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 (CO2) leaks.
8. Recognize and react to unexplained pressure deviations.

MODULE 63103-02 – PIPELINE MECHANIC HAND AND POWER TOOLS

1. Safely use and care for pipeline mechanic hand tools.
2. Safely use and care for drill presses, hydraulic presses, and pipe threading machines.
3. Safely use and care for selected sheet metal tools.
4. Identify and explain surface grinders and belt sanders.
5. Identify and explain Woodruff key seaters and key broachers.
6. Safely use and care for bearing heaters and drills and perform precision drilling.

MODULE 63104-02 – PIPING AND MECHANICAL BLUEPRINT READING

1. Identify and explain types and parts of drawings.
2. Read and interpret piping and instrumentation diagrams (P&Ids), plan views, section views, and isometric drawings.
3. Read and interpret machine drawings.
MODULE 63105-02 – TUBING, THREADED PIPE, AND HOSES

1. Identify and explain the materials used in tubing systems.
2. Identify, use, and care for tubing cutters, benders, and flaring tools.
3. Fabricate tubing systems.
4. Identify and explain the materials used in threaded piping systems.
5. Use and care for pipe threading tools.
6. Fabricate threaded piping systems.
7. Identify and select types and sizes of hoses.
8. Maintain hoses used in control systems.

MODULE 63106-02 – FASTENERS

1. Identify and explain threaded and nonthreaded fasteners.
2. Identify and explain insulation fasteners.
3. Install fasteners.

MODULE 63107-02 – IDENTIFY, INSTALL, AND MAINTAIN VALVES (CTS 19.1-19.4)

1. Identify the types of valves used to start and stop flow on a pipeline and regulate flow on a pipeline.
2. Identify and explain the functions of the various types of relief valves.
3. Properly isolate and purge a valve.
5. Winterize valves (CT 19.1).
6. Install threaded and flanged valves.

MODULE 63108-02 – IDENTIFY TYPES OF VALVE ACTUATORS/OPERATORS

1. Identify the types of actuators used to open and close valves.
2. Identify the types of controls used with actuators.
3. Explain the principles used for operation of actuators.
4. Perform general maintenance on actuators.

MODULE 63109-02 – INSTALLING SEALS AND GASKETS

1. Identify and explain types of seals.
2. Remove and install seals.
3. Identify and explain gasket types and materials.
4. Layout, cut, and install gaskets.
Level Two

MODULE 63201-02 – INTRODUCTION TO PNEUMATIC SYSTEMS

1. Explain pneumatic safety.
2. Explain the physical characteristics of gases.
3. Explain the characteristics of natural gas.
4. Explain the pneumatic transmission of energy.
5. Identify and explain types of compressors.

MODULE 63202-02 – INTRODUCTION TO HYDRAULIC SYSTEMS

1. Explain hydraulic system safety.
2. Explain the principles of hydraulics.
3. Identify and explain hydraulic fluids.
4. Identify and explain hydraulic system parts.
5. Identify and explain hydraulic pumps.
6. Identify and explain hydraulic motors.

MODULE 63203-02 – SPECIALTY AND PRECISION TOOLS

1. Identify, use, and care for specialty tools.
2. Identify, use, and care for precision measuring tools.

MODULE 63204-02 – INSPECT AND REPAIR VALVES (CT 20, 21.2, 21.3)

1. Identify the different valve inspection requirements.
2. Describe the routine walk-around inspection requirements for valves or perform a routine walk-around valve inspection (CT 20.1).
3. Describe the external integrity inspections requirements for valves or perform an external integrity valve inspection (CT 20.2).
4. Describe the functional test required for valves or perform a functional valve test (CT 20.3).
5. Describe how to leak test a valve or leak test a valve (CT 20.4).
6. Describe how to disassemble and reassemble a valve or disassemble and reassemble a valve (CT 21.2).
7. Describe the internal inspection requirements of a valve or perform an internal valve inspection (CT 21.3).
8. Describe how to rig a large valve or rig a large valve.

MODULE 63205-02 – MAINTAIN AND REPAIR PRESSURE LIMITING DEVICES AND RELIEF VALVES (CT 22, 23.1, 23.2, AND 24)

1. Identify types of relief valves and pressure limiting devices.
2. Inspect tank pressure/vacuum breaker. Inspect, test, and calibrate HVL tank pressure relief valves (CT 22).
3. Inspect, maintain, and repair relief valves (CT 23.1).
4. Maintain and repair pressure limiting devices (CT 23.2).
5. Inspect, test, and calibrate pressure limiting devices and relief valves (CT 24).
MODULE 63206-02 – INTRODUCTION TO METERING DEVICES AND PROVERS

1. Identify, explain, and/or demonstrate the use of various types of meters.
2. Identify, explain, and/or demonstrate the use of various types of provers.

