PIPELINE PERSONNEL QUALIFICATION

1 INTRODUCTION

1.1 Scope

This Standard establishes the requirements for developing and implementing an effective Pipeline Personnel Qualification Program (qualification program) utilizing a combination of technically based data, accepted industry practices, and consensus-based decisions. The Standard also offers guidance and examples of a variety of methods that may be used to meet selected requirements. The Standard specifies the requirements for identifying covered tasks that impact the safety or integrity of pipelines, for qualifying individuals to perform those tasks, and for managing the qualifications of pipeline personnel.

With the following exceptions, this Standard applies to tasks that impact the safety or integrity of pipelines:

(a) design or engineering tasks
(b) tasks that are primarily intended to ensure personnel safety

1.2 Purpose and Objectives

The purpose of this Standard is to establish requirements for the qualification and management of qualifications for pipeline personnel. The objective of this Standard is to minimize the impact on safety and integrity of the pipeline due to human error that may result from an individual's lack of knowledge, skills, or abilities during the performance of certain activities.

Individuals who perform covered tasks and those individuals responsible for ensuring a qualified workforce shall meet the applicable requirements of this Standard.

2 DEFINITIONS

ability: the mental and physical capacity to perform a task.
abnormal operating condition (AOC): a condition that may indicate a malfunction of a component or deviation from normal operations that may
(a) indicate a condition exceeding design limits or
(b) result in a hazard(s) to persons, property, or the environment
affected individual: an individual who performs a covered task(s) or who has qualification program implementation responsibility.
covered task: a task that can affect the safety or integrity of the pipeline.
DI analysis: an analysis that explores the difficulty (D), importance (I), and frequency of performance (F) of each task.
direct and observe: the process by which a qualified individual oversees the work activities of a nonqualified individual(s) and is able to take immediate corrective actions when necessary.
distinctive physical ability: clearly defined physical functioning required to perform color vision, visual acuity, hearing, smell.
entity: any individual or organization utilizing any portion of this Standard to develop or implement a qualification program or portion thereof, including pipeline operators, contractors, subcontractors, service providers, etc.
evaluation: a process established to determine an individual's ability to perform a covered task. The term can be used to refer to the process, instrument(s), or both. The process may entail one or more evaluation methods or one or more distinct evaluation instruments.
evaluation criteria: the specific knowledge and skill an individual must possess and demonstrate to be qualified to perform a covered task.
evaluation instrument: the materials that are used to conduct an evaluation, including but not limited to written, oral interview, and performance evaluation materials.
evaluator: an individual selected or credentialed to conduct performance or oral interview evaluations to determine if the individual is qualified.
knowledge: a body of information applied directly to the performance of a task.
mutual aid: pipeline operator personnel assistance (aid) provided to another pipeline operator in the performance of covered tasks.
on-the-job training: instruction at or near the work setting.
performance: demonstration of the knowledge, abilities (KSAs) required to complete a task.
performance monitoring: a means of confirming an individual performs covered tasks in accordance with applicable standards or procedures.
personnel: individuals who perform covered tasks.
personnel qualification: the results of the process under which individuals become qualified in accordance with this Standard.
1.3 Units of Measure

This Standard states values in both U.S. Customary (USC) and International System (SI, also known as metric) units. Either set of units may be used. Local customary units may also be used to demonstrate compliance with this Standard. Within the text, the SI units are shown in parentheses or in separate tables. The values stated in each system are not exact equivalents; therefore, each system of units should be used independently of the other. It is the responsibility of the organization performing calculations to ensure that a consistent system of units is used.

When necessary to convert from one system of units to another, conversion should be made by rounding the values to the number of significant digits of implied precision in the starting value.
The following new/revised definitions to be added to Section 2 DEFINITIONS of the ASME B31Q Pipeline Personnel Qualification

**mutual aid:** The timely and efficient sharing of capabilities, upon request, in the form of resources and services. pipeline operator personnel assistance (aid) provided to another pipeline operator, upon request, in the performance of covered tasks.

**emergency response provider:** governmental and non-governmental emergency, public safety, fire, law enforcement, emergency response, emergency medical service providers, and related authorities, agencies, agency volunteers, and personnel.

**first responder:** a person with specialized training acting on behalf of the pipeline or facility operator who is among the first to arrive and provide make safe procedures to mitigate further threats or risks, provide remediation, and deliver other assistance at the scene of an emergency, such as an accident, natural disaster, or terrorist attack.
perform a task and questions to answer. This one instrument is composed of both performance and oral interview evaluation methods.

8.1 Evaluation Process

8.1.1 Responsibilities. The evaluation process shall be documented in writing and as a minimum establish responsibilities for
(a) establishing and maintaining the evaluation process and evaluations
(b) selecting evaluators or proctors

8.1.1.1 Evaluator Selection. Evaluators shall be used when a judgment must be made about an individual’s performance, such as during a performance evaluation or oral interview [see paras. 8.3.2(b) and 8.3.3(b)]. Evaluators shall be selected based on technical knowledge and capability to ascertain an individual’s KSAs to perform the task and recognize and react to AOCs.

Paragraph 5.3.1 describes considerations for the selection of SMEs that may be applied to the selection of evaluators for technical knowledge. The evaluator’s ability to administer the evaluation in accordance with the requirements of the evaluation should be considered. Similarly, an evaluator should be able to make it possible for the individual to accurately demonstrate KSAs during the evaluation.

8.1.2 Procedures. The evaluation process shall include policies or procedures for
(a) prohibiting an individual from self-scoring of evaluations
(b) verifying the identity of the individual(s) being evaluated
(c) investigating and resolving suspected cheating
(d) concluding an evaluation early when unsafe or unsatisfactory actions are being demonstrated
(e) resolving evaluation failure, including
   (1) requirements for determining remedial action(s)
   (2) minimum allowable time between evaluation attempts to ensure additional attempts are not merely measuring short-term memory

8.2 Evaluation Material(s) and Criteria

Evaluation materials shall be purchased or developed and maintained consistent with identified evaluation materials. Evaluations shall be implemented in accordance with processes that include content validity, evaluation criteria, and appropriate evaluation methods as specified in paras. 8.2.1 through 8.2.3.

8.2.1 Content Validity. Evaluations shall be developed or reviewed to establish content validity. An evaluation is content valid when an SME or group of SMEs has verified (through development or review) that the content of the evaluation covers the criteria required for performance of the task(s). A content-valid evaluation addresses conditions that may either be caused by or encountered during performance of the task that adversely impact the safety or integrity of the pipeline. The conditions should be limited to those that could be reasonably anticipated to occur.

