) system. Trainees will learn about the components of the SCADA system as well as how to troubleshoot system problems.

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 Levels One and Two; Pipeline Electrical and Instrumentation Level Three, Modules 64301-02 through 64306-02

OBJECTIVES

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

1. Explain the functions and importance of control systems in pipeline operations.
2. Explain the various methods of communication used on the pipeline system.
3. Explain the functions and components of the Supervisory Control and Data Acquisition (SCADA) system.
4. Explain the functions and components of programmable logic controller (PLC) systems.
5. Explain the functions and methods for redundant systems.
6. Explain troubleshooting methods for pipeline control systems.

PERFORMANCE TASKS

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

1. Draw a block diagram of a SCADA system.
2. Given a set of circumstances, react to a communications failure.
3. Identify the four major hardware components of a PLC.
4. Troubleshoot a SCADA system using the 7-step procedure.

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	Copies of your company's policy and procedures manual
Markers/chalk	Overhead projector and screen
Blank acetate sheets	Whiteboard/chalkboard
Transparency pens	Appropriate personal protective equipment
Pencils and scratch paper	Copies of your local code
Module Examinations*	A variety of SCADA screenshots
Performance Profile Sheets*	Documentation of an actual or hypothetical troubleshooting procedure
Copies of Quick Quiz**	

* 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.

For information and updates about accessing the Module Examinations, visit www.nccer.org/testing.