MODULE 63207-02 – INTRODUCTION TO PUMPS

1. Identify and explain various types of pumps.
2. Explain net positive suction head and cavitation.
3. Install pumps.

MODULE 63208-02 – INTRODUCTION TO GAS COMPRESSORS

1. Identify and explain various types of gas compressors.
2. Explain the function of compressors.
3. Explain the operation of compressors.
4. Identify auxiliary equipment.

MODULE 63209-02 – INSTALL AND MAINTAIN BEARINGS

1. Identify and explain various types of bearings.
2. Explain bearing designation.
3. Remove, troubleshoot, and install bearings.

MODULE 63210-02 – INSTALL MECHANICAL SEALS

1. Identify and explain types of mechanical seals.
2. Explain mechanical seal classification.
3. Remove, inspect, and install mechanical seals.

MODULE 63211-02 – MAINTAIN AND REPAIR DRIVERS

1. Identify types of drivers.
2. Inspect drivers.
3. Replace bearings and seals.
4. Perform preventative maintenance activities.
5. Replace drivers.
LEVEL THREE

MODULE 63301-02 – INSTALLING ROTATING EQUIPMENT

1. Identify inspection requirements for an equipment pad.
2. Describe the requirements for equipment base preparation.
3. Inspect equipment prior to installation.
4. Prepare equipment prior to installation.
5. Describe the installation process for rotating equipment.
6. Describe the process to relieve pipe stress from rotating equipment.

MODULE 63302-02 – UNIT ALIGNMENT

1. Recognize and describe the four types of equipment misalignment.
2. Identify the causes of soft foot.
3. Describe the major steps in performing conventional rim-and-face alignment.
4. Describe the major steps in performing reverse dial indicator alignment using the equation method of alignment.
5. Describe the major steps in performing reverse dial indicator alignment using the graphical chart method of alignment.
6. Describe the major steps in performing laser alignment.
7. Identify other laser alignment procedures that may be completed on the machinery trains depending on equipment needs.

MODULE 63303-02 – VIBRATION ANALYSIS

1. Explain the causes of vibration.
2. Explain vibration analysis.
3. Identify and explain the different kinds of basic vibration test equipment.
4. Explain vibration monitoring.
5. Explain field balancing of machines.

MODULE 63304-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR PUMPS

1. Describe the preventive maintenance requirements for a pump.
2. Describe the inspection requirements for a pump.
3. Identify common troubleshooting techniques and problems for a pump.
4. Identify the common steps required to prepare a pump for shutdown for maintenance or repair.
5. Identify the common steps required to remove a pump from a pipeline system for maintenance or repair.
6. Identify the common steps to disassemble and reassemble a pump.
7. Identify the common steps required to install the pump after the pump has been reassembled.
8. Identify the common steps to prepare the pump for startup and operational check after maintenance or repair has been completed.
MODULE 63305-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR GAS COMPRESSORS

1. Identify the typical lubrication system components of a gas compressor.
2. Describe the preventive maintenance requirements for a gas compressor.
3. Identify the common troubleshooting techniques for a gas compressor.
4. Identify the common steps required to prepare for shutdown and repair of a gas compressor.
5. Identify the common steps required to isolate a gas compressor from a pipeline system.
6. Identify the common steps required to repair a rotary and reciprocating gas compressor.
7. Identify the common steps required to prepare the gas compressor for start-up and operational check after maintenance has been completed.

MODULE 63306-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR PNEUMATIC VALVE ACTUATORS/OPERATORS AND SYSTEMS (CT 19.6 AND 21.1)

1. Perform pneumatic system preventive maintenance procedures.
2. Inspect pneumatic system components.
3. Read pneumatic system schematic diagrams.
4. Troubleshoot pneumatic systems.
5. Repair pneumatic system components.
6. Adjust pneumatic valve actuators/operators (CT 19.6).
7. Repair pneumatic valve actuators/operators (CT 21.1).

MODULE 63307-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR HYDRAULIC VALVE ACTUATORS/OPERATORS AND SYSTEMS (CT 19.7 AND 21.4)

1. Inspect hydraulic system equipment.
2. Read hydraulic system schematic diagrams.
3. Explain the basic hydraulic principles that must be considered before troubleshooting.
4. Troubleshoot hydraulic systems.
5. Repair hydraulic system components.
6. Adjust hydraulic valve actuators/operators (CT 19.7).

MODULE 63308-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR ELECTRIC VALVE ACTUATORS/OPERATORS AND SYSTEMS (CT 19.5 AND 21.5)

1. Perform preventative maintenance procedures on electric actuators/operators.
2. Inspect electric actuator/operator components.
3. Troubleshoot problems with electric actuators/operators.
4. Adjust electric actuator/operator components (CT 19.5).
5. Repair electric actuator/operator components (CT 21.5).

