



## PIPELINE MAINTENANCE

### 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 66102-02 – LIQUID PIPELINE GENERAL ABNORMAL OPERATING CONDITIONS

1. Recognize and react to abnormal facility conditions.
2. Recognize and react to activation of a safety device.
3. Recognize and react to communications failures.
4. Recognize and react to power interruptions.
5. Respond appropriately to fire, explosions, and natural disasters.
6. Recognize and react to pipeline system damage.
7. Recognize and react to unexpected hazardous liquid or carbon dioxide (CO<sub>2</sub>) leaks.
8. Recognize and react to unexplained pressure deviations.

### MODULE 62103-02 – RELEASE IDENTIFICATION AND RESPONSE

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.

### MODULE 62104-02 – TOOLS OF THE TRADE

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.

## **MODULE 62105-02 – PIPELINE DOCUMENTATION**

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

## **MODULE 62106-02 – PREVENTING PIPELINE DAMAGE (CT 14 AND 28)**

1. Explain the One-Call system.
2. Perform tasks to prevent third-party and in-house damage (CT 28).
3. Explain public awareness activities.
4. Place and maintain permanent line markers (CT 14).

## **MODULE 62107-02 – EXCAVATING AND BACKFILLING**

1. Explain OSHA requirements for excavating.
2. Explain locating pipelines (CT 17).
3. Explain permits.
4. Explain exposing pipeline.
5. Explain damage inspection.
6. Explain reporting obvious defects.
7. Explain water inspection.
8. Explain backfilling (CT 39).

## Level Two

### **MODULE 62201-02 – RIGHT-OF-WAY INSPECTION (CT 15 AND 16)**

1. Inspect navigable water crossings (CT 16).
2. Perform vehicle/foot and aerial patrols.
3. Inspect surface conditions of the right-of-way (CT 15).

### **MODULE 62202-02 – FACILITY INSPECTION (CT 27)**

1. Inspect facilities (buildings).
2. Perform routine monthly inspections of breakout tanks (CT 27.1).
3. Perform inspections of in-service breakout tanks (CT 27.2).
4. Perform vault inspection and maintenance.

### **MODULE 62203-02 – VALVE INSPECTION (CT 20)**

1. Identify the types of valves used to start and stop flow on a pipeline.
2. Identify the types of valves used to regulate flow on a pipeline.
3. Identify and explain the functions of the various types of relief valves.
4. Perform a routine walk-around valve inspection and an external integrity inspection (CT 20.1 and 20.2).
5. Function test and leak test a valve (CT 20.3 and 20.4).
6. Perform preventative maintenance on pipeline valves.
7. Perform regular lubrication of valves, and winterize valves.
8. Install threaded and flanged valves.

### **MODULE 62204-02 – PIPELINE COATING INSPECTION (CT 5)**

1. Identify pipeline coating types, and describe characteristics.
2. Identify pipeline coating problems (CT 5.1).
3. Inspect pipeline coating for damage (CT 5.3).
4. Inspect pipeline coating for external corrosion (CT 5.2).

### **MODULE 62205-02 – PIPE INSPECTION AND NONDESTRUCTIVE TESTING (CT 38.1, 38.2, AND 38.3)**

1. Identify types of NDE testing.
2. Prepare welds for NDE testing.
3. Visually inspect pipe and pipe components (CT 38.1).
4. Direct/verify a nondestructive weld test (CT 38.2).
5. Visually inspect that welds meet DOT requirements (CT 38.3)

### **MODULE 62206-02 – PIPELINE MAINTENANCE (CT 18 AND 52)**

1. Locate underground structures
2. Maintain the pipeline route.
3. Excavate utilities and pipeline components.
4. Apply coatings.
5. Perform flange tightening.
6. Run pigs and perform maintenance pigging.
7. Inspect the pipeline following excavation activities, and perform a leakage survey after blasting (CT 18).
8. Conduct a leakage survey of a natural gas pipeline (CT 52).

## **MODULE 62207-02 – HYDROSTATIC TESTING (CT 41)**

1. Explain the purpose of hydrostatic testing.
2. Prepare for hydrostatic testing.
3. Perform hydrostatic testing procedures (CT 41).

# Level Three

## **MODULE 62301-02 – GENERAL MAINTENANCE & WINTERIZING PIPELINE EQUIPMENT**

1. Explain preventive and predictive maintenance.
2. Perform general maintenance on rotating equipment.
3. Maintain pumps and prime movers.
4. Maintain tank mixers.
5. Winterize pipelines and equipment.