8.2.2 Evaluation Criteria. For each task, evaluation criteria shall be documented. Evaluation criteria represent the knowledge, skills, and distinctive physical abilities an individual must possess and demonstrate to be considered qualified to perform a covered task. Evaluation criteria for each covered task may be developed by SMEs or obtained from vendors, manufacturers, or applicable references and standards. For some evaluations, evaluation criteria and the evaluation instrument may be one and the same (e.g., performance checklist, list of oral interview questions). An example of evaluation criteria is in Nonmandatory Appendix D. Factors that may be considered when developing evaluation criteria include
(a) pipeline and personnel safety considerations
(b) AOCs and other conditions adversely affecting the safety or integrity of the pipeline that may be either caused by or encountered during task performance
(c) technical knowledge required to perform the task, for example
   (1) applicable policies or procedures
   (2) necessary sequence of performance
   (3) base technical knowledge to perform the task (e.g., corrosion characteristics, electrical laws, federal and state regulatory requirements, equipment selection, equipment maintenance, equipment calibration, equipment operation)
   (4) knowledge to account for variance required in task performance due to equipment differences
   (5) knowledge to account for variance required in task performance due to conditions or context differences (e.g., cold weather, dry climate, performed for a different purpose)
(d) technical skills required to perform the task (e.g., welding, hot tapping, operating heavy equipment, crane operation), for example
   (1) demonstration of basic skills
   (2) demonstration to account for substantial variance required in task performance due to equipment differences (e.g., different principles of equipment operation)
8.1.2 Procedures. The evaluation process shall include policies or procedures for

(a) requiring all oral interview and performance evaluations to be conducted 1:1; one evaluator to one individual being evaluated

(ba) prohibiting an individual from self-scoring of evaluations

(cb) verifying the identity of the individual(s) being evaluated

(de) investigating and resolving suspected cheating

(ed) concluding an evaluation early when unsafe or unsatisfactory actions are being demonstrated

(e) resolving evaluation failure, including

(1) requirements for determining remedial action(s)

(2) minimum allowable time between evaluation attempts to ensure additional attempts are not merely measuring short-term memory
*New para.*

### 8.1.3 Evaluation Security

To protect the integrity of evaluations, operators shall have provisions in place to:

(a) prevent the use of unauthorized reference materials

(b) clarify written test items as authorized

(c) configure testing hardware and software to prevent unauthorized access and copying of electronic test materials

(d) preventing unauthorized access to hard copy evaluation materials

Test proctor and evaluator roles and responsibilities related to each of these items shall be documented in accordance with the operator's program.
tasks associated with the qualification in accordance with applicable standards or procedures.

If subsequent qualification of a covered task requires evaluation of only the required knowledge, a written or oral interview evaluation in accordance with section 8 may be used.

The subsequent qualification process for covered tasks should verify that any suspension related to the qualification has been satisfactorily resolved.

9.2 Suspension and Revocation of Qualification

The qualification program shall include processes or procedures to suspend and reinstate or revoke a qualification(s).

9.2.1 Suspension. The suspension and reinstatement process or procedures shall include, when necessary, notifying the individual and those who are responsible to assign the performance of covered tasks to the individual of the suspension or reinstatement. Suspension of qualification should be considered for, but not limited to, such items as

(a) failure to complete requirements (such as training or subsequent qualification) that have become necessary due to a task change

(b) failure to complete or expiration of continuing education or training required for qualification in a task

(c) if there is reason to believe an individual's performance of a covered task may have affected pipeline safety or integrity adversely or cannot be ruled out as a contributing factor

(d) subsequent qualification is not completed by the due date

(e) discovery that an individual might have been improperly evaluated

(f) if there is reason to believe a change in an individual's distinctive physical abilities has resulted in failure to complete a covered task or

(g) whenever there is reasonable belief that an individual is no longer qualified to perform a covered task(s)

9.2.2 Reinstatement. The suspended qualification(s) may be reinstated when one of the following has been completed:

(a) It has been determined and documented that the individual was and still is qualified.

(b) The individual has completed action that resolves the concern that caused the suspension (e.g., training, coaching, evaluation, completion of change communication).

(c) The qualification has been reestablished in accordance with the requirements for initial qualification (para. 9.1.3.1).

If (a), (b), or (c) is not completed, the suspended qualification shall be revoked.

9.2.3 Revocation. The revocation process or procedures shall include, when necessary, notifying the individual and those who are responsible to assign the performance of covered tasks to the individual of the revocation. Conditions under which revocation of qualification should be considered include, but are not limited to, the following:

(a) A suspended qualification is not resolved with para. 9.2.2.

(b) It is determined that an individual is qualified.

9.2.4 Additional Qualification. If it is determined that an individual is to be qualified for a revoked qualification, they shall be qualified in accordance with the applicable requirements of para. 9.1.3.1.

9.3 Qualification Requirements for Emergency Response

The first priority is to dispatch qualified individuals to respond to the emergency condition. However, nonqualified individuals that are close to the scene may be called upon to respond to an emergency condition in order to immediately protect life, property, and the environment. When practical, reasonable guidance and direction should be provided to nonqualified individuals on the appropriate actions for stabilizing the emergency condition.

Individuals whose normal job responsibilities include emergency response shall be qualified for the covered tasks they perform in responding to, stabilizing, or terminating an emergency condition.

Tasks that are performed after the emergency condition has been stabilized or terminated shall be performed by qualified individuals or nonqualified individuals under the direction and observation of qualified persons consistent with the span-of-control requirements identified in this Standard.

Professional emergency responders, such as firefighters, do not need to be qualified to perform covered tasks. Professional emergency responders who perform covered tasks under contract on behalf of the operator shall be qualified.

Individuals that perform covered tasks through a mutual aid arrangement shall perform emergency response tasks consistent with the qualification requirements for emergency responders as described above.

9.4 Performance of Covered Tasks by Nonqualified Individuals

A nonqualified individual performing a covered task shall be directed and observed by an individual who is qualified. The qualified individual is accountable for the work and shall be physically present during task performance and able to take immediate action to prevent or mitigate an AOC.
REMOVE EXISTING VERBIAGE FROM SECTION 9.3

9.3 Qualification Requirements for Emergency Response

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Individuals whose normal job responsibilities include emergency response shall be qualified for the covered tasks they perform in responding to, stabilizing, or terminating an emergency condition.

Tasks that are performed after the emergency condition has been stabilized or terminated shall be performed by qualified individuals or nonqualified individuals under the direction and observation of qualified persons consistent with the span-of-control requirements identified in this Standard. Professional emergency responders, such as firefighters, do not need to be qualified to perform covered tasks.

Professional emergency responders who perform covered tasks under contract on behalf of the operator shall be qualified. Individuals that perform covered tasks through a mutual aid arrangement shall perform emergency response tasks consistent with the qualification requirements for emergency responders as described above.

Individuals that perform covered tasks through a mutual aid arrangement shall perform emergency response tasks consistent with the qualification requirements for emergency responders as described above.

REPLACE SECTION 9.3 WITH THE FOLLOWING PROPOSED REVISIONS/NEW LANGUAGE

9.3 Qualification Requirements for Emergency Response and Mutual Aid

Each operator maintains a workforce of employees and contractors with the technical expertise and qualifications necessary to safely sustain the maintenance and operations of its systems, and to promptly respond to certain incidents, accidents, and emergencies. In the event of a significant natural disaster, emergency, or event where the required actions necessitated by an event exceed the capacity of the operator and its available workforce to effectively respond, proactive mutual aid arrangements provide an opportunity for the timely and efficient sharing of capabilities, upon request, in the form of resources and services.