MODULE 63309-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR METERING DEVICES AND PROVERS

1. Inspect and maintain metering devices.
2. Repair metering devices.
3. Inspect and maintain prover systems.
4. Repair prover systems.
5. Calibrate prover systems.
**Level One**

**MODULE 66101-02 – INTRODUCTION TO THE PIPELINE INDUSTRY**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This is a knowledge-based module; there is no performance testing.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 66102-02 – LIQUID PIPELINE GENERAL ABNORMAL OPERATING CONDITIONS**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This is a knowledge-based module; there is no performance testing.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 63103-02 – PIPELINE MECHANIC HAND AND POWER TOOLS**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63103-1</td>
<td>Recognize and identify pipeline mechanic tools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63103-2</td>
<td>Use and care for pipeline mechanic hand tools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63103-3</td>
<td>Recognize and identify pipeline mechanic power tools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63103-4</td>
<td>Use and care for pipeline mechanic power tools.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 63104-02 – PIPING AND MECHANICAL BLUEPRINT READING**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63104-1</td>
<td>Identify symbols and abbreviations on P&amp;IDs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63104-2</td>
<td>Identify piping arrangement drawings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63104-3</td>
<td>Read and interpret coordinates, control points, and elevation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63104-4</td>
<td>Read and interpret P&amp;IDs, plan views, and section views.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63104-5</td>
<td>Identify, read, and interpret isometric drawings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63104-6</td>
<td>Read and interpret assembly and detail drawings.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Level One

MODULE 63103-02 - PIPELINE MECHANIC HAND AND POWER TOOLS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Copies of Quick Quiz
- Module Examination
- Performance Profile Sheets
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment

A variety of wrenches, including:
  - Straight pipe wrenches
  - Offset pipe wrenches
  - Strap wrenches
  - Chain wrenches

A variety of spanner wrenches, including:
  - Pin spanners
  - Flat hook spanners
  - Adjustable hook eyes
  - Face spanners
  - Adjustable face types

A variety of tin snips, including:
  - Right offset
  - Left offset
  - Right cut aviation
  - Left cut aviation
  - Straight cut aviation
  - Combination blade
  - Straight blade

Pieces of sheet or plate metal, several scribers, and layout dye
- Packing pullers and stuffing boxes
- Inspections mirrors and flashlights
- Retaining ring pliers, shafts, rods, and spindles
- Taper gauge and section of pipe
- Woodruff key seaters, including one smaller than 2 inches and one 2-inch cutter
MODULE 63104-02 - PIPING AND MECHANICAL BLUEPRINT READING

- 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’s policy and procedures manual
- Copies of 49 CFR Part 195 (Liquid) and/or 49 CFR Part 192 (Gas)
- Copies of sample P&IDs
- Copies of sample machine drawings
- Calculators
- Enlarged copies of Figure 6

MODULE 63105-02 - TUBING, THREADED PIPE, AND HOSES

- 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’s policy and procedures manual
- Copies of 49 CFR Part 195 (Liquid) and/or 49 CFR Part 192 (Gas)
- Several sections of tubing and a rule, outside caliper, or caliper rule
- Several sections of copper, steel, stainless steel, aluminum, Monel®, Inconel®, Hastelloy®, and poly tubing
- Section of tubing and a sharp pencil, colored felt tip pen, or silver marking pencil
- Sections of tubing with OD and ID burrs and a tube deburring tool
- Several sections of tubing and a variety of tubing cutters, including a hacksaw, a bandsaw, and snips
- Spring tube bender and a section of soft metal tubing
- Compression-type hand bender, table- or bench-mounted tubing bender, and several sections of tubing of different size and thickness
- Pipe threader and die head
- Assorted couplings, unions, bushings, and reducers
- Several lengths of pipe and a variety of fittings
- Pipe joint compounds, including Teflon® tape, liquid Teflon®, and pipe dope
- A variety of nonmetallic hoses
- Male, female, and splicer push-on fittings
MODULE 63106-02 - FASTENERS

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Copies of Quick Quiz
Module Examination
Performance Profile Sheets
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)
A variety of threaded fasteners
A variety of retainer rings and several pairs of pliers
A variety of cotter pins, including a standard pin, humped pin, clinch pin, and hitch, and a section of a shaft with holes drilled crosswise
A variety of pin fasteners and the necessary tools to install them
Several sections of insulation and a variety of insulation fasteners
A variety of threaded, nonthreaded, expandable, and nonexpandable fasteners; the appropriate tools to install these fasteners; and sections of drywall, concrete blocks, and insulation materials

MODULE 63107-02 - IDENTIFY, INSTALL, AND MAINTAIN VALVES (CTS 19.1–19.4)

Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Copies of the Performance Verification for Covered Task 19
Copies of the Quick Quiz
Module Examinations
Performance Profile Sheets
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)
Appropriate tools for assembling and disassembling various types of valves
Several valve stems, including:
  Rising stems
  Nonrising stems
  Outside screw-and-yoke stems
Gate, ball, plug, and expanding gate valves
Globe, angle, Y-type, butterfly, and diaphragm valves
Copies of a valve maintenance log
Valve packing-removal tools and a valve packing assembly
MODULE 63108-02 - IDENTIFY TYPES OF VALVE ACTUATORS/OPERATORS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Copies of Quick Quiz
- Module Examination
- Performance Profile Sheets
- 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)
- Sample equipment warranties for valve actuators
- Several copies of manufacturer’s instructions for a variety of valve actuators

