MODULE DESCRIPTION SUMMARIES

General	
Module 1.1	Introduction to Operator Qualification
Description	This module identifies the elements needed to develop an OQ program. It defines the regulatory requirements and emphasizes the importance of qualified personnel who perform covered tasks. Qualification indicates that an individual has been evaluated and can recognize and react to abnormal operating conditions—which are described in the module. Also included are examples of disasters that could have been prevented and OQ Protocols.
Module 1.2	Overview of the Gas Industry
Description	This module describes how using natural gas as a fuel has evolved throughout history and the development of the industry. The stages of natural gas from the wellhead to the user are described: exploration, production, transmission, storage, and distribution. The history of regulations and statistics of gas consumption and load fluctuations are covered.
Module 1.3	Regulatory Audits
Description	This module focuses on the development and implementation of an internal audit program and required follow-up to assist with regulatory compliance. It covers the characteristics of federal and state regulatory inspections and how to prepare for a pipeline safety inspection. Included are Quality Assurance/Quality Control programs and an understanding of the political environment that impacts regulation. Trainees learn how to respond to a Notice of Probable Violation.
Module 1.4	Distribution Integrity Management Program
Description	This module defines the regulatory requirements of DIMP, the areas of focus, and the essential elements of an integrity management plan that includes reporting requirements to the Department of Transportation. Excavation damage, excess flow valves, reporting requirements, and how to measure and monitor performance are among the topics covered.

MODULE DESCRIPTION SUMMARIES

Construction	
Module 2.1	Perform Construction Practices
Description	This module provides an overview of pipeline construction activities for transmission and distribution pipelines. An array of construction-related topics begins with survey and route selection and proceeds through site restoration. Regulatory requirements, including class locations are included in the training content.
Module 2.2	Excavate Near A Gas Pipeline
Description	This module focuses on performing safe excavation practices to protect company facilities and all other utilities from damage. It stresses the importance of safeguarding company workers and the general public as well as property. Topics also include locates, one-call centers, excavation guidelines, and tolerance zones.
Module 2.3	Perform Vacuum Excavation
Description	This module defines the soil extraction methods (air and hydro) used in damage prevention, including equipment, techniques, and safety requirements. The procedural guidelines are from a CGA best practice perspective. The module also features a brief video on equipotential safety.
Module 2.4	Perform Keyhole Technology
Description	This module describes the benefits and safety implications of keyhole technology in performing excavation. The six-step process is introduced, and various above-ground procedural activities using this technology are identified. The module features a brief keyhole technology video.
Module 2.5	Backfill an Excavation
Description	This module covers the need for proper backfill and compaction procedures in damage prevention. It includes the importance of protecting and supporting pipeline facilities as well as Dynamic Cone Penetrometer (DCP) testing for soil compaction verification.
Module 2.6	Install Shoring in an Excavation
Description	This module covers shoring protective system requirements for aluminum hydraulic shoring and timber shoring. Topics include soil classification, shoring equipment, and installation steps as well as the shoring removal process. The module features a brief video demonstrating the installation of aluminum vertical hydraulic shoring.
Module 2.7	Perform Horizontal Directional Drilling
Description	This module introduces the underground method of pipe installation, including cautionary considerations. A video and an animation are included to show the process and emphasize safety-related issues.