## **MODULE 62302-02 – PIPELINE DAMAGE INSPECTION (CT 34 AND 35)**

1. Identify types and sources of pipeline damage.
2. Check problem areas for pipeline integrity (CT 34 and 35).

## **MODULE 62303-02 – PERFORMING IN-LINE INSPECTIONS (CT 29)**

1. Complete preparations for pigging.
2. Identify types of smart pigs.
3. Run pigs (CT 29).
4. Follow up on collected data.

## **MODULE 62304-02 – PIPELINE REPAIR (CT 9.5, 37, 40.1-40.5, 40.7, AND 40.91)**

1. Install pipe sleeves (CT 40.1, 40.2, 40.4, 40.5).
2. Install clock springs (CT 40.3).
3. Cut out and replace pipe.
4. Perform 2" tap (CT 40.7, 40.91).
5. Repair shorted casing (CT 9.5).
6. Install and repair support structures (CT 37).
7. Repair insulation.

## **MODULE 62305-02 – RELOCATING AND LOWERING PIPELINES (CT 33 AND 34)**

1. Perform preparation for moving pipeline.
2. Explain in-service and out-of-service pipeline (CT 33.1 and 33.2).
3. Perform movement of the pipeline (CT 33.3).
4. Inspect the pipeline (CT 34).
5. Backfill the excavation.

## **MODULE 62306-02 – HOT TAPPING AND STOPPLING® – 2.5" AND LARGER (CT 40.6, 40.8, 40.9, AND 40.91)**

1. Explain hot tap safety and potential hazards.
2. Identify and install fittings used with hot taps (CT 40.6).
3. Explain the use of hot tap machines (CT 40.8).
4. Identify and explain the use of stopples (CT 40.9, 40.91).

## **MODULE 62307-02 – TANK REPAIR**

1. Tighten tank connection flanges and perform tank hot tapping.
2. Perform nondestructive testing on tanks.
3. Perform flange electrical insulating and welding on tanks.
4. Repair and replace tank bottoms.
5. Move tanks for repair and repair arc burns and welds.
6. Perform roof installation.
7. Demolish and build internal/external floating roof tanks.
8. Replace in-service seals on floating roof tanks and remove/install nozzles, manways, and sumps.

## **MODULE 62308-02 – MAINTENANCE WELDING ON PIPELINES (CT 42)**

1. Repair arc burns (CT 42.1).
2. Repair defective welds (CT 42.2).
3. Repair direct pass defects (CT 42.3).
4. Repair butt welds (CT 42.4).
5. Repair previously repaired welds (CT 42.5).
6. Replace a weld or cylinder of pipe (CT 42.6).
7. Explain general welding procedures.
8. Deal with problems when found.

## **MODULE 62309-02 – PERFORMING PIPELINE DISCONNECTION PROCEDURES (CT 36)**

1. Perform the safe disconnect of pipeline facilities (CT 36.1).
2. Purge pipeline facilities (CT 36.2).
3. Seal a disconnected portion of pipeline (CT 36.3).

## **MODULE 62310-02 – VAULT MAINTENANCE AND CONFINED SPACE ENTRY (CT 59)**

1. Explain confined space entry hazards.
2. Perform confined space entry safety requirements.
3. Perform vault inspections (CT 59).

# Level Four

## MODULE 62401-03 – RADIOGRAPHIC TESTING OF PIPELINE WELDS

1. Describe how X-ray and gamma ray techniques are used in the examination of pipe welds.
2. List the safety procedures and identify the detection devices used to ensure the safety of persons working with or near radiographic testing.
3. Describe in detail the exposure techniques used in radiographic testing.
4. Explain the equipment and methods used in processing radiographic film.
5. List the main requirements for radiographic testing defined in API 1104.
6. Demonstrate to the satisfaction of the instructor the ability to expose and process radiographic film. (CT 38.4)
7. Demonstrate to the satisfaction of the instructor the ability to recognize and identify weld conditions by examining radiographic film of pipe welds. (CT 38.4)



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## **PIPELINE MAINTENANCE**

### **Materials and Equipment**

## **Level One**

### **MODULE 62103-02 - RELEASE IDENTIFICATION AND RESPONSE**

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



## **MODULE 62104-02 – TOOLS OF THE TRADE**

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

## **MODULE 62105-02 – PIPELINE DOCUMENTATION**

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

## **MODULE 62106-02 - PREVENTING PIPELINE DAMAGE**

Transparencies  
Felt-tip markers/chalk  
Posterboard  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Tape or tacks  
Strip maps (in addition to the trainee book)  
Copies of the Performance Verification for Covered Tasks in 14 and 28  
Copies of the Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Probe  
Line locator