MODULE 63109-02 - INSTALLING SEALS AND GASKETS

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Copies of Quick Quiz
- Module Examination
- Performance Profile Sheets
- 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)
- Sample seal materials, including:
  - Buna-N
  - Leather
  - Silicone
  - Neoprene
- Plastic and elastomer compounds
- Room temperature vulcanizing seals
- A variety of O-rings and lip and oil seals
- Appropriate tools to install O-rings and lip and oil seals
- Mounting thimble, shaft, and seal
- Measuring tapes, gasket cutters, hole punches, and a variety of gasket materials, including:
  - Natural rubber
  - Ethylene propylene dieneterpolymer
  - Neoprene
  - Nitrile
  - Silicone
  - Viton
  - Gylon
Level Two

MODULE 63201-02 - INTRODUCTION TO PNEUMATIC SYSTEMS

- Transparencies
- Blank acetate sheets
- Transparency pens
- Overhead projector and screen
- Felt-tip markers/chalk
- Pencils and scratch paper
- Module Examinations
- Copies of the Quick Quiz
- Performance Profile Sheets
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Sliding-vane compressor
- Air compressor and filters
- Several grades of in-line mesh filters
- Valve actuator
- Copies of your company’s policy and procedures manual

MODULE 63202-02 - INTRODUCTION TO HYDRAULIC SYSTEMS

- Transparencies
- Felt-tip markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Module Examinations
- Copies of the Quick Quiz
- Performance Profile Sheets
- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Samples of various types of hydraulic fluids
- Different schedules of steel pipe, including Schedule 40 and Schedule 60
- Piping, tubing, and fittings
- Check valves
- Hydraulic pumps
- Lubricants with different pour points
- Glass jars
- Several frozen ice packs
- Cooler
- Different types and sizes of strainers and filters
- Hydraulic fluid
- Common cylinder
MODULE 63203-02 - SPECIALTY AND PRECISION TOOLS

Transparencies
Felt-tip markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Module Examinations
Copies of Quick Quiz
Performance Profile Sheets
Overhead projector and screen
Whiteboard/Chalkboard
Appropriate personal protective equipment
Torque wrench
Torque multiplier
Hex turn flange spreader
T-handle flange spreader
Ratchet action flange spreader
Hydraulic flange spreader
Mechanic’s level
Master level
Shims
Scrap wood
Optical level
Metal tape
Bevel protractor
Universal bevel protractors
Plasti-gauge
Jo blocks
Drill shanks of various sizes
Inside and outside calipers
Micrometers
Telescoping gauges
Dial indicators
Stroboscopic tachometer
MODULE 63204-02 - INSPECT AND REPAIR VALVES (CT 20, 21.2, 21.3)

Transparencies
Blank acetate sheets
Transparency pens
Overhead projector and screen
Felt-tip markers/chalk
Pencils and scratch paper
Module Examinations*
Performance Profile Sheets*
Copies of the Quick Quiz**
Copies of the Performance Verifications for Covered Tasks 20, 21.1, and 21.3 †
Copies of 49 CFR Part 195 (Liquid) and/or 49 CFR Part 192 (Gas)
Copies of your company’s policy and procedures manual
Whiteboard/chalkboard
Slab-type gate valve
Expanding plug valve
Varieties of rigging hardware
Valve assembly

MODULE 63205-02 - MAINTAIN AND REPAIR PRESSURE LIMITING DEVICES AND RELIEF VALVES (CT 22, 23.1, 23.2, 24)

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
Several relief valves and PLDs, including:
Spring-type pressure relief valve
Boot-type relief valve
Safety valve
Rupture disc device
Control valve
Electro-hydraulic relief valve
A copy of your company’s procedures for inspecting tank pressure/vacuum breakers
Copies of the Performance Verifications for Covered Tasks 22, 23.1, 23.2, and 24†
 MODULE 63206-02 - INTRODUCTION TO METERING DEVICES AND PROVERS

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 Chapter 4
Mass flow meters
A variety of orifice plates
Several types of meters or photographs of several types of meters, including:
Turbine meters
Positive displacement meters
Ultrasonic meters
Mass flow meters
Coriolis-type mass flow meters
Vortex meters
Sample meter factor logs
Graph paper
MODULE 63207-02 - INTRODUCTION TO PUMPS

Transparencies
Blank acetate sheets
Transparency pens
Markers/chalk
Overhead projector and screen
Pencils and scratch paper
Module Examinations
Performance Profile Sheets
Whiteboard/chalkboard
Appropriate personal protective equipment
Copies of 49 CFR Part 192 (Gas) and/or 49 CFR Part 195 (Liquid)
Copies of your company’s policy and procedures manual
Gears, including:
Helical
Spur
Herringbone
Samples or photographs of each type of pump, including:
Centrifugal pumps
Rotary pumps
Reciprocating pumps
Metering pumps
Copies of Figures 2 and 20