A constant priority for operators in all situations is public and worker safety and this priority does not change during an emergency response or the post-emergency recovery from such an emergency event. Defining the necessary procedures and qualifications for emergencies as well as mutual aid events allows all parties to prioritize safety during the response and recovery.
9.3.1 Emergency Response Qualifications

Emergencies are unplanned events that require a response from the operator beyond standard operations. The first priority in response to an emergency is the protection of persons, property, and environment, which may include the dispatch of Emergency Responders, First Responders and qualified individuals to respond to and eliminate the emergency condition. In addition, nonqualified individuals who are close to the scene may be called upon to respond to an emergency condition in order to immediately protect life, property, and the environment. During the emergency, the qualification and guidance requirements for each of these groups differs:

- An operator’s emergency response plan should identify and address how it will mitigate risks presented by non-qualified personnel, such as independent or local professional Emergency Responders, who may perform or attempt to perform unauthorized covered tasks on an operator’s pipeline or pipeline facility in the normal course of their professional responsibilities.
- Professional Emergency Response Providers who perform covered tasks under contract on behalf of the operator shall be qualified.
- Operator’s First Responders and individual workers whose normal job responsibilities include emergency response shall be qualified for the covered tasks they perform in responding to, stabilizing, or resolving an emergency condition.

Tasks that are performed after the emergency condition has been stabilized or resolved shall be performed by qualified individuals or nonqualified individuals under the direction and observation of qualified persons consistent with the span-of-control requirements identified in this Standard.

9.3.2. Mutual Aid

Significant emergency conditions and events requiring mutual aid may present themselves in one of two ways; advanced notice events and no-notice events, both of which may disrupt product delivery and operations beyond the operator’s response capabilities. Advanced notice events may be anticipated and generally include severe weather events (e.g., hurricanes, wildfires, and ice storms). No-notice events occur with little or no warning and may include natural disasters (e.g., tornados, earthquakes), physical or cyber-attacks, or significant incidents and accidents. They may also include significant incidents on planned operational activities that result in the need for immediate action to ensure the ongoing safe and continuous delivery of products and services. Dependent upon the required response or the extent of damage to an operator’s system, an immediate local response may be managed using qualified or nonqualified personnel as outlined in 9.3 and 9.3.1., and without the need for mutual aid support.

During the receipt of mutual aid resources, it is the responsibility of the receiving entity to ensure that personnel meet the established requirements for safety, procedural knowledge, and technical expertise. In order to establish an effective mutual aid program, the operator should develop or adopt a mutual aid agreement with entities who would likely be called upon during a significant emergency. State, regional and national trade associations, and governmental entities, often provide a baseline for mutual aid services that may assist the operator in the development of a mutual aid program and agreements.

In order to verify mutual aid personnel are qualified to perform covered tasks on behalf of the operator, the operator shall:

(a) Identify regulatory requirements and the operator’s policies, procedures, and standards that must be adhered to by mutual aid personnel, and validate necessary credentialing or qualifications are held by mutual aid personnel.
(b) Identify the covered tasks that may be performed by mutual aid personnel, and review task qualifications to ensure alignment of mutual aid personnel with the tasks they may be asked to
perform on behalf of the operator. Nonmandatory Appendix H Implementation of ASME B31Q, provides guidance to compare the organization's program and this Standard.

(c) Identify the acceptable evaluation methods for each covered task, and review corresponding qualified evaluations to ensure that mutual aid personnel meet the operator’s program requirements for qualification in the performance of a covered task, including the ability to recognize and react to AOCs.

(d) Issue written communication to the mutual aid entity which, if any, personnel are accepted to perform covered tasks on behalf of the operator, and the tasks they may perform.

(e) Retain credentialing and qualification records for all mutual aid personnel who perform covered tasks on behalf of the operator, and as required by federal and state regulatory requirements and the operator’s policies and procedures.

This Standard supports the effective application of mutual aid programs by establishing common terminology and a set of requirements by which an operator receiving mutual aid support may verify the qualifications of support personnel that may perform covered tasks during an emergency event. Section 10 of this Standard provides further guidance on the establishment of portability, where more than one entity mutually agrees to accept a standard of qualification as acceptable for the performance of a covered task. This common basis and verification process for portable evaluations may be applied in both normal operations and for mutual aid that may be provided during emergency conditions.
10.1.6 **Section 9, Qualifications.** Qualification requirements for selected covered tasks may be specified in an American National Standard (ANSI standard), e.g., API 653, API 1104. If an entity chooses to qualify individuals under an American National Standard

(a) the initial and subsequent qualification (certification) requirements of that standard shall govern.

(b) requirements, other than initial and subsequent qualification (certification) requirements, of this Standard that are not included in that code or standard, such as recognition of and reaction to AOCs, shall also be met.

10.1.7 **Section 12, Communicating the Qualification Program and Managing Program Changes.** The provider shall develop and implement processes for communication of changes consistent with the requirements of section 12, including

(a) communicating changes in provider processes to those responsible for their implementation

(b) communicating changes affecting an individual’s evaluations to the individual and others as required

(c) submitting changes to the provider’s processes for review by the acceptors or an organization authorized by the acceptors

10.1.8 **Section 13, Documentation Requirements.** The provider shall develop and implement processes for

(a) generating and maintaining documentation as it applies to each provider’s processes and the individual’s evaluation records. The specific requirements are in Nonmandatory Appendix I, section I-1 as a guide for developing a process.

(b) providing a copy of an individual’s evaluation records to the individual or other organization authorized by the individual within 14 calendar days of receipt of a written request from the individual.

11 PROGRAM EFFECTIVENESS

11.1 General

The qualification program shall include a process to appraise its effectiveness. An effective program minimizes human errors caused by an individual’s lack of knowledge, skills, and abilities to perform tasks in a manner that maintains the safety and integrity of the pipeline. This process shall be conducted periodically at an interval of 3 yr not to exceed 39 months.

The process shall comprise the following three parts:

(a) Determine whether the program is being implemented as documented.

(b) Appraise whether it is effective as implemented.

(c) Include provisions to update the qualification program based on the results from the implementation and effectiveness appraisals.

(1) **Program Implementation.** The operator shall develop a process to evaluate if the program is being implemented and executed as documented or use

(2) **Program Measures.** The operator shall use the following measure to appraise the effectiveness of the program. This measure and any others used shall be periodically reviewed.

Number of individuals whose performance of a covered task(s) adversely affected the safety or integrity of the pipeline due to any of the following deficiencies:

(-a) evaluation was not conducted properly

(-b) knowledge, skill, and ability (KSA) for the specific covered task were not adequately determined

(-c) training was not adequate for the specific covered task

(-d) individual forgot needed KSA

(-e) change to the covered task or the KSA

(-f) program failed to determine the inability of the individual to perform the covered task correctly

(-g) individual failed to recognize an abnormal operating condition (AOC)

(-h) individual failed to take the appropriate action following the recognition of an AOC

(-i) individual was not qualified or was not being directed and observed

The initial numbers establish the baseline for the operator’s program performance in the individual categories, addressing specific areas in which a program may or may not need improvement, depending on subsequent program appraisals.