MODULE DESCRIPTION SUMMARIES

Corrosion Control	
Module 3.1	Measure Pipe to Soil Potential
Description	This module explains measurement of the voltage difference between the pipe and the surrounding soil—measurements used to determine whether cathodic protection levels are adequate or if a corrective action is required. Trainees learn to perform pipe-to-soil potential measurement accurately and to maintain test equipment and materials for proper operation.
Module 3.2	Install and Test Insulators
Description	This module describes the importance of electrical isolation and identifies the types of insulating devices used for isolation. Trainees learn how to install insulators and how to test the effectiveness of the isolation device for cathodic protection.
Module 3.3	Conduct a Soil Resistance Survey
Description	This module defines soil resistivity and identifies the various methods used for soil resistivity testing, including the procedure for the Wenner four pin test method. Other methods described are single rod and soil box.
Module 3.4	Attach a Wire Using a Thermite Weld
Description	This module explains the purpose of the thermite welding process and the equipment required. Trainees learn to perform the thermite welding procedure. Precautions and procedural steps are covered for typical installations (for example, anode wire connection), and the thermite procedure as performed in keyhole excavations is described.
Module 3.5	Test and Clear Shorts
Description	This module covers the test methods used to identify shorts on gas pipeline systems and describes casing/carrier piping, insulated isolation fittings, and the problems associated with meter shorts. It explains corrective actions needed to clear shorting issues to ensure adequate cathodic protection.
Module 3.6	Install an Anode and Test Station
Description	This module explains the purpose of galvanic anodes and identifies guidelines for anode and test station installation. Test leads for external corrosion control and pipe-to-soil measurements are described.
Module 3.7	Inspect and Maintain a Rectifier
Description	This module covers the operation of an impressed current system and identifies the components and controls of a rectifier for the inspection procedure. Trainees learn how to take rectifier voltage and current readings.
Module 3.8	Inspect for Atmospheric Corrosion
Description	This module shows trainees what to look for when conducting an atmospheric inspection. The factors and corrosion-related conditions that affect aboveground pipe facilities are identified and detailed.

MODULE DESCRIPTION SUMMARIES

Corrosion Control (Cont'd)	
Module 3.9	Conduct Interference Testing
Description	This module defines stray current interference and identifies its sources and types and the effect of stray current (static and dynamic types) on the pipeline system. The steps involved in conducting a stray current investigation, and the methods used to control/mitigate stray current interference are described.
Module 3.10	Inspect for Internal Corrosion
Description	This module covers the types and causes of internal corrosion in pipeline systems and describes inspection monitoring methods used to detect corrosion and mitigation methods. The module explains how smart pigging technology plays a significant role in pipe in-line inspection. An animation on launching and receiving demonstrates the process.
Module 3.11	Measure Internal and External Corrosion
Description	This module identifies various corrosion conditions found internally and externally in pipe. Measurement methods for assessment of coating thickness and corrosion defects are discussed, along with how smart pigs provide in-line inspection and measurement to assist with assessment and remediation.

MODULE DESCRIPTION SUMMARIES

Pipeline Installation	
Module 4.1	Inspect Condition of Pipe
Description	This module covers two areas of pipe inspection: Exposed pipe and new piping prior to installation. Assessing the condition of pipe is very important to the safe operation of the pipeline system. The task of inspecting buried pipe, once exposed, involves visual examination to determine corrosion and the evaluation of coating integrity. Prior to installation, it is important to identify and assess piping for defects and damage that could result in problems in the future.
Module 4.2	Install Steel Pipe
Description	This module describes the procedures for proper handling, inspection, and installation of steel pipe. Trainees learn field bending methods and the regulatory requirements for steel pipe installation. Specific topics include stringing pipe, trench padding, and backfilling.
Module 4.3	Install Polyethylene (PE) Pipe
Description	This module covers the requirements for storing, handling, inspecting, and installing polyethylene pipe, including installation methods for both direct burial and insertion of polyethylene pipe. Trainees learn the differences between these methods and the regulatory requirements for proper installation of PE pipe.
Module 4.4	Install Tracer Wire
Description	This module covers the installation and connection of tracer wire for the purpose of locating polyethylene pipe that is installed by direct burial. Continuity testing protocol is included to ensure the signal integrity of the tracer wire installation.

