



GAS PIPELINE OPERATIONS

Competencies / Objectives

Level One

MODULE 66101-02 – INTRODUCTION TO THE PIPELINE INDUSTRY

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.

MODULE 67102-02 – BASIC PIPELINE PNEUMATICS AND EQUIPMENT

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.

MODULE 67103-02 – PIPELINE COMMUNICATIONS

1. Communicate critical operations information to the next shift.
2. Communicate with the control center, scheduling department, and maintenance technicians.
3. Initiate call-outs.
4. Generate work orders.
5. Effectively communicate with pipeline personnel.
6. Notify customers of operations changes.
7. Effectively communicate with the public regarding pipeline issues.

MODULE 67104-02 – ROUTINE FIELD AND FACILITY OPERATIONS (CT 43, 50, 51, 54, 56, 57, AND 58)

1. Perform routine facility inspections and monitor pipeline parameters (CT 43.3) to ensure normal facility operations.
2. Describe the general procedures for performing system startup (CT 43.1) and system shut in/shutdown (CT 43.2).
3. Operate valves (CT 43.4) and compressor units and monitor engines.
4. Test remotely controlled shutdown devices (RCSDs) (CT 54).
5. Monitor alarms and safety devices.
6. Identify, select, launch, track, and receive pigging devices.
7. Purge gas from pipelines (CT 50), purge air from pipelines (CT 51), and monitor purging during maintenance.
8. Monitor weather conditions.
9. Locate a buried pipeline.
10. Describe the general procedures involved in uprating the pipeline's maximum allowable operating pressure (MAOP) (CT 56).
11. Operate odorant equipment (CT 57) and monitor odorant level if applicable (CT 58).
12. Perform right-of-way (ROW) inspections, linewalking, and surveillance.

MODULE 67105-02 – ROUTINE CONTROL CENTER OPERATIONS (CT 43, 50, 51, 54, 56, 57, AND 58)

1. Perform SCADA operations and explain the concepts and applications of the SCADA system.
2. Perform pipeline system monitoring and pipeline station monitoring with the SCADA system (CT 43.3).
3. Document pipeline activities with the SCADA system.
4. Explain manifold operations (CT 43.4) and compressor operations.
5. Monitor and respond to alarms and test remotely controlled shutdown devices (RCSDs) (CT 54).
6. Describe the general procedures for performing system startup (CT 43.1) and system shut in/shutdown (CT 43.2).
7. Describe the general procedures for purging gas from pipelines (CT 50), purging air from pipelines (CT 51), and monitoring purging during maintenance.
8. Perform pigging operations.
9. Describe the general procedures involved in uprating the pipeline's maximum allowable operating pressure (MAOP) (CT 56).
10. Operate odorant equipment (CT 57) and monitor odorant level if applicable (CT 58).

MODULE 67106-02 – QUALITY CONTROL/MEASUREMENT

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.

MODULE 67107-02 – ABNORMAL OPERATING CONDITIONS

1. Recognize and react to abnormal facility conditions.
2. Recognize and react to the activation of a safety device.
3. Recognize and react to communications failures.
4. Recognize and react to control system failures.
5. Recognize and react to power interruptions.
6. Recognize and react to fire, explosions, or natural disaster.
7. Recognize and react to pipeline system damage.
8. Recognize and react to unexpected release of a hazardous gas.
9. Recognize and react to unexplained pressure changes.