The operator may select other measures specifically related to incidents or accidents caused by human error as determined by industry studies or individual operator data.

Additional examples of program effectiveness measures may be found in Nonmandatory Appendix I, section I-2.

(3) **Program Updates.** The operator shall incorporate changes into the program to address any deficiencies found as a result of the program implementation appraisals or the program measures review. This update process shall comply with the management of change process utilized for the OQ program.

12 COMMUNICATING THE QUALIFICATION PROGRAM AND MANAGING PROGRAM CHANGES

The qualification program shall incorporate processes or procedures by which its content, requirements, and implementation responsibilities are communicated in accordance with para. 12.1. Changes in the program and its implementing processes and procedures shall be communicated in accordance with the requirements of para. 12.2. Communication methods may include the following:

(a) written notification
Record 19-255

Program Effectiveness Periodicity

11 PROGRAM EFFECTIVENESS

11.1 General

The qualification program shall include a process to appraise its effectiveness. An effective program minimizes human errors caused by an individual’s lack of knowledge, skills, and abilities to perform tasks in a manner that maintains the safety and integrity of the pipeline. This assessment process shall be conducted as often as necessary to ensure program effectiveness, yet no less frequently than periodically at an interval of every 3 yrs not to exceed 39 months.
Task 0561 Perform Pressure Test Using a Nonliquid Medium — MAOP Less Than 100 psi

(a) Task Guidance. This task includes achieving test pressure and durations and record keeping.
(1) Select task procedure(s) and appropriate equipment.
(2) Prepare for test.
(3) Review the pressure test design.
   (-a) duration of test
   (-b) maximum/minimum test pressure
   (-c) bleed-off/repressurize pressures
   (-d) test medium
(4) Calibrate/certify/test equipment used to perform and monitor the test.
   (-a) leak detection equipment
   (-b) pressure gages
   (-c) pressure-inducing equipment
(5) Perform leak test.
   (-a) Install accurate test instruments at points that will provide required test data.
   (-b) Install pressure-inducing equipment, and make connections to introduce the test medium into the facility.
   (-c) Ensure isolation of the segment, component, or unit.
   (-d) Introduce the test medium into the facility.
   (-e) Increase pressure, making adjustments to compensate for temperature or other effects.
   (-f) Maintain pressure and duration as specified.
   (-g) Ensure inspection of pipe segment, fitting, component, or unit for leaks. (Utilize leak detection equipment, as appropriate.)
   (-h) Collect/record test data, and log during test execution.
   (-i) Depressurize the segment, component, or unit.
   (-j) Remove isolation devices and test equipment.
(6) Make notifications, as required.
(7) Document, as required.
(b) Potential applicability: G, D
(c) Difficulty: 1
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
(1) Initial: P & W/O
(2) Sub: W/O
(g) Span of control: 1:2

Task 0571 Perform Pressure Test Using a Nonliquid Medium — MAOP Greater Than or Equal to 100 psi

(a) Task Guidance. This task includes achieving test pressure and durations and record keeping.
(1) Select task procedure(s) and appropriate equipment.
(2) Prepare for test.
   (-a) Determine the type of pressure test.
      (-1) strength test
      (-2) leak test
   (-b) Determine appropriate test pressure and duration.
   (-c) Install pressure-inducing and test-monitoring equipment.
   (-d) Isolate segment to be tested.
(3) Perform test. (Include data analysis, and check for leaks.)
   (-a) Pressurize segment at a controlled rate.
   (-b) Search for leaks by appropriate methods.
   (-c) Maintain test pressure for established holding period.
   (-d) Record test data.
   (-e) Depressurize segment.
   (-f) Remove isolation and test equipment.
(4) Document, as required.
(b) Potential applicability: L, G, D
(c) Difficulty: 4
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
(1) Initial: P & W/O
(2) Sub: W/O
(g) Span of control: 1:2

Task 0581 Perform Pressure Test Using a Liquid Medium

(a) Task Guidance. This task includes achieving test pressure and durations and record keeping.
(1) Select task procedure(s) and appropriate equipment.
(2) Prepare for test.
(3) Review the pressure test design.
   (-a) duration of test
   (-b) maximum/minimum test pressure
   (-c) bleed-off/repressurize pressures
   (-d) liquid test medium
(4) Calibrate/certify/test equipment used to perform and monitor the test.
   (-a) leak detection equipment
   (-b) pressure gages
   (-c) pressure-inducing equipment
(5) Perform leak test.
   (-a) Install accurate test instruments at points that will provide required test data.
Task 0561 Perform Pressure Test Using a Nonliquid Medium — MAOP Less Than 100 psi (700 kPa)

Task 0571 Perform Pressure Test Using a Nonliquid Medium — MAOP Greater Than or Equal to 100 psi (700 kPa)
(d) Importance: 4
(e) Interval: Once each calendar year at intervals not exceeding 15 months
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: P & W/O
(g) Span of control: 1:0

18 Task 0681 Join Plastic Pipe Using Stab Fittings

(a) Task Guidance. This task includes the joining and inspection of plastic pipe with stab fittings and inspection of completed joints.
   (1) Select task procedures and appropriate equipment.
   (2) Verify correct selection of stab fitting.
      (-a) pipe materials
      (-b) pipe diameter
      (-c) pipe wall thickness
   (3) Perform preparation of pipe and fitting.
      (-a) Verify pipe conditions (gouges not to exceed 10% of nominal wall thickness).
      (-b) Pipe ends cut square.
      (-c) Pipe and fittings should be clean and dry, with ends chamfered and free of burrs and other defects.
      (-d) Verify fitting condition.
      (-e) Prepare pipe for installation by marking stab depth.
   (4) Perform actions to install fitting.
      (-a) Install fitting to pipe, ensuring proper stab depth is achieved.
      (-b) Verify fitting is locked into place by gripper ring.
      (-c) Verify proper stab depth has been achieved.
   (5) Document, as required.

(b) Potential applicability: G, D
(c) Difficulty: 3
(d) Importance: 4
(e) Interval: Once each calendar year at intervals not exceeding 15 months
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: P & W/O
(g) Span of control: 1:0

18 Task 0691 Join Pipe Using Nonbottom-Out Compression Couplings

(a) Task Guidance. This task includes the joining of pipe 2 in. and less, with nonbottom-out compression couplings and inspection of completed joints. A nonbottom-out compression coupling is one that requires tightening to a specified torque or number of turns.
   (1) Select task procedure(s) and appropriate equipment.
   (2) Verify components and tools are adequate for intended service.
   (3) Prepare pipe and fitting.
      (-a) Remove burrs and square pipe ends.
      (-b) Clean and inspect sealing surfaces and fittings/couplings, and remove any debris or obstructions.
      (-c) Measure and mark stab depth.
   (4) Install coupling by performing the following, as applicable:
      (-a) proper alignment
      (-b) proper stab depth met
      (-c) tighten to required torque or number of turns
   (5) Visually inspect completed joint, as applicable.
      (-a) Inspect with a mirror.
      (-b) Verify proper alignment of pipe and fitting/coupling.
      (-c) Check stab depth marks for any movement during installation.
   (6) Document, as required.