MODULE DESCRIPTION SUMMARIES

Pipe Joining	
Module 5.1	Join Polyethylene Pipe: Stab Fittings
Description	This module describes the procedure for joining polyethylene pipe with stab fittings, with examples by two manufacturers: Continental and Perfection. The module includes two videos to demonstrate the installation procedural steps. Trainees learn to perform the joining procedure based on the manufacturer's installation requirements.
Module 5.2	Join Pipe: Compression Couplings
Description	This module focuses on the procedure for joining polyethylene, steel, and cast iron pipe with various types of compression fittings. Joining includes bottom-out and nonbottom-out fittings. (Dresser and Perfection are the manufacturers highlighted.) Trainees learn the "why, how, and when" of using compression fittings.
Module 5.3	Join Polyethylene Pipe: Butt Heat Fusion — Manual Unit
Description	This module covers joining of polyethylene pipe by butt heat fusion using mechanical fusion units (#14 and #2LC manual fusion units). A video is included to assist in demonstrating the butt fusion procedure.
Module 5.4	Join Polyethylene Pipe: Butt Heat Fusion — Hydraulic Unit
Description	This module covers joining of polyethylene pipe by butt heat fusion using a #28 hydraulic fusion unit. It includes shift sequence and setting drag pressure—essential components of hydraulic unit operation. Brief animations help to demonstrate unit operation.
Module 5.5	Join Polyethylene Pipe: Sidewall Heat Fusion
Description	This module focuses on heat fusion, specific to installing tapping tees and branch saddle fittings on polyethylene pipe (saddle/sidewall procedure). Procedures involve the McElroy Sidewinder Unit. The module includes a brief animation clip on the process, and identifies visual acceptability of the fusion joints.
Module 5.6	Join Polyethylene Pipe: Electrofusion
Description	This module covers the joining of polyethylene pipe by the electrofusion process. Included are the bar code and self-regulating procedures, along with a brief section on visual acceptability. An animation clip and video assist in demonstrating the best practice procedure for the electrofusion bar code method.
Module 5.7	Join Polyethylene Pipe: Socket Heat Fusion
Description	This module focuses on the equipment and procedure required to perform socket heat fusion. Although the process is not used too often in the industry, some companies still maintain it as a joining method for polyethylene gas services. The module covers pipe preparation, fusion in an explosive atmosphere, heating, and the importance of accurate visual inspection.

MODULE DESCRIPTION SUMMARIES

Pipe Joining (Cont'd)	
Module 5.8	Inspect a Polyethylene Pipe Fusion Joint
Description	This module identifies the requirements for visually inspecting and evaluating polyethylene heat fusion and electrofusion joints. Trainees learn the difference between acceptable and unacceptable fusion though visual inspection with the aid of the module's pictorial examples of acceptable and unacceptable fusion joints. The module also covers thermal expansion and contraction.
Module 5.9	Weld Steel Pipe
Description	This module focuses on the safety and procedural-related issues that welders may encounter on a job. Various welding processes are discussed, but the procedures are not addressed in detail. Welding is on-the-job training and self-development that requires training, practice, and testing to ensure competence and compliance. Regulatory requirements, fire hazards, protective equipment, excavation safety, and types of defects are among the topics covered.