## **MODULE 62107-02 - EXCAVATING AND BACKFILLING**

Transparencies and blank transparencies  
Markers/chalk  
Pencils and scratch paper  
Empty 3' × 3' × 3' cardboard box  
Tape measure  
Stick locator  
Sample permanent pipeline marker  
Electromagnetic (battery-operated) locator  
Split box locator  
Induction set  
Copies of the Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Copies of the Performance Verification for Covered Tasks 17 and 39  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
The instructor will determine the number of the following items needed based on class size:  
    Plastic buckets  
    Two-liter water bottles  
    Small bags of various soil types (sand, potting soil, clay, fill dirt, and so on)  
    Garden trowels or large spoons

## Level Two

### MODULE 62201-03 – RIGHT-OF-WAY INSPECTION

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and paper
- Module Examinations
- Performance Profile Sheets
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Copies of your company's policy and procedures manual
- Probing/sonar equipment
- Copies of *49 CFR Part 195* (Liquid) and/or *49 CFR Part 192* (Gas)
- Copies of a blank pipeline report form
- Samples of drawings of navigable water crossings
- Copies of the Performance Verifications for Covered Tasks 15 and 16<sup>†</sup>

### MODULE 62202-03 – FACILITY INSPECTION

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and paper
- Module Examinations
- Performance Profile Sheets
- Copies of Quick Quiz
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Copies of your company's policy and procedures manual
- Copies of *49 CFR Part 195* (Liquid) and/or *49 CFR Part 192* (Gas)
- Equipment required for security system inspection
- Equipment required for pipeline facility inspection
- Equipment required for monthly inspection of a tank
- Copies of *API Standard 653*
- Equipment for performing a 5-year in-service inspection of a tank
- Copies of the Performance Verifications for Covered Task 27<sup>†</sup>

## **MODULE 62203-03 – VALVE INSPECTION**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and 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 195 (Liquid)* and/or *49 CFR Part 192 (Gas)*  
Copies of your company's policy and procedures manual  
A variety of valves  
Copies of *Figure 17* with callouts covered (leave callout lines exposed)  
Copies of a complete valve maintenance log  
Equipment required for removing and repacking a valve  
Equipment required for lubricating a valve  
Equipment required for winterizing a valve  
Copies of the Performance Verifications for Covered Task 20<sup>+</sup>

## **MODULE 62204-03 – PIPELINE COATING INSPECTION**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and paper  
Module Examinations  
Performance Profile Sheets  
Copies of Quick Quiz  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your company's policy and procedures manual  
Samples of various types of coating  
Examples (or pictures) of various types of coating failure  
Pearson holiday detector  
Samples of pitted steel and rusted metal  
Inspection equipment, including pipeline inspection report forms  
Copies of the Performance Verifications for Covered Task 5<sup>+</sup>  
Copies of *49 CFR Part 195 (Liquid)* and/or *49 CFR Part 192 (Gas)*

## **MODULE 62205-03 – PIPELINE INSPECTION AND NONDESTRUCTIVE TESTING**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Copies of *49 CFR Part 195 (Liquid)* and/or *49 CFR Part 192 (Gas)*  
Appropriate personal protective equipment  
Copies of your company's policy and procedures manual  
Inspection equipment and pipe components  
Material and equipment for a pre-fit-up inspection  
Material and equipment for a fit-up inspection  
Samples of root passes that failed inspection  
Flexible fiberscope and/or videoscope  
Copies of *Table 1*  
Copies of the Performance Verifications for Covered Tasks 38.1, 38.2, and 38.3<sup>†</sup>

## **MODULE 62207-03 – HYDROSTATIC TESTING**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and 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 195 (Liquid)* and/or *49 CFR Part 192 (Gas)*  
Copies of your company's policy and procedures manual  
Required equipment for conducting a pressure test  
Copies of the Performance Verifications for Covered Task 41<sup>†</sup>

# Level Three

## MODULE 62301-03 – GENERAL MAINTENANCE AND WINTERIZING PIPELINE EQUIPMENT

Transparencies

Markers/chalk

Blank acetate sheets

Transparency pens

Pencils and scratch paper

Module Examination

Overhead projector and screen

Whiteboard/chalkboard

Appropriate personal protective equipment

Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)