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GAS PIPELINE OPERATIONS

Materials and Equipment

MODULE 67102-02 – BASIC PIPELINE PNEUMATICS AND EQUIPMENT

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

MODULE 67103-02 – PIPELINE COMMUNICATIONS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Module Examinations*
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Sample logbooks used by shift workers
- Samples of completed work orders
- Blank call investigation report forms
- Samples and photos of information material for the public
- Photos or drawings of line markers
- Copies of 49 CFR Part 192
- Copies of your company's policies and procedures manual

MODULE 67104-02 – ROUTINE FIELD AND FACILITY OPERATIONS

Transparencies

Markers/chalk

Blank acetate sheets

Transparency pens

Pencils and scratch paper

Module Examinations*

Performance Profile Sheets*

Copies of Quick Quiz**

Overhead projector and screen

Whiteboard/chalkboard

Copies of *49 CFR Part 192*

Copies of Performance Verifications for Covered Tasks 43, 50, 51, 54, 56, 57, and 58†

Copies of your company policy and procedures manual

Pipeline markers or photos of pipeline markers

Appropriate personal protective equipment

Equipment required for:

- starting up a pipeline segment

- shutting in a pipeline segment

- air or gas purge

- testing an RSCD

Assortment of valves

Sample alignment maps

Various types of electronic locators

Odorometer

MODULE 67105-02 – ROUTINE CONTROL CENTER OPERATIONS

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Module Examinations*
Performance Profile Sheets*
Copies of Quick Quiz**
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of *49 CFR Part 192*
Copies of Performance Verifications for Covered Tasks 43, 50, 51, 54, 56, 57, and 58†
Copies of your company policy and procedures manual
Copies of sample SCADA screen captures
Samples of pipeline documentation
Analog and digital meters
Valves or pictures of valves
Equipment required for:
 starting up a pipeline segment
 shutting in a pipeline segment
 air or gas purge
 testing an RSCD
 launching, receiving, and unloading a pig
Odorometers and equipment for calibrating them

MODULE 67106-02 – QUALITY CONTROL/MEASUREMENT

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

MODULE 67107-02 – ABNORMAL OPERATING CONDITIONS

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Module Examinations*
Overhead projector and screen
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of your company policy and procedures manual
Copies of web pages of organizations listed in *Appendix A*
Copies of a sample AOC investigation file
Blank AOC report forms
Evacuation plan
Copies of sample paperwork for gas leaks
Copies of *49 CFR Part 192*



GAS PIPELINE OPERATIONS

On-the-Job Training

Level One

MODULE 66101-02 – INTRODUCTION TO THE PIPELINE INDUSTRY

Task Number	Item	Date(s)	Recorded By
This is a knowledge-based module; there is no performance testing.			

MODULE 67102-02 – BASIC PIPELINE PNEUMATICS AND EQUIPMENT

Task Number	Item	Date(s)	Recorded By
67102-1	Identify and explain types of gas pipeline equipment.		

MODULE 67103-02 – PIPELINE COMMUNICATIONS

Task Number	Item	Date(s)	Recorded By
This is a knowledge-based module; there is no performance testing.			

MODULE 67104-02 – ROUTINE FIELD AND FACILITY OPERATIONS (CT 43, 50, 51, 54, 56, 57, AND 58)

Task Number	Item	Date(s)	Recorded By
67104-1	Monitor pipeline parameters to ensure normal facility operation (CT 43.3).		
67104-2	Perform routine facility inspection (CT 43.1, 43.2, 43.3, and 43.4).		
67104-3	Monitor safety devices (CT 54).		
67104-4	Monitor weather conditions.		
67104-5	Locate a buried line.		
67104-6	Monitor odorant level (CT 58).		

**MODULE 67105-02 – ROUTINE CONTROL CENTER OPERATIONS
(CT 43, 50, 51, 54, 56, 57, AND 58)**

Task Number	Item	Date(s)	Recorded By
67105-1	Monitor and respond to various alarms (CT 43.3 and 54).		
67105-2	Monitor odorant level (CT 58).		

MODULE 67106-02 – QUALITY CONTROL AND MEASUREMENT

Task Number	Item	Date(s)	Recorded By
67106-1	Take samples.		
67106-2	Use tube testing kits.		
67106-3	Inspect orifice meter plates.		
67106-4	Identify types of meters.		

MODULE 67107-02 – ABNORMAL OPERATING CONDITIONS

Task Number	Item	Date(s)	Recorded By
	This is a knowledge-based module; there is no performance testing.		