MODULE DESCRIPTION SUMMARIES

Pipeline Operations and Maintenance	
Module 6.1	Inspect, Operate, and Maintain a Valve
Description	This module describes the various types of valves, their operating characteristics, and explains the tasks required to safely complete a valve inspection. It also covers valve maintenance.
Module 6.2	Conduct a Pressure Test
Description	This module covers pressure testing requirements for new and replaced pipeline mains and services. Performing pressure testing correctly and safely is emphasized. Hydrostatic testing and documentation requirements are also covered.
Module 6.3	Abandon a Pipeline Facility
Description	This module explains how to safely and effectively deactivate and/or abandon main and service pipes in accordance with regulatory requirements—including the difference between service abandonment and service deactivation.
Module 6.4	Operate and Inspect a Pressure Recording Gauge
Description	This module describes the operating characteristics, chart installation, and basic calibration and maintenance of a pressure recording gauge. It also includes how to interpret pressure recording chart data in the field.
Module 6.5	Perform Non-Destructive Testing (NDT) of Welds
Description	This module identifies methods for non-destructive testing of pipe welds and describes various weld defects that may occur in pipe welds, illustrated through photos of x-ray film during a radiographic inspection.
Module 6.6	Repair Cast Iron Pipe Joints
Description	This module describes the various methods used to repair cast iron bell and spigot joints. Procedural methods include anaerobic sealant, encapsulants, and mechanical repair clamps. Trainees also learn to inspect the visual condition of the pipe/joint to determine whether to repair or replace the section.
Module 6.7	Apply External Pipe Coating
Description	This module describes the various types of coatings (factory, specialty, and general field applied) for metallic pipe and fittings to prevent corrosion as well as coating application procedures and requirements. Included are holiday detection for coating inspections and recognition of coating damage/failures. Trainees learn to perform installation procedures safely and correctly for a specific coating material type.
Module 6.8	Perform Indirect Inspection Techniques
Description	This module describes the various indirect inspection techniques, including close interval survey (CIS), direct current voltage gradient (DCVG), alternating current voltage gradient (ACVG), and pipeline current mapper (PCM). It explains the purpose and limitations of indirect inspection procedures.

MODULE DESCRIPTION SUMMARIES

Pipeline Operations and Maintenance (Cont'd)	
Module 6.9	Install Mechanical Clamps and Repair Sleeves
Description	This module describes repair methods used for temporary and permanent pipe repair with the use of mechanical fittings and repair sleeves. It includes the installation procedure for these repair methods.
Module 6.10	Tap a Pipeline Under Pressure
Description	This module identifies fittings and equipment involved with tapping gas lines using small and large tapping machines. It explains the procedures to install tapping equipment properly and in accordance with requirements and safety precautions for pressurized pipelines.
Module 6.11	Stop Flow In a Pipeline Under Pressure
Description	This module covers the equipment and procedures used to stop gas flow safely in pressurized pipelines, including the line stop process and low-pressure bag and stopper installation. Videos and animations enhance understanding by demonstrating concepts.
Module 6.12	Tie-in Service Pipe (From Main)
Description	This module explains the skills required to safely perform tie-in procedures when connecting service lines at the main (polyethylene, steel, and cast/ductile iron). It includes a description of the required fittings and emphasizes the importance of information and requirements related to tie-ins.
Module 6.13	Perform a Hot Tap on Polyethylene Pipe
Description	This module describes preliminary preparation (measurements) and the procedure for performing a hot tap through a branch saddle fitting on polyethylene pipe—an important process for extending a main or connecting a new service without the need for gas shutdown. It explains the requirement for heat fusion joining procedures.
Module 6.14	Squeeze off a Pipeline
Description	This module illustrates the mechanical and hydraulic squeeze tool procedures for polyethylene and steel pipe. Trainees learn to recognize and control static electricity on PE pipe; perform the squeeze-off procedure properly and safely on both PE and steel pipe. To address safety, the module includes an understanding of static electricity and the measures required to control detrimental effects to the workers and the public.
Module 6.15	Operate and Maintain an Odorizer
Description	This module covers the regulatory requirements for maintaining the correct concentration of odorant for natural gas odorization and includes odorant properties, safety measures required during handling, and the transfer process procedure.