MODULE 63208-02 - INTRODUCTION TO GAS COMPRESSORS

Transparencies
Blank acetate sheets
Transparency pens
Markers/chalk
Overhead projector and screen
Pencils and scratch paper
Module Examinations*
Performance Profile Sheets*
Copies of Quick Quiz**
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 Figure 1 with the callouts covered
MODULE 63209-02 - INSTALL AND MAINTAIN BEARINGS

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’s policy and procedures manual
Assorted plain bearings
Assorted ball bearings
Roller bearings
Plain, roller, and ball flanged bearings
One- and two-piece pillow block bearings and takeup bearings
Bearings with various identification codes
Used bearings, lintless rags, clean oil, 3-volt ohmmeter, Permatex® or Teflon® tape, fine-tooth file
Plain bearings and appropriate tools for disassembling and reassembling them
Equipment required for installing standard sleeve bearings
A bearing that failed due to fatigue and a bearing that failed due to overload
Bearings that have failed for various reasons
Equipment and materials required for packing a bearing
Equipment required for removing a bearing using a manual bearing puller
Equipment required for removing a bearing using a press
Equipment required for removing a bearing using the hydraulic method
Equipment required for removing a bearing using the temperature method
Equipment required for installing tapered roller bearings using the temperature mounting method
Equipment required for installing a thrust bearing using the press mounting method
Equipment required for installing spherical roller bearings using a hydraulic nut or locknut
Split-housing pillow block bearings and equipment needed to assemble/disassemble them
Equipment and materials for troubleshooting, removing, and repairing or replacing bearings
MODULE 63210-02 - INSTALL MECHANICAL SEALS

- 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 the Quick Quiz**
- Copies of your company’s policy and procedures manual
- Several types of mechanical seals
- Examples of failed mechanical seals
- Equipment required for removing and inspecting mechanical seals from a pump
- Equipment required for installing mechanical seals on a pump

MODULE 63211-02 - MAINTAIN AND REPAIR DRIVERS

- 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’s policy and procedure manual
- Sample engine power ratings
- Examples or photos of electric, diesel, gas, and turbine drivers
- New bearings
- Examples of various types of failed bearings
- Access to bearings requiring replacement
- Equipment required to remove and install bearings
- Access to pipeline drivers
- Equipment required for driver maintenance
- Access to a driver requiring replacement
- Equipment required to replace drivers
MODLE 63301-02 - INSTALLING ROTATING EQUIPMENT

- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Pencils and scratch paper
- Calculators
- 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
- A variety of base plates
- Installation drawings
- Sample pumps and/or motors with physical damage
- Sample base plates that are warped, damaged, or cracked
- Equipment to perform the bearing heating method
- Tools and equipment necessary to level base plates, including:
  - Jack bolts
  - Anchor bolts
  - Shims
  - Wrenches
  - Wedges
  - Hammers
  - Levels
  - Shim packs
  - Straightedges
  - Feeler gauges
- Tools and materials necessary to perform clearance and interference installation, including:
  - Brass hammers
  - Key and setscrew couplings
  - Cleaning solvents
  - Shop clothes
  - Tapered shafts
  - Locking nuts
  - Micrometers
  - Nonshrink and epoxy grout
  - Forms to practice grouting
  - Tools to work the grout
MODULE 63302-02 - UNIT ALIGNMENT

- 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 (Gas) and/or 49 CFR Part 195 (Liquid)
- Copies of your company policy and procedures manual
- Calculators
- Copies of Figures 1, 2, 3, 4, 23, 24, and 25 with the titles covered
- Copies of Figure 33 with the callouts covered
- Alignment simulators
- Dial calipers
- Straightedges
- Scales
- Rules
- Feeler gauges
- Chain indicator jigs
- Dial indicators
- Graphical alignment charts
- Graph paper
- Reverse indicator plotting guides
- Sample alignment records
MODULE 63303-02 - VIBRATION ANALYSIS

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
A variety of transducers, including:
Velocity transducers
Accelerometers
Displacement transducers
A variety of vibration test equipment, including:
Meters
Oscilloscopes
Spectrum analyzers
Electronic filters
Stroboscopes
A variety of vibration recording instruments, including strip chart recorders and data collectors
Sample vibration monitoring forms

MODULE 63304-02 - MAINTAIN, TROUBLESHOOT, AND REPAIR PUMPS

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
Completed inspection reports
Sample manufacturers’ manuals, including procedures, schematics, and line drawings
Copies of Figure 13 with the callouts covered
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 Figures 1, 2, and 3 with the callouts covered
Copies of manufacturers’ specifications for gas compressors
Copies of manufacturers’ maintenance manuals, including recommended startup checklists
Gas compressors on which to practice maintenance and repair techniques
Tools and materials to repair common rotary compressor components, including:
  Mechanical seals
  O-rings
  Thread caulking
  Silicone caulking
  Oil pumps
  Couplings
  Lubricant
  Fasteners
  Oil
Straightedges
Tools and materials to repair common reciprocating compressor components, including:
  Crossheads
  Drive chains
  Screws
  Nuts
  Dust plugs
  Sprockets
  Drift punches
  Washers
  Valve caps
  Bolts
  O-rings
  Machinist’s rules
  Lube oil pump chain sprockets
  Sprocket setscrews
  Woodruff keys
  Gaskets
  Metal files
MODULE 63305-02 - MAINTAIN, TROUBLESHOOT, AND REPAIR GAS COMPRESSIONS (Continued)