Copies of your company policy and procedures manual

Vibration meter

Bearings that have loose and/or cracked housings, loose bolts, and seal problems

A variety of machine monitoring equipment, including

- Surface thermometers

- Stethoscopes and microphones

- Vibration monitors

- Balancing machines

Variety of pump maintenance cards or computerized maintenance management system records

Manufacturer's instruction manual for the service and maintenance of the following:

Pump or prime movers

Gas compressors

Tank mixers

## MODULE 62302-03 – PIPELINE DAMAGE INSPECTION

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Copies of Performance Verifications for Covered Tasks 34 and 35\*\*  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)  
Copies of your company policy and procedures manual  
Lists of information that a One-Call operator would request  
Battery-powered locator  
Pipeline strip maps and alignment sheets  
Search records and maps for a company pipeline  
As-built records or maps for a foreign pipeline or structure  
Blank copies of an exposed pipe report (or foreign line crossing report)  
Blank copies of a typical report form  
Sections of pipeline with and without coating damage  
Sections of damaged pipeline insulation  
Materials necessary to patch pipeline insulation, including  
    Cleaning materials  
    Insulation knives  
    Dow Styrofoam HI-60 (or similar foam)  
    Mastic

## MODULE 62303-03 – PERFORMING IN-LINE INSPECTIONS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Module Examinations
- Performance Profile Sheets
- Copies of Quick Quiz
- Copies of Performance Verifications for Covered Task 29<sup>+</sup>
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)
- Copies of your company policy and procedures manual
- Photos or samples of cleaning pigs, including
  - Foam pigs
  - Brush-equipped pigs
  - Scraper disc and cone-equipped pigs
  - Gel pigs
- Photos or samples of sizing pigs, including
  - Caliper pigs
  - Pipe deformation pigs
- Vendor manuals for handling and preventing damage to pigs
- Sample hard copies and CD-based sets of data obtained by in-line inspection tools
- Sample rubbings and/or tracings
- Materials to take rubbings and tracings
- Sample dig sheets
- Completed inspection report forms
- Sections of damaged pipe
- Blank inspection report forms
- Sample repair schedules



## MODULE 62304-03 – PIPELINE REPAIR

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Module Examinations
- Performance Profile Sheets
- Copies of Quick Quiz
- Copies of Performance Verifications for Covered Tasks 9.5, 37, 40.1–40.5, 40.7, and 40.91
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)
- Copies of your company policy and procedures manual
- Blank repair reports
- News articles about accidents that occurred during pipeline repair and/or maintenance
- Sections of damaged and undamaged pipe
- A variety of split sleeves, including
  - PLIDCO® Split+Sleeves
  - LDS sleeves
  - Pressure-containment sleeves (with and without collars)
- A variety of pipe sleeves, including
  - Oversleeves
  - Tight-fitting sleeves
  - Clock Spring® sleeves
- Materials to perform wire buffing and abrasive blasting
- Materials to install a pig-detectable patch, including
  - Pig-detectable patches
  - Filler material
  - Epoxy
  - Fiberglass tape
  - Approved coating
- Weld Plus couplings

## MODULE 62305-03 – RELOCATING AND LOWERING PIPELINES

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Copies of Performance Verifications for Covered Tasks 33 and 34  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)  
Copies of your company policy and procedures manual  
Sample pipeline movement plan  
Pipeline alignment sheets  
Pipeline markers  
Sections of pipe  
Pipe locators  
Line markers  
Probe rods  
Soil samples for class A, B, and C soils  
Containers, buckets, and hand spades  
Pipeline inspection forms

## MODULE 62306-03 – HOT TAPPING AND STOPPLING® – 2½" AND LARGER

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Copies of Performance Verifications for Covered Task 40  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of 49 CFR Part 192 (Gas) and/or 49 CFR Part 195 (Liquid)  
Copies of your company policy and procedures manual  
Copies of *Figures 1* through *3* without titles  
Pipe coupon  
Hole saw  
Hot tap machine  
Tools and materials to install and operate a hot tap machine  
Hot tap machine manufacturers' manuals  
Stopple® fittings  
Tools and materials to install and remove Stopples®  
LOCK-O-RING® plugs  
Tools and materials to set completion plugs