MODULE DESCRIPTION SUMMARIES

Pipeline Operations and Maintenance (Cont'd)	
Module 6.16	Monitor Odorization By Periodic Sampling
Description	This module describes the regulatory requirements for proper natural gas odorization, odorant testing guidelines, and the procedures for conducting odor level tests by sampling with an air dilution instrument. Trainees learn how to perform a sniff test with an air dilution instrument.
Module 6.17	Conduct an Inside Leak Investigation
Description	This module focuses on the importance of safety in responding to an inside leak investigation—safety requirements, types of equipment, and the procedural steps in responding to a gas leak or odor complaint investigation. The "Smell of Danger" video emphasizes the importance of proper investigative protocol. The video shows an incident in which the gas company responded twice to odor complaints, only hours before a home exploded.
Module 6.18	Investigate and Classify an Outside Leak
Description	This module focuses on the procedures and actions involved in investigating outside natural gas leaks—including finding all gas leaks and assigning the proper classification grade to the leak for follow-up. It includes leak classification guidelines and a video ("Smell of Danger") that demonstrates the importance of proper response to a gas leak investigation. The video depicts the events preceding a gas explosion that resulted in a fatality and the destruction of a home.
Module 6.19	Conduct a Walking Leak Survey
Description	This module defines the types of surveys conducted, as required by regulatory code. It describes the operation and use of the flame ionization (FI) instrument and walking leak survey search patterns that ensure a thorough investigation for possible gas leaks. Also described are the factors that can affect the leak survey.
Module 6.20	Perform a Mobile Leak Survey
Description	This module describes the procedural steps in conducting a mobile gas leak survey with an optical methane detector (OMD), and with a flame ionization (FI) unit; including defining specific OMD and FI operational differences. It also covers regulatory requirements, aerial surveys, OMD display modes, and CGI gas scales.
Module 6.21	Locate Underground Pipelines
Description	This module promotes an understanding of locator best practices and responsibilities, including the One-Call Center, use of information sources, and marking requirements. It shows trainees how to perform locator responsibilities in accordance with applicable state code requirements and company operations and maintenance procedures. Locate equipment and conductive and inductive locate methodologies are explained.
Module 6.22	Patrol and Maintain a Pipeline Right-of-way
Description	This module covers the patrol and inspection requirements for buried and above-ground pipe facilities, including identification of any safety-related conditions along the pipeline right-of-way and ensuring that proper marking requirements are in place.

MODULE DESCRIPTION SUMMARIES

Pipeline Operations and Maintenance (Cont'd)	
Module 6.23	Conduct a Purge on a Pipeline
Description	This module describes purging requirements, including essential safety procedures and the importance of communication throughout the purge. It covers typical into-service and out-of-service procedures using nitrogen, air, and natural gas.
Module 6.24	Repair/Tie-in Polyethylene Pipe
Description	This module describe various tie-in methods used to connect polyethylene pipe and fittings and explains how to evaluate and determine the extent of polyethylene pipe/fitting damage and the proper method for repair or replacement. It covers heat fusion, electrofusion, mechanical fittings, and repair sleeves and the connection methods for final tie-in.
Module 6.25	Repair/Tie-in Steel Pipe
Description	This module describes various defects in steel pipe/welds and presents the proper way to inspect the visual condition of steel pipe to determine repair or replacement. Included are the procedures for controlling gas flow during a typical tie-in process and applications of fittings and equipment associated with the tie-in process.
Module 6.26	Repair/Tie-in Cast Iron Pipe
Description	This module explains how to inspect the visual condition of cast iron pipe to determine repair or replacement. It describes the tie-in procedures for cast iron to steel or polyethylene pipe connections and presents repair methods for cast iron pipe.

MODULE DESCRIPTION SUMMARIES

Gas Control and Pressure Regulation	
Module 7.1	Regulator Operation and Fundamentals
Description	This module describes the essential elements associated with a self-operated regulator and promotes a basic understanding of the operational characteristics of a gas service regulator. It includes the three essential elements—restricting, measuring, and loading—and the performance factors associated with a self-operated regulator, with an emphasis on system safety.
Module 7.2	Uprate the Pressure on a Pipeline System
Description	This module describes the process of uprating a segment of a pipeline to operate at a higher maximum allowable operating pressure (MAOP). Topics include uprating rationale, factors, regulations, and the importance of having an uprating plan and documentation.
Module 7.3	Operate and Test Overpressure Protection Equipment
Description	This module focuses on the various methods of overpressure protection, including relief valves, wide-open monitoring, working monitor, series regulation, and slam shut devices. Trainees learn the advantages and disadvantages of overprotection operation and how to perform operational tests on overprotection devices. The module also covers operational testing steps to check equipment integrity.
Module 7.4	Control/Monitor Gas Pressure and Flow
Description	This module defines the procedures and responsibilities of gas control room operations and management, including SCADA system operation and gas measurement equipment. Trainees learn about monitoring flow and pressure indicators; responding to alarms; ensuring adequate pressures throughout the distribution system; and remote opening/closing of valves. Regulatory requirements for control room operations are included.
Module 7.5	Inspect and Maintain a Regulator Station/Vault
Description	This module covers the basic steps for inspection and maintenance of regulator stations/vaults, including ventilation equipment, vault cover, and structural integrity. It includes an explanation of the regulator bypass procedure and two videos, “Internal Inspection of a Regulator,” and “Bypassing and Testing Monitor and Control Regulators.”