Lubricator
Pry bars
Screwdrivers
Valve tools
Anti-seize lubricant
Valve retainer
Lubricant
Sample documentation for startup and operational checks

MODULE 63306-02 - MAINTAIN, TROUBLESHOOT, AND REPAIR PNEUMATIC VALVE ACTUATORS/OPERATORS AND SYSTEMS (CT 19.6 AND 21.1)

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 19.6 and 21.1†
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 manufacturer’s warranties
Sample preventive maintenance records and schedules
Sample equipment records
Pneumatic schematic diagrams
Sample actuators/operators and the necessary tools for disassembly and reassembly
Manufacturers’ instruction manuals for the sample actuators/operators
A variety of new and damaged gauges
Sample valve maintenance logs
Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Module Examinations*
Performance Profile Sheets*
Copies of Performance Verifications for Covered Tasks 19.7 and 21.4**
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 preventive maintenance schedules
Sample maintenance records and equipment logs
Pyrometer
Clamp-on ammeter
Sample hydraulic pump with the necessary tools for disassembly and assembly
Manufacturers’ instruction manuals for the sample hydraulic pumps
Hydraulic system control valves and the necessary tools for disassembly and assembly
A variety of replacement parts for a hydraulic actuator/operator and the corresponding manufacturers’ specifications
A variety of hydraulic hoses and the necessary tools to cut them
Hydraulic schematic drawings
Copies of manufacturers’ instruction manuals for a variety of hydraulic system components
Transparencies
Markers/chalk
Blank acetate sheets
Transparency pens
Pencils and scratch paper
Module Examinations*
Performance Profile Sheets*
Copies of Performance Verifications for Covered Tasks 19.5 and 21.5**
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 valve maintenance logs
Computer-generated work orders
Grease guns
Valve stems
Copies of Figure 10 with the legend covered
Tools and materials to
- Apply external and internal lubricants
- Disassemble bolt-on and machine-fitted spur-gear attachments
- Remove worm gear assemblies
Tools and materials to disassemble and assemble
- Single reduction worm gears
- Actuator/operator bearing assemblies
- Bevel gear actuator/operators
Lubricants
Brushes
Cleaning solvents
Shop cloths
Sample P&IDs
Inspection checklists
Bolt-on and machine-fitted spur gear attachments
Manufacturer’s instruction manuals for limit switches
Torque switch
Stem nut assembly
MODULE 63309-02 - MAINTAIN, TROUBLESHOOT, AND REPAIR METERING DEVICES AND PROVERS

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
API Manual of Petroleum Measurement Standards
Typical strainer assembly
Tools and materials to clean a typical strainer assembly and to disassemble a turbine meter
Meter clearance records
Practice meters
Appropriate measuring gauges
Components of a disassembled positive displacement meter
Materials to clean positive displacement meter components
Proving spheres
Calipers
Sizing rings
Steel tape
**MODULE 63105-02 – TUBING, THREADED PIPE, AND HOSES**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63105-1</td>
<td>Identify and explain the materials used in tubing systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-2</td>
<td>Identify, use, and care for tubing cutters, benders, and flaring tools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-3</td>
<td>Fabricate tubing systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-4</td>
<td>Identify and explain the materials used in threaded piping systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-5</td>
<td>Use and care for pipe threading tools.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-6</td>
<td>Fabricate threaded piping systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-7</td>
<td>Identify and select types and sizes of hoses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63105-8</td>
<td>Maintain hoses used in control systems.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 63106-02 – FASTENERS**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63106-1</td>
<td>Identify and explain threaded fasteners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63106-2</td>
<td>Identify and explain nonthreaded fasteners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63106-3</td>
<td>Identify and explain insulation fasteners.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63106-4</td>
<td>Install fasteners.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MODULE 63107-02 – IDENTIFY, INSTALL, AND MAINTAIN VALVES**