## MODULE 62307-03 – TANK REPAIR

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 *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)  
Copies of your company policy and procedures manual  
Copies of *API Standards 650* and *653*  
Bolts and nuts  
Variety of flanges with different numbers of bolts  
Sample radiograph films  
Weld maps  
Ultrasonic monitor  
Insulated flanges and bolts  
Insulator checker  
Procedure documentation for roof jacking  
Photos of arc burns  
Inspection tags  
Drawings that show mark locations on shell, bottom, and roof plates  
*Figure 20* with the callouts covered  
Aqueous film-forming foam with a fire extinguisher applicator

## MODULE 62308-03 – MAINTENANCE WELDING ON PIPELINES

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Copies of Performance Verifications for Covered Task 42  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of *49 CFR Part 192 (Gas)* and/or *49 CFR Part 195 (Liquid)*  
Copies of your company policy and procedures manual  
Copies of *API Standard 1104, 18th edition*  
Metal panels with arc burns  
Pencil grinders and/or sanders  
Etching solutions  
Metal panels with defective butt and fillet welds  
Metal panels with repaired direct pass defects  
Metal panel with a butt weld containing cracks  
Materials for magnetic particle or dye penetrant inspection  
Metal panel with a previously repaired weld  
Tools and materials to preheat the area  
Sections of metal pipe  
Jumper cables  
Tools and materials to make field cuts  
Expandable plugs and/or gas bags  
External lineup clamps  
Procedure specification forms

## MODULE 62309-03 – PERFORMING PIPELINE DISCONNECTION PROCEDURES

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Copies of Performance Verifications for Covered Task 36  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)  
Copies of your company policy and procedures manual  
Examples of appropriate personal protective equipment, including  
    Fire retardant clothing  
    Hearing protection  
    Gloves  
    Safety glasses  
    Hard hats  
    Safety boots  
    Respiratory protection  
Examples of safety equipment, including  
    Atmospheric monitors  
    Personal monitors  
    Personal hydrogen sulfide monitors  
    Bonding cables  
    Fire extinguishers  
Pipe segment  
Bonding cable  
Grounding clamps  
Sample abandonment reports  
Combustible gas detectors  
Draeger tubes  
Copies of news articles highlighting accidents that occurred during purging procedures

## MODULE 62310-03 – VAULT MAINTENANCE AND CONFINED SPACE ENTRY

Transparencies

Markers/chalk

Blank acetate sheets

Transparency pens

Pencils and scratch paper

Module Examinations

Performance Profile Sheets

Copies of Performance Verifications for Covered Task 59

Overhead projector and screen

Whiteboard/chalkboard

Appropriate personal protective equipment

Copies of *49 CFR Part 192* (Gas) and/or *49 CFR Part 195* (Liquid)

Copies of your company policy and procedures manual

Sample permits

OSHA Publication No. 3132, *Title 29 Code of Federal Regulations Part 1910.146*

Combustible gas indicator

# Level Four

## MODULE 62401-03 – RADIOGRAPHIC TESTING OF PIPELINE WELDS

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of API Standard 1104, Welding of Pipelines and Related Facilities  
Copies of your company policy and procedures manual  
Manual film processing equipment  
Automatic film processing equipment  
Film badge  
Thermoluminescent dosimeter (TLD)  
OSL dosimeter  
Alarming rate meter  
Ion chamber survey meter  
Geiger Mueller (GM) rate meter  
Area alarm monitor  
Exposure calculator  
Exposure charts  
Radiographic film in different packaging  
Flexible, semi-rigid, and rigid film cassettes  
Hole-type and wire-type penetrameters  
Selection of welded pipe sections  
Intensifying screens  
Module Examinations  
Performance Profile Sheets  
Copies of the Performance Verification for Covered Task 38.4





## PIPELINE MAINTENANCE

### 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 66102-02 – LIQUID PIPELINE GENERAL ABNORMAL OPERATING CONDITIONS

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

### MODULE 62103-02 – RELEASE IDENTIFICATION AND RESPONSE

Task Number	Item	Date(s)	Recorded By
62103-1	Identify and explain the company's oil spill response plan and emergency procedures.		
62103-2	Identify and explain the company's policies on spill prevention.		
62103-3	Identify and explain the company's policies on spill reporting and spill containment.		
62103-4	Identify and explain the company's policies on proper waste handling.		