(b) Potential applicability: G, D
(c) Difficulty: 3
(d) Importance: 4
(e) Interval: Once each calendar year at intervals not exceeding 15 months
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: P & W/O
(g) Span of control: 1:0

18 Task 0701 Join Pipe Using Bottom-Out Compression Couplings

(a) Task Guidance. This task includes the joining of pipe 2 in. and less, with bottom-out compression coupling and inspection of completed joints. A bottom-out compression coupling is one that is designed to prevent overtightening by contact (bottoming out) of the nut with a square shoulder or mating surface.
   (1) Select task procedure(s) and appropriate equipment.
   (2) Verify components and tools are adequate for intended service.
   (3) Prepare pipe and fitting.
      (-a) Remove burrs and square pipe ends.
      (-b) Clean and inspect sealing surfaces and fittings/couplings, and remove any debris or obstructions.
      (-c) Measure and mark stab depth.
   (4) Install coupling by performing the following, as applicable:
Task 0691 Join Pipe Using Nonbottom-Out Compression Couplings

(a) Task Guidance. This task includes the joining of pipe 2 in. (50 mm) and less, with nonbottom-out compression couplings and inspection of completed joints. A nonbottom-out compression coupling is one that requires tightening to a specified torque or number of turns.

Task 0701 Join Pipe Using Bottom-Out Compression Couplings

(a) Task Guidance. This task includes the joining of pipe 2 in. (50 mm) and less, with bottom-out compression coupling and inspection of completed joints. A bottom-out compression coupling is one that is designed to prevent overtightening by contact (bottoming out) of the nut with a square shoulder or mating surface.
(a) Task Guidance. This task includes the joining of pipe greater than 2 in., with compression couplings and inspection of completed joints.

(1) Select task procedure(s) and appropriate equipment.

(2) Perform selection of compression coupling based on the following:
   - (a) pipe materials
   - (b) pipe diameter
   - (c) pipe wall thickness
   - (d) type of joint

(3) Perform preparation of pipe and coupling.
   - (a) Verify pipe conditions.
   - (b) Verify pipe ends are cut square.
   - (c) Keep pipe and coupling clean and dry.
   - (d) Verify coupling condition.
   - (e) Prepare pipe for installation by marking stab depth.

(4) Perform actions to install coupling.
   - (a) Install stiffener if fitting is being installed in conjunction with plastic pipe and is not attached to coupling.
   - (b) Correctly align pipe and coupling.
   - (c) Install coupling to pipe, ensuring proper stab depth is achieved.
   - (d) Tighten and torque as specified.

(5) Inspect installed coupling.
   - (a) maintenance of stab depth
   - (b) pipe alignment

(6) Document, as required.

(b) Potential applicability: G, D
(c) Difficulty: 3
(d) Importance: 4
(e) Interval: Once each calendar year at intervals not exceeding 15 months

(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: P & W/O
   (g) Span of control: 1:0
Task 0711 Join Pipe Using Compression Couplings

(a) Task Guidance. This task includes the joining of pipe greater than 2 in. (50 mm), with compression couplings and inspection of completed joints.
(1) Select task procedure(s) and appropriate equipment.

(2) Identify service requirements for tubing installation.
   - (a) vertical or horizontal installation
   - (b) temperature(s)
   - (c) number of tubing runs
   - (d) vibration conditions
   - (e) direction changes

(3) Verify tubing and fittings are adequate for the intended service.
   - (a) wall thickness
   - (b) outer diameter
   - (c) length
   - (d) pressure rating(s)
   - (e) type
   - (f) fitting(s)
   - (g) material

(4) Install tubing and fittings.
   - (a) Cut tubing.
     - (1) Visually inspect and clean.
     - (2) Bend with bender.
     - (3) Do not hand-bend.
     - (4) Smooth and buckle free.
     - (5) Appropriate number of bends and radius of bends for application.
   - (c) Join tubing and fittings as required by the component manufacturer or in accordance with operator installation procedures.
     - (d) Utilize thread compound, as applicable, on tube fitting threads as required by the component manufacturer or in accordance with operator installation procedures.
     - (e) Protect and secure.
     - (f) Provide adequate support.
     - (g) Cushion and/or allow for flexibility.

(5) Document, as required.

(6) Potential applicability: L, G, D
(7) Difficulty: 3
(8) Importance: 4
(9) Interval: 3 yr
(10) Evaluation method
(11) Initial: P & W/O
(12) Sub: W/O
(13) Span of control: 1:2

Task 0831 Install and Maintain Mechanical Leak Clamps on Cast Iron Caulked Bell and Spigot Joints

(a) Task Guidance. This task includes the installation and maintenance of mechanical leak clamps on caulked bell and spigot joints.

(1) Select task procedure(s) and appropriate equipment.

(2) Perform clamping equipment check.
   - (a) Select proper sized mechanical clamp that is free of defects.
   - (b) Select proper installation tools.

(3) Prepare pipe surface.
   - (a) Clean pipe bell face, hub, and spigot.
   - (b) Ensure pipe and pipe fittings are free from dirt, rust, scale, and corrosion in area of clamp installation.
   - (c) Ensure a flush bell face.

(4) Install mechanical leak clamp.
   - (a) Install all of the following in accordance with manufacturer’s instructions.
     - (b) Install hub flange pieces.
     - (c) Install rubber gasket.
     - (d) Ensure that beveled side of gasket is facing away from bell face.
     - (e) Install spigot flange pieces.
     - (f) Join hub, gasket, and spigot pieces with applicable bolts, ensuring nuts are located on spigot side of assembled clamp.
     - (g) Wrench tighten uniformly and progressively, and torque to manufacturer’s specifications.
     - (h) Check for leakage.
     - (i) Recheck bolts for proper torque.

(5) Visually inspect.
   - (a) Inspect completed clamp for uniformity, ensuring equal spacing between clamp and bell face.

(6) Document, as required.

(7) Potential applicability: D
(8) Difficulty: 3
(9) Importance: 4
(10) Interval: 3 yr
(11) Evaluation method
(12) Initial: P & W/O
(13) Sub: W/O
(14) Span of control: 1:2

Task 0841 Seal Cast Iron Joints Using Encapsulation

(a) Task Guidance. This task includes the sealing of cast iron joints by encapsulation and inspection of encapsulation.

(1) Select task procedure(s) and appropriate equipment.