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63107-1</td>
<td>Identify types of valves that start and stop flow.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-2</td>
<td>Identify types of valves that regulate flow and pressure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-3</td>
<td>Identify and explain the function of various types of relief valves.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-4</td>
<td>Perform preventive maintenance (CTs 19.3, 19.4).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-5</td>
<td>Perform regular lubrication of valves (CT 19.2).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-6</td>
<td>Winterize valves (CT 19.1).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-7</td>
<td>Install threaded valves.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-8</td>
<td>Install flanged valves.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63107-9</td>
<td>Properly isolate and purge a valve.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MODULE 63108-02 – IDENTIFY TYPES OF VALVE ACTUATORS/OPERATORS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63108-1</td>
<td>Identify types of actuators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63108-2</td>
<td>Identify types of actuator controls.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63108-3</td>
<td>Explain principles of operation of actuators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63108-4</td>
<td>Perform general maintenance on actuators.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MODULE 63109-02 – INSTALLING SEALS AND GASKETS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63109-1</td>
<td>Identify and explain types of seals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-2</td>
<td>Identify and explain seal materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-3</td>
<td>Remove and install seals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-4</td>
<td>Identify and explain gasket types.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-5</td>
<td>Identify and explain gasket materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-6</td>
<td>Lay out and cut gaskets.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63109-7</td>
<td>Install gaskets.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Level Two

## MODULE 63201-02 – INTRODUCTION TO PNEUMATIC SYSTEMS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63201-1</td>
<td>Demonstrate steps and precautions you should take when working with pneumonic systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63201-2</td>
<td>Identify different types of compressors and their components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63201-3</td>
<td>Demonstrate how different types of compressors work.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63202-02 – INTRODUCTION TO HYDRAULIC SYSTEMS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63202-1</td>
<td>Demonstrate steps and precautions you should take when working with hydraulic systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63202-2</td>
<td>Identify types of hydraulic fluid.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63202-3</td>
<td>Identify hydraulic system parts, explain how they work, and describe their role in a hydraulic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63202-4</td>
<td>Describe the classifications of hydraulic pumps.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63202-5</td>
<td>Identify different types of hydraulic motors and how they work.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63203-02 – SPECIALTY AND PRECISION TOOLS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63203-1</td>
<td>Identify a given specialty tool, state its application, and describe its safe use and maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63203-2</td>
<td>Demonstrate the use of a given specialty tool according to the standards given by the instructor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63203-3</td>
<td>Identify a given precision tool, state its application, and describe its safe use and maintenance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63203-4</td>
<td>Demonstrate the use of a given precision tool according to the standards given by the instructor.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MODULE 63204-02 – INSPECT AND REPAIR VALVES

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63204-1</td>
<td>Identify the different valve inspection requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-2</td>
<td>Describe the routine walk-around inspection requirements for valves or perform a routine walk-around valve inspection (CT 20.1).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-3</td>
<td>Describe the external integrity inspection requirements for valves or perform an external integrity inspection (CT 20.2).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-4</td>
<td>Describe the functional test required for valves or perform a functional valve test (CT 20.3).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-5</td>
<td>Describe how to leak test a valve or perform a leak test on a valve (CT 20.4).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-6</td>
<td>Describe how to disassemble and reassemble a valve or disassemble and reassemble a valve (CT 21.2).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-7</td>
<td>Describe the internal inspection requirements of a valve or perform an internal valve inspection (CT 21.3).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63204-8</td>
<td>Rig a large valve or describe how to rig a large valve.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63205-02 – MAINTAIN AND REPAIR PRESSURE LIMITING DEVICES & RELIEF VALVES

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63205-1</td>
<td>Identify types of relief valves and pressure limiting devices.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63205-2</td>
<td>Inspect tank pressure/vacuum breaker (CT 22).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63205-3</td>
<td>Inspect, test, and calibrate HVL tank pressure relief valves (CT 22).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63205-4</td>
<td>Inspect, test, and calibrate pressure limiting devices and relief valves (CT 24).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63205-5</td>
<td>Inspect, maintain, and repair relief valves (CT 23.1).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63205-6</td>
<td>Maintain and repair pressure limiting devices (CT 23.2).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63206-02 – INTRODUCTION TO METERING DEVICES AND PROVERS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63206-1</td>
<td>Identify, explain, and/or demonstrate the use of various types of meters.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63206-2</td>
<td>Identify, explain, and/or demonstrate the use of various types of provers.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MODULE 63207-02 – INTRODUCTION TO PUMPS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63207-1</td>
<td>Identify various types of pumps and their components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63207-2</td>
<td>Explain how various types of pumps work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63207-3</td>
<td>Define net positive suction head.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63207-4</td>
<td>Define cavitation and describe the damage it can cause.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63207-5</td>
<td>Install or simulate installing a pump.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MODULE 63208-02 – INTRODUCTION TO GAS COMPRESSORS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63208-1</td>
<td>Identify and explain various types of gas compressors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63208-2</td>
<td>Explain the function of compressors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63208-3</td>
<td>Explain the operation of compressors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63208-4</td>
<td>Identify auxiliary equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MODULE 63209-02 – INSTALL AND MAINTAIN BEARINGS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63209-1</td>
<td>Identify types of bearings and explain how they work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63209-2</td>
<td>Explain bearing designation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63209-3</td>
<td>Troubleshoot bearings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63209-4</td>
<td>Remove bearings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63209-5</td>
<td>Install bearings.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MODULE 63210-02 – INSTALL MECHANICAL SEALS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63210-1</td>
<td>Identify types of mechanical seals and explain how they work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63210-2</td>
<td>Explain mechanical seal classification.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63210-3</td>
<td>Remove a mechanical seal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63210-4</td>
<td>Troubleshoot a mechanical seal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63210-5</td>
<td>Install a mechanical seal.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MODULE 63211-02 – MAINTAIN AND REPAIR DRIVERS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>63211-1</td>
<td>Identify types of drivers.</td>
</tr>
<tr>
<td>63211-2</td>
<td>Inspect drivers.</td>
</tr>
<tr>
<td>63211-3</td>
<td>Replace bearings and seals.</td>
</tr>
<tr>
<td>63211-4</td>
<td>Perform preventive maintenance activities.</td>
</tr>
<tr>
<td>63211-5</td>
<td>Replace drivers.</td>
</tr>
</tbody>
</table>
## MODULE 63301-02 – INSTALLING ROTATING EQUIPMENT