## MODULE 62104-02 – TOOLS OF THE TRADE

Task Number	Item	Date(s)	Recorded By
62104-1	Identify a given hand tool, state its application, and describe its safe use and maintenance.		
62104-2	Demonstrate the use of a given hand tool according to standards given by the instructor.		
62104-3	Identify a given power tool, state its application, and describe its safe use and maintenance.		
62104-4	Demonstrate the use of a given power tool according to standards given by the instructor.		
62104-5	Identify a given beveling machine, state its application, and describe its safe use and maintenance.		
62104-6	Identify a given meter or tester, state its application, and describe its safe use and maintenance.		
62104-7	Identify various nondestructive examination methods and tools and state their applications.		
62104-8	Identify a given kind of lifting or excavation equipment, state its application, and describe its safe use.		

## MODULE 62105-02 – PIPELINE DOCUMENTATION

Task Number	Item	Date(s)	Recorded By
63105-1	Read and interpret alignment sheets.		
63105-2	Using a company's manuals or procedure books, identify and explain some of the company's required documentation and records.		
63105-3	Fill out, properly submit, and file a company maintenance document according to the company's documentation procedures (or simulate doing so).		

## MODULE 62106-02 – PREVENTING PIPELINE DAMAGE (CT 14 AND 28)

Task Number	Item	Date(s)	Recorded By
62106-1	Perform tasks or identify and describe tasks to prevent third-party and in-house damage per company procedure and/or using Performance Verification 28 as a guide.		
62106-2	Locate or simulate locating a line per company procedure and/or using Performance Verification 14.1 as a guide.		
62106-3	Install or simulate installing a line marker per company procedure and/or using Performance Verification 14.2 as a guide.		
62106-4	Inspect and maintain or simulate inspecting and maintaining a line marker per company procedure and/or using Performance Verification 14.3 as a guide.		
62106-5	Inspect and maintain or simulate inspecting and maintaining an aerial line marker per company procedure and/or using Performance Verification 14.4 as a guide.		

## MODULE 62107-02 – EXCAVATING AND BACKFILLING (CT 17 AND 39)

Task Number	Item	Date(s)	Recorded By
62107-1	Locate or simulate locating a line per company procedure and/or using Performance Verification 17.1 as a guide.		
62107-2	Install or simulate installing a line marker per company procedure and/or using Performance Verification 17.2 as a guide.		
62107-3	Inspect and maintain or simulate inspecting and maintaining a line marker per company procedure and/or using Performance Verification 17.3 as a guide.		
62107-4	Explain backfilling a trench following maintenance per company procedure and/or using Performance Verification 39 as a guide.		
62107-5	Using a company's manuals or procedure books, Identify and explain what trainees should do if they encounter any damage or defects while performing any of the above tasks.		

# Level Two

## MODULE 62201-02 – RIGHT OF WAY INSPECTION (CT 15 AND 16)

Task Number	Item	Date(s)	Recorded By
62201-1	Inspect or simulate inspecting a navigable waterway crossing per company procedure and/or using Performance Verification 16.1, 16.2, and 16.3 as guides.		
62201-2	Inspect surface conditions of the right-of-way per company procedure and/or using Performance Verification 15.1 as a guide.		
62201-3	Complete documentation and report forms for a right-of-way inspection per company procedure and/or using Performance Verification 15.2 as a guide.		

## MODULE 62202-02 – FACILITY INSPECTION (CT 27)

Task Number	Item	Date(s)	Recorded By
62202-1	Complete an inspection of a facility building in accordance with your company's procedures.		
62202-2	Perform a monthly inspection of a breakout tank per company procedure and/or using Performance Verification 27.1 as a guide.		
62202-3	Perform or simulate performing an inspection of an in-service breakout tank per company procedure and/or using Performance Verification 27.2 as a guide.		

## MODULE 62203-02 – VALVE INSPECTION (CT 20)

Task Number	Item	Date(s)	Recorded By
62203-1	Identify and explain the functions of various types of valves, including valves used to stop and start flow, regulate flow, and relieve pressure.		
62203-2	Perform a routine walk-around valve inspection per company procedure and/or using Performance Verification 20.1 as a guide.		
62203-3	Perform an external integrity inspection on a valve per company procedure and/or using Performance Verification 20.2 as a guide.		
62203-4	Perform or simulate performing a function test on a valve per company procedure and/or using Performance Verification 20.3 as a guide.		
62203-5	Perform or simulate performing a leak test on a valve per company procedure and/or using Performance Verification 20.4 as a guide.		
62203-6	Perform preventative maintenance on a pipeline valve.		
62203-7	Lubricate and winterize a valve.		
62203-8	Install threaded and flanged valves.		