(2) Prepare pipe surface.
   - (a) Ensure sufficient excavation around cast iron bell and spigot.
   - (b) Grit blast bell face, hub, and a minimum of 4 in. of spigot to clean bare metal.
   - (c) Ensure underside of bell joint is cleaned to bare metal.
   - (d) If soap is used for cleaning, reblast.
   - (e) Prime pipe with applicable primer, ensuring complete coverage of bare metal.

(3) Install encapsulation kit in accordance with manufacturer’s instructions.
   - (a) Install mold over bell and spigot.
   - (b) Potential applicability: D
   - (c) Difficulty: 3
   - (d) Importance: 4
   - (e) Interval: 3 yr
   - (f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: W/O
   (3) Span of control: 1:2

Record 18-2535 Update highlighted text per insert on the following page
Task 0841 Seal Cast Iron Joints Using Encapsulation

(a) Task Guidance. This task includes the sealing of cast iron joints by encapsulation and inspection of encapsulation.

(1) Select task procedure(s) and appropriate equipment.
(2) Prepare pipe surface.
   (-a) Ensure sufficient excavation around cast iron bell and spigot.
   (-b) Grit blast bell face, hub, and a minimum of 4 in. *(100 mm)* of spigot to clean bare metal.
   (-c) Ensure underside of bell joint is cleaned to bare metal.
   (-d) If soap is used for cleaning, reblast.
   (-e) Prime pipe with applicable primer, ensuring complete coverage of bare metal.
Task 1051 Fit-Up Weld-Type Repair Sleeves

(a) Task Guidance. This task includes the preparation and fit-up of weld-type repair sleeves. This task does not include the items addressed in Task 0801, Perform Welding.

(1) Select task procedure(s) and appropriate equipment.
(2) Select and prepare sleeve.
   (-a) Select sleeve material, design, and size.
(3) Prepare pipe for fit-up of sleeve.
   (-a) Ensure adequate surface preparation for type of sleeve.
   (-b) Prepare bevels on sleeve.
(4) Fit up sleeve.
   (-a) Take precautions when fitting each type of sleeve.
   (-b) Install filler material, if applicable.
   (-c) Fit up sleeve.
   (-d) Support pipe, as necessary.
(5) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 3
(d) Importance: 3
(e) Interval: 3 yr
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: W/O
(g) Span of control: 1:2

Task 1061 Install Composite Sleeves

(a) Task Guidance. This task includes the preparation and installation of composite sleeves.

(1) Select task procedure(s) and appropriate equipment.
(2) Prepare pipe surface, as specified by the manufacturer, so that
   (-a) the pipe surface is clean and free of rust
   (-b) the surface has the proper profile
(3) Ensure correct working clearance around pipe.
(4) Install composite wrap, as specified by the manufacturer, to ensure
   (-a) sufficient surface adhesiveness
   (-b) correct overlap, if applicable
   (-c) no sagging or wrinkles are present
   (-d) no dry spots are present
   (-e) composite material is thoroughly coated, as applicable
   (-f) correct tightness, as applicable
(5) Visually inspect, as specified by the manufacturer, for
   (-a) curing
   (-b) dry spots
(6) Document, as required.
(b) Potential applicability: L, G, D
(c) Difficulty: 3
(d) Importance: 3
(e) Interval: 3 yr
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: W/O or Mfr’s Rec
(g) Span of control: 1:2 or Mfr’s Rec

Task 1071 Repair Steel Pipe by Grinding

(a) Task Guidance. This task includes the verification of minimum wall thickness requirements and removal of defects by grinding.

(1) Select task procedure(s) and appropriate equipment.
(2) Determine wall thickness is acceptable.
(3) Initiate removal of defect by grinding.
   (-a) Take precautions when grinding, with consideration of the operating pressure of pipeline.
   (-b) Perform grinding operation.
   (-c) Confirm defect is removed and minimum wall thickness remains.
(4) Document, as required.
(b) Potential applicability: L, G, D
(c) Difficulty: 3
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
   (1) Initial: P & W/O
   (2) Sub: W/O
(g) Span of control: 1:1

Task 1081 Tap a Pipeline (Tap Diameter 2 in. and Less)

(a) Task Guidance. This task includes performing tapping, including the installation of the isolation valve and tapping equipment and removal of isolation valve, as specified. This task does not include installing fittings as addressed in
• Task 0771, Join Plastic Pipe Using Sidewall Heat Fusion
• Task 0781, Join Plastic Pipe Using Electrofusion
• Task 0801, Perform Welding
• Task 1041, Install Bolted Mechanical Clamps and Sleeves

(1) Select task procedure(s) and appropriate equipment.
(2) Verify equipment matches line conditions and install the following:
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Task 1081 Tap a Pipeline (Tap Diameter 2 in. [50 mm], and Less)
Task 1091 Tap a Pipeline (Tap Diameter Greater Than 2 in.)

(a) Task Guidance. This task includes performing tapping, including the installation of the isolation valve and tapping equipment and removal of isolation valve, as specified. This task does not include installing fittings as addressed in

- Task 0771, Join Plastic Pipe Using Sidewall Heat Fusion
- Task 0781, Join Plastic Pipe Using Electrofusion
- Task 0801, Perform Welding
- Task 1041, Install Bolted Mechanical Clamps and Sleeves

(1) Select task procedure(s) and appropriate equipment.
(2) Verify equipment matches line conditions and install the following:
(-a) gaskets or thread sealing compound
(-b) valve
(-c) tapping machine
(-d) cutter and pilot combination

(3) Prepare to perform tap.
(-a) Inspect fittings.
(-b) Verify alignment on valve to fitting.
(-c) Verify equipment alignment.
(-d) Take proper measurements, and record for reference.

(4) Functional leak test
(-a) Verify equipment valve and fitting will hold pipeline pressure.
(-b) Close valve to ensure lower section of valve will hold pipeline pressure. (Purge pressure between valve and machine.)
(-c) Perform leak test.

(5) Make tap.
(-a) Verify valve is open.
(-b) Verify pilot drill position.
(-c) Get proper approval to start tap.
(-d) Perform tap.

(6) Recover equipment.
(-a) Retract tapping machine to "0."
(-b) Close valve.
(-c) Vent product safely.
(-d) Check for leaks.

(7) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 4
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
(1) Initial: P & W/O
(2) Sub: P & W/O
(g) Span of control: 1:2
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Task 1091 Tap a Pipeline (Tap Diameter Greater Than 2 in. [50 mm])
(2) Sub: W/O
(g) Span of control: 1:1

Task 1341 Provide/Ensure Adequate Pipeline Support During Operator-Initiated Excavation Activities

(a) Task Guidance. This task includes the actions necessary to provide or ensure adequate pipeline support during excavation activities (e.g., installing bridging, bracing).

(1) Select task procedure(s) and appropriate equipment.
(2) Obtain pipeline support factors and select supports.
   - (a) pipe composition (plastic, cast iron, steel, etc.)
   - (b) length of exposed pipe
   - (c) weight of exposed pipe
   - (d) depth of trench underneath pipe
   - (e) length of time pipe will be exposed
   - (f) type of existing pipe joining
   - (g) type of supports
   - (h) quantity of supports

(3) Identify locations to install supports.
   - (a) distance from girth welds
   - (b) distance from other pipeline components
   - (c) horizontal distance between supports

(4) Install bridging, bracing, or other specified support.