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63301-1</td>
<td>Identify and describe the inspection requirements for an equipment pad.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63301-2</td>
<td>Describe, inspect, and prepare equipment prior to installation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63301-3</td>
<td>Describe the installation process for rotating equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63301-4</td>
<td>Describe the process to relieve pipe stress from rotating equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63302-02 – UNIT ALIGNMENT

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63302-1</td>
<td>Recognize and describe the four types of equipment misalignment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63302-2</td>
<td>Describe the major steps in performing each of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Conventional rim-and-face alignment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reverse dial indicator alignment using the equation method of alignment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reverse dial indicator alignment using the graphical chart method of alignment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Laser alignment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63303-02 – VIBRATION ANALYSIS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63303-1</td>
<td>Identify and explain the different kinds of basic vibration test equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MODULE 63304-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR PUMPS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63304-1</td>
<td>Describe the preventive maintenance requirements for a pump.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63304-2</td>
<td>Describe the inspection requirements for a pump.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63304-3</td>
<td>Demonstrate common troubleshooting techniques and identify common problems for a pump.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63304-4</td>
<td>Demonstrate the common steps to perform each of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare a pump for shutdown for maintenance or repair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Remove a pump from a pipeline system for maintenance or repair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Disassemble and reassemble a pump.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare a pump for startup and operation check after maintenance or repair has been completed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MODULE 63305-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR GAS COMPRESSORS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63305-1</td>
<td>Identify the typical lubrication system components of a gas compressor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63305-2</td>
<td>Describe the preventive maintenance requirements for a gas compressor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63305-3</td>
<td>Demonstrate common troubleshooting techniques for a gas compressor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63305-4</td>
<td>Demonstrate the common steps to perform each of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare a gas compressor for shutdown and repair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Isolate a gas compressor from a pipeline system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Repair a rotary and reciprocating gas compressor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare the gas compressor for start-up and operational check after maintenance or repair has been completed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MODULE 63306-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR PNEUMATIC VALVE ACTUATORS/OPERATORS AND SYSTEMS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63306-1</td>
<td>Perform preventive maintenance procedures on a pneumatic system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63306-2</td>
<td>Inspect pneumatic system components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63306-3</td>
<td>Troubleshoot pneumatic systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63306-4</td>
<td>Repair pneumatic system components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63306-5</td>
<td>Adjust pneumatic valve actuators/operators (CT 19.6).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63306-6</td>
<td>Repair pneumatic valve actuators/operators (CT 21.1).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63307-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR HYDRAULIC VALVE ACTUATORS/OPERATORS AND SYSTEMS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63307-1</td>
<td>Inspect hydraulic system equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63307-2</td>
<td>Troubleshoot hydraulic system components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63307-3</td>
<td>Repair hydraulic system components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63307-4</td>
<td>Adjust hydraulic valve actuators/operators (CT 19.7).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63307-5</td>
<td>Repair hydraulic valve actuators/operators (CT 21.4).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## MODULE 63308-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR ELECTRIC VALVE ACTUATORS/OPERATORS AND SYSTEMS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
<th>Date(s)</th>
<th>Recorded By</th>
</tr>
</thead>
<tbody>
<tr>
<td>63308-1</td>
<td>Perform preventative maintenance procedures on electric actuators/operators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63308-2</td>
<td>Inspect electric actuator/operator components.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63308-3</td>
<td>Troubleshoot problems with electric actuators/operators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63308-4</td>
<td>Adjust electric actuator/operator components (CT 19.5).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63308-5</td>
<td>Repair electric actuator/operator components (CT 21.5).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## MODULE 63309-02 – MAINTAIN, TROUBLESHOOT, AND REPAIR METERING DEVICES AND PROVERS

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>63309-1</td>
<td>Inspect, maintain, and repair metering devices.</td>
</tr>
<tr>
<td>63309-2</td>
<td>Inspect, maintain, and repair prover systems.</td>
</tr>
<tr>
<td>63309-3</td>
<td>Calibrate prover systems.</td>
</tr>
</tbody>
</table>