MODULE DESCRIPTION SUMMARIES

Customer Service Operations	
Module 8.1	Activate/Terminate a Gas Service
Description	This module covers the procedures for establishing gas service and discontinuing gas service for a customer—commonly referred to as performing a turn on or turn off procedure. Also covered are the preliminary inspection, purging, the importance of customer safety, and the prevention of unauthorized use of gas. A video is included that shows the steps involved with proper meter removal and lock-off.
Module 8.2	Install a Meter and Regulator
Description	This module covers the general requirements for location, protection considerations, and installation of meters and regulators. The code requirements for inside and outside installation are explained for the meter, meter sets, and regulator venting.
Module 8.3	Test Customer Piping
Description	This module focuses on the proper testing requirements for new and existing customer house piping. It includes identifying the testing methods performed for existing and new customer house piping and understanding what actions to take if a leak is found. The module includes a video that demonstrates the various procedural methods for testing customer piping for leaks.
Module 8.4	Investigate and Resolve a No Gas/Poor Supply Condition
Description	This module identifies the causes of a no gas/poor supply condition associated with a customer's premise. The content provides a practical investigation protocol needed to resolve a condition—including awareness, observation, asking the appropriate questions, and locating the specific cause of the no gas or poor supply problem.

MODULE DESCRIPTION SUMMARIES

Station Operation and Maintenance	
Module 9.1	Operate a Pipeline Compressor Station
Description	This module describes the operational startup and shutdown methods of a compressor station, including modes of operation, levels of safety protection, and regulatory and operational requirements. Specific topics include unit and pressurization permissives, set points, speed controls, and communication links.
Module 9.2	Maintain a Pipeline Compressor Station
Description	This module explains basic compressor station maintenance requirements and identifies the governing regulatory codes. Module topics include engine and compressor mechanical inspections; compressor gas path integrity check; emergency shutdown system; gas detection systems and alarms; and compressor repair.

MODULE DESCRIPTION SUMMARIES

Emergency Preparedness	
Module 10.1	Identify the Properties and Characteristics of Natural Gas
Description	This module focuses on the composition and physical properties of natural gas, including its flammable characteristics (lower and upper explosive limits), measurement, temperature, and effects of carbon monoxide. The module features a brief video of a gas explosion.
Module 10.2	Recognize and React to Abnormal Operating Conditions
Description	This module defines abnormal operating conditions and presents examples of the effect they have on work-related covered tasks. The trainee will learn how to recognize and react to various abnormal operating conditions they may encounter while performing field tasks.
Module 10.3	Communicate Public Awareness
Description	This module identifies the regulatory requirements for pipeline operator public awareness programs. Public education and damage prevention are vital to safety. API RP 1162 is reviewed, along with message delivery methods and communication components.
Module 10.4	Investigate and Report an Incident
Description	This module focuses on the regulatory and reporting requirements for incident investigation. Response protocol, explosion attributes, and application of a root analysis approach are included. The major causes of leaks are described. The module features a brief video of a gas explosion.
Module 10.5	Respond to an Emergency
Description	This module identifies the levels of emergency and what they represent. It describes the elements of an incident command system, determines the first responder actions when responding to an emergency, and includes a sample thought process (the SAFER protocol) that can be followed for safe and effective emergency response.