(5) Visually inspect pipe and supports for the following:
   - (a) coating damage
   - (b) sagging
   - (c) slippage

(6) Take appropriate actions if any adverse support issues are observed.
   - (a) Add additional supports.
   - (b) Add different type of supports.
   - (c) Issue notifications, as appropriate.

(b) Potential applicability: L, G, D
(c) Difficulty: 4
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
   (1) Initial: W/O
   (2) Sub: W/O
(g) Span of control: 1:1

Task 1351 Inspect and Maintain Vault

(a) Task Guidance. This task applies to the inspection and maintenance of vaults housing pressure-regulating and pressure-limiting equipment, having a volumetric internal content of 200 ft³ or more. This task also includes inspection of ventilating equipment, vault cover, sufficient drainage, and structural integrity. This task does not include investigating to identify product leakage as addressed in
   - Task 1231, Perform Inside Gas Leak Investigation
   - Task 1241, Perform Outside Gas Leak Investigation
   - Task 1251, Perform Hazardous Liquid Leak Investigation

(1) Select task procedure(s) and appropriate equipment.
(2) Verify materials and procedures, as applicable.
(3) Obtain entry permit, as applicable.
(4) Inspect vault and ventilating equipment, as appropriate.
   - (a) Ensure cover is tight-fitting, without openings, except to provide a means for venting.
   - (b) Check locking devices.
   - (c) Check vault and overall structure, including walls, ceiling, ladder, rails, and other components.
   - (d) Check for drainage.
   - (e) Ensure vents are free of debris and operating as designed.
   - (f) Perform maintenance, as needed.

(5) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 2
(d) Importance: 4
(e) Interval: 3 yr
(f) Evaluation method
   (1) Initial: W/O
   (2) Sub: W/O
(g) Span of control: 1:1

Task 1361 Inspect, Test, and Maintain Station Emergency Shutdown System

(a) Task Guidance. This task includes verification that the station emergency shutdown system is functioning within specified parameters, after installation and prior to or during placing in service. This task also includes the repair or replacement, alteration, or refurbishment of the station emergency shutdown system and actions to verify operation and maintain the station emergency shutdown system.

(1) Select task procedure(s) and appropriate equipment.
(2) Visually inspect each Emergency Shutdown Device (ESD) for the following:
   - (a) loose electrical connections
   - (b) mechanical defects
   - (c) loose bolted or screwed connections
   - (d) evidence of physical damage

(3) Conduct the required tests to determine each ESD is functioning correctly.

(4) Perform corrective maintenance on components of the ESD.
   - (a) Correct any deficiencies found during the testing process.
Task 1351 Inspect and Maintain Vault

(a) Task Guidance. This task applies to the inspection and maintenance of vaults housing pressure-regulating and pressure-limiting equipment, having a volumetric internal content of 200 ft³ (5.7 m³) or more. This task also includes inspection of ventilating equipment, vault cover, sufficient drainage, and structural integrity. This task does not include investigating to identify product leakage as addressed in
(5) Install, replace, or repair supports using appropriate equipment (e.g., hand tools, lift bags, grout bags, sand/cement bags, concrete mat, clamps, bolts, riser cans, isolation material, and knee brace):

- Install temporary supports to stabilize pipelines, etc.
- Remove damaged support, if applicable.
- Properly install or repair support structures according to appropriate procedures.
- Remove temporary supports according to appropriate procedures.

(6) Perform a final inspection of the replaced or repaired support structure:

- Ensure correct position and that support structure is secured correctly.
- Inspect for adequate support.
- Install additional structures as necessary to rectify unacceptable stress and at crossings: Pipeline separation should be 18 in. or more. Determine pipeline separation by pneumo-fathometer readings.
- Install support structures between pipelines (mats or bags).
- Inspect for physical or coating damage from improper use of rigging or lifting equipment.

(7) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 2
(d) Importance: 4
(e) Interval: 3 yr

Task 1511 Diving: Perform Stopping of Pipe

(a) Task Guidance. This task includes the assembly of flanges, disassembly of flanges, bolting in sequence, and torquing, as specified.

(1) Select task procedure(s) and appropriate equipment.
(2) Review the job requirements for the specific application. Topside and diver personnel are involved in this step. Utilize survey data, initial construction blueprints, construction maps, GPS, etc.

- Select location characteristics
- Depth of water
- Client preference
(3) Confirm that lockout/tagout, purging, and depressurization procedures have been performed.
(4) Prepare/inspect the flange surface and seals.

- Inspect (visual/tactile) flange for existing damage that may interfere with mating procedures.
- Prepare surface and seals typically without lubricant to avoid collection of debris.
- Clean debris from seals and O-ring groove with pneumo hose.

(5) Properly align flanges.

- Inspect to ensure proper rating, condition, alignment, and gasket installation.
- Align using handling frame, drift pins, and lacing slings.
- Support using cranes and forklifts.
(6) Install preliminary bolts and gasket.

- Install preliminary bolts to hold flanges together and allow insertion of O-ring or ring gasket.
- Install gasket using skilet.
(7) Install and tighten remaining bolts.

- Install remaining bolts.
- Tighten bolts in the specified sequence to the specified torque.

(8) Inspect the assembled flange. Check for proper alignment, damage, missing bolts, and properly seated O-ring or ring gasket.

(9) Perform general flange disassembly.

- Identify differential pressure, stored energy/tension, and hazardous fluids.
- Loosen and remove flange bolts.
- Remove ring gasket.
- Plug or cap the pipeline ends according to appropriate procedures (e.g., blind flange, internal plug).
- Remove pipeline components as required using cranes, rigging, and other lifting equipment.

(10) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 3
(d) Importance: 4
(e) Interval: 3 yr

Task 1521 Diving: Install Pipe-End Connectors

(a) Task Guidance. This task includes the installation of pipe-end connectors (e.g., mechanical gripping, cold forged) on underwater pipelines.

(1) Select task procedure(s) and appropriate equipment.
(2) Review the job requirements for the specific application. Topside and diver personnel are involved in this step. Utilize survey data, initial construction blueprints, construction maps, GPS, etc.

- Select location characteristics
- Depth of water
- Client preference
(3) Identify and use appropriate equipment: drift pins, lacing slings, wrench, hydraulic impact, lift bags, cranes, tugger, davits, come-alongs, handling frame, etc.
(4) Prepare end connector. Topside personnel can assist with this step.

- Confirm type of end connector to be installed.
- Ensure seals are free of debris.
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(5) Install, replace, or repair supports using appropriate equipment (e.g., hand tools, lift bags, grout bags, sand/cement bags, concrete mat, clamps, bolts, riser caps, isolation material, and knee brace):

(-a) Install temporary supports to stabilize pipeline: lift bags, cranes, etc.
(-b) Remove damaged support, if applicable.
(-c) Properly install or repair support structures according to appropriate procedures.
(-d) Remove temporary supports according to appropriate procedures.

