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 evaluation to determine if an individual is qualified.

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.

knowledge: a body of