## MODULE 62204-02 – PIPELINE COATING INSPECTION (CT 5)

Task Number	Item	Date(s)	Recorded By
62204-1	Inspect for physical damage on buried or submerged pipe per company procedure and/or using Performance Verification 5.1 as a guide.		
62204-2	Inspect for external corrosion on buried or submerged pipe per company procedure and/or using Performance Verification 5.2 as a guide.		
62204-3	Inspect the condition or external coating on buried or submerged pipe per company procedure and/or using Performance Verification 5.3 as a guide.		

**MODULE 62205-02 – PIPE INSPECTION AND NONDESTRUCTIVE TESTING  
(CT 38.1, 38.2, AND 38.3)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
62205-1	Visually inspect pipe and pipe components per company procedure and/or using Performance Verification 38.1 as a guide.		
62205-2	Prepare a weld for NDE testing.		
62205-3	Direct and verify or simulate directing and verifying a nondestructive weld test per company procedure and/or using Performance Verification 38.2 as a guide.		
62205-4	Visually inspect to verify that welds meet DOT requirements per company procedure and/or using Performance Verification 38.3 as a guide.		

**MODULE 62206-02 – PIPELINE MAINTENANCE (CT 18 AND 52)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
62206-1	Locate an underground structure.		
62206-2	Demonstrate the ability to properly maintain the pipeline route.		
62206-3	Properly tighten a flange.		
62206-4	Demonstrate the ability to run a pig and perform maintenance pigging.		
62206-5	Inspect the pipeline following excavation activities per company procedure and/or using Performance Verification 18.1 as a guide.		
62206-6	Monitor for pressure loss and survey for leaks after blasting activities per company procedure and/or using Performance Verification 18.2 as a guide.		
62206-7	Conduct or simulate conducting a leakage survey on a gas pipeline per company procedure and/or using Performance Verification 52.1, 52.2, and 52.3 as a guide.		

**MODULE 62207-02 – HYDROSTATIC TESTING (CT 41)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
62207-1	Prepare for hydrostatic testing.		
62207-2	Perform or simulate performing hydrostatic testing procedures per company procedures and/or using Performance Verification 41 as a guide.		

# Level Three

## MODULE 62301-02 – GENERAL MAINTENANCE AND WINTERIZING

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

## MODULE 62302-02 – PIPELINE DAMAGE INSPECTION (CT 34 AND 35)

Task Number	Item	Date(s)	Recorded By
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62302-1	Observe and determine activities required after the movement of a section of pipe in a ditch (trench) per company procedure and/or using Performance Verification 34.0 as a guide.		
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62302-2	Determine the minimum clearance between existing pipe(s) and other underground structures installed by excavation, boring, or directional drilling per company procedure and/or using Performance Verification 35.0 as a guide.		
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## MODULE 62303-02 – PERFORMING IN-LINE INSPECTIONS (CT 29)

Task Number	Item	Date(s)	Recorded By
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62303-1	Launch an in-line inspection device per company procedure and/or using Performance Verification 29.1 as a guide.		
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62303-2	Receive an in-line inspection device per company procedure and/or using Performance Verification 29.2 as a guide.		
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**MODULE 62304-02 – PIPELINE REPAIR (CT 9.5, 37, 40.1, 40.2, 40.3, 40.4, 40.5, 40.7, AND 40.91)**

<b>Task Number</b>	<b>Item</b>	<b>Date(s)</b>	<b>Recorded By</b>
62304-1	Install a tight-fitting sleeve repair used for covering anomalies on the pipeline with top and bottom sleeve ends welded around the circumference directly to the pipeline per company procedure and/or using Performance Verification 40.1 as a guide.		
62304-2	Install an oversleeve per company procedure and/or using Performance Verification 40.2 as a guide.		
62304-3	Install a leak-repair pipeline enclosure, such as the PLIDCO® Split+Sleeve repair sleeve, on an active leaking pipeline per company procedure and/or using Performance Verification 40.4 as a guide.		
62304-4	Install a Weld Plus coupling per company procedure and/or using Performance Verification 40.5 as a guide.		
62304-5	Install a composite wrap sleeve, such as the Clock Spring®, per company procedure and/or using Performance Verification 40.3 as a guide.		
62304-6	Cut out and replace a piece of pipe.		
62304-7	Perform a 2" tap per company procedure and/or using Performance Verifications 40.7 and 40.91 as a guide.		
62304-8	Test and repair shorted casing per company procedure and/or using Performance Verification 9.5 as a guide.		
62304-9	Perform the activities required to fit or mount additional or revised support elements to existing aboveground structures per company procedure and/or using Performance Verification 37.0 as a guide.		
62304-10	Repair insulation.		