(6) Perform a final inspection of the replaced or repaired support structure.

(-a) Ensure correct position and that support structure is secured correctly.
(-b) Inspect for adequate support.
(-c) Install additional structures as necessary to rectify unacceptable stress and at crossings: Pipeline separation should be 18 in. (450 mm), or more. Determine pipeline separation by pneumofathometer readings.
(-d) Install support structures between pipelines (mats or bags).
(-e) Inspect for physical or coating damage from improper use of rigging or lifting equipment.
Task 1511 Diving: Perform Stopping of Pipe, Perform Underwater Flange Assembly and Disassembly
Check the integrity of the seals according to manufacturer's specifications.

(5) Identify segment characteristics. Inspect pipeline condition: flat spots, ovality, corrosion, wall thickness, seams, etc.

(6) Prepare pipe for installation of end connector.
   (-a) Ensure appropriate isolation measures have been implemented.
   (-b) Ensure pipeline is prepared to manufacturer's specifications using appropriate tools including grit blaster, cavi blaster, water blaster, circular saw, wedges/mauls, buffing wheels or pads, etc.

(7) Install end connector to specified insertion depth.
   (-a) Ensure seals are free of debris.
   (-b) Perform pressure test, if applicable.

(8) Document, as required.
   (b) Potential applicability: L, G, D
   (c) Difficulty: 4
   (d) Importance: 4
   (e) Interval: 3 yr
   (f) Evaluation method
      (1) Initial: P & W/O
      (2) Sub: W/O
   (g) Span of control: 1:0

**Task 1531 Diving: Install Mechanical Clamps or Sleeves**

(a) Task Guidance. This task includes the installation of mechanical clamps or sleeves on underwater pipelines.

(1) Select task procedure(s) and appropriate equipment.

(2) Review the job requirements for the specific application. Topside and diver personnel are involved in this step. Utilize survey data, initial construction blueprints, construction maps, GPS, etc.
   (-a) location characteristics
   (-b) depth of water
   (-c) client preference

(3) Identify and use appropriate equipment: drift pins, lacing slings, wrench, hydraulic impact, lift bags, cranes, tugger, davits, come-alongs, handling frame, etc.

(4) Prepare clamp or sleeve. Topside personnel can assist with this step.
   (-a) Confirm type of clamp or sleeve to be installed.
   (-b) Ensure seals are free of debris.
   (-c) Check the integrity of the seals according to manufacturer's specifications.

(5) Identify segment characteristics. Inspect pipeline condition: flat spots, ovality, corrosion, wall thickness, seams, etc.

(6) Prepare pipe for installation of clamp or sleeve.
   (-a) Ensure appropriate isolation measures have been implemented.
   (-b) Monitor appropriate pressure and flow rate during repair activities.
   (-c) Ensure pipeline is prepared to manufacturer's specifications using appropriate tools including grit blaster, cavi blaster, water blaster, circular saw, wedges/mauls, buffing wheels or pads, etc.

(7) Install clamp or sleeve.
   (-a) Ensure seals are free of debris.
   (-b) Center the clamp over the defect.
   (-c) Tighten bolts in the specified sequence to the specified torque.
   (-d) Check the integrity of the seals.
   (-e) Perform pressure test, if applicable.

(8) Document, as required.
   (b) Potential applicability: L, G, D
   (c) Difficulty: 3
   (d) Importance: 4
   (e) Interval: 3 yr
   (f) Evaluation method
      (1) Initial: P & W/O
      (2) Sub: W/O
   (g) Span of control: 1:0

**Task 1541 Diving: Perform an Underwater Mechanical Tap**

(a) Task Guidance. This task includes performing tapping, including the installation of the isolation valve and tapping equipment.

(1) Select task procedure(s) and appropriate equipment.

(2) Review the job requirements for the specific application. Topside and diver personnel are involved in this step. Utilize survey data, initial construction blueprints, construction maps, GPS, etc.
   (-a) location characteristics
   (-b) depth of water
   (-c) client preference

(3) Identify necessary equipment, and remove coating for the length of the hot tap clamp plus 1 ft to 2 ft on either side. Clean pipeline to reveal bare shiny metal with a smooth surface.
   (-a) water blaster
   (-b) buffer
   (-c) grit blaster
   (-d) scraper

(4) Conduct pipeline quality checks, and ensure surface preparation for the type of sleeve, including the following, as applicable:
   (-a) Perform visual/tactile inspection.
   (-b) Conduct ovality checks.
   (-c) Check wall thickness and integrity with UT thickness gauge. Wall thickness may be determined by topside personnel or by using a gauge with an underwater indicator.
   (-d) Grind the length of the hot tap flush.

(5) Install clamp according to appropriate procedures.
   (-a) Inspect pipeline and ditch/work area.
Task 1541 Diving: Perform an Underwater Mechanical Tap
(a) Task Guidance. This task includes performing tapping, including the installation of the isolation valve and tapping equipment.
(1) Select task procedure(s) and appropriate equipment.
(2) Review the job requirements for the specific application. Topside and diver personnel are involved in this step. Utilize survey data, initial construction blueprints, construction maps, GPS, etc.
(-a) location characteristics
(-b) depth of water
(-c) client preference
(3) Identify necessary equipment, and remove coating for the length of the hot tap clamp plus 1 ft (0.3 m) to 2 ft (0.6 m) on either side. Clean pipeline to reveal bare shiny metal with a smooth surface.
(-a) water blaster
(-b) buffer
(-c) grit blaster
(-d) scraper
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<td>Install Residential and Small Commercial Meters and Regulators</td>
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<td>Install Tubing and Fittings</td>
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<td>Inspect and Maintain a Pipeline Heater</td>
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Pressure Testing

0561 Perform Pressure Test Using a Nonliquid Medium — MAOP Less Than 100 psi (700 kPa) Revised 2014

0571 Perform Pressure Test Using a Nonliquid Medium — MAOP Greater Than or Equal to 100 psi (700 kPa) Revised 2014

0581 Perform Pressure Test Using a Liquid Medium Revised 2014

0591 Perform Leak Test at Operating Pressure Revised 2014
## Table B-1 Covered Tasks and Status History by Categories (Cont’d)

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<th>Task Number</th>
<th>Task Title</th>
<th>Latest Status</th>
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<tr>
<td>0521</td>
<td>Inspect, Test, and Maintain Reciprocating Pump</td>
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<td><strong>Valves and Actuators</strong></td>
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<td>Open and Close Valves Manually</td>
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<td>0311</td>
<td>Operate Valves Manually to Adjust Flow/Pressure and Monitor for Changes</td>
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Tapping

1081 Tap a Pipeline (Tap Diameter 2 in. [50 mm] and Less) Revised 2014
1091 Tap a Pipeline (Tap Diameter Greater Than 2 in. [50 mm]) Revised 2014
1101 Tap a Pipeline With a Built-In Cutter Revised 2014