## MODULE 62305-02 – RELOCATING AND LOWERING PIPELINES (CT 33 AND 34)

Task Number	Item	Date(s)	Recorded By
62305-1	Perform the activities required to determine the actual pressure of the pipeline section being moved, raised, lowered, or moved laterally per company procedure and/or using Performance Verification 33.1 as a guide.		
62305-2	Complete the activities required to safely excavate and prepare the pipeline to be moved per company procedure and/or using Performance Verification 33.2 as a guide.		
62305-3	Complete the activities required to safely move a pipeline per company procedure and/or using Performance Verification 33.3 as a guide.		
62305-4	Observe and determine activities required after the movement of a section of pipe in a ditch (trench) per company procedure and/or using Performance Verification 34.0 as a guide.		
62305-6	Backfill the excavation after the movement of a section of pipe in a ditch.		

## MODULE 62306-02 – HOT TAPPING AND STOPPLING® – 2.5" AND LARGER (CT 40.6, 40.8, 40.9, AND 40.91)

Task Number	Item	Date(s)	Recorded By
62306-1	Tap a pipeline 2½" or larger per company procedure and/or using Performance Verification 40.8 as a guide.		
62306-2	Install a Stopple® fitting per company procedure and/or using Performance Verification 40.6 as a guide.		
62306-3	Stop or divert the flow of product in the pipeline and use the tapping machine to install the Lock-O-Ring® completion plug into the Stopple® fitting per company procedure and/or using Performance Verifications 40.9 and 40.91 as a guide.		

## MODULE 62307-02 – TANK REPAIR

Task Number	Item	Date(s)	Recorded By
62307-1	Perform tank repair activities per company procedure and/or using the tank repair critical steps checklist provided by your instructor.		

## MODULE 62308-02 – MAINTENANCE WELDING ON PIPELINES (CT 42)

Task Number	Item	Date(s)	Recorded By
62308-1	Direct the activities associated with repair of an arc burn area per company procedure and/or using Performance Verification 42.1 as a guide.		
62308-2	Direct the activities associated with repair of a weld containing defect(s) other than cracks per company procedure and/or using Performance Verification 42.2 as a guide.		
62308-3	Direct the activities associated with repair of a cover pass containing defect(s) other than cracks per company procedure and/or using Performance Verification 42.3 as a guide.		
62308-4	Direct the activities associated with repair of a butt weld containing a crack per company procedure and/or using Performance Verification 42.4 as a guide.		
62308-5	Direct the activities associated with repair of a previously repaired area per company procedure and/or using Performance Verification 42.5 as a guide.		
62308-6	Direct the activities associated with cutting out and replacing a weld or cylinder of pipe per company procedure and/or using Performance Verification 42.6 as a guide.		

## MODULE 62309-02 – PERFORMING PIPELINE DISCONNECTION PROCEDURES (CT 36)

Task Number	Item	Date(s)	Recorded By
62309-1	Complete the safe disconnect of a pipeline from service per company procedure and/or using Performance Verification 36.1 as a guide.		
62309-2	Perform the safe purging of petroleum or hazardous vapors from a pipeline during the abandonment process per company procedure and/or using Performance Verification 36.2 as a guide.		
62309-3	Perform the sealing of the end(s) of a disconnected portion of pipeline from the environment or an active pipeline per company procedure and/or using Performance Verification 36.3 as a guide.		

## MODULE 62310-02 – VAULT MAINTENANCE AND CONFINED SPACE ENTRY (CT 59)

Task Number	Item	Date(s)	Recorded By
62310-1	Demonstrate knowledge of confined space entry safety requirements.		
62310-2	Perform a vault inspection per company procedure and/or using Performance Verification 59.0 as a guide.		

# Level Four

## MODULE 62401-03 – RADIOGRAPHIC TESTING OF PIPELINE WELDS

Task Number	Item	Date(s)	Recorded By
62401-1	Demonstrate to the satisfaction of the instructor the expose and process radiographic film. (CT 38.4)		
62401-2	Demonstrate to the satisfaction of the instructor the ability to recognize and identify weld conditions by examining radiographic film of pipe welds. (CT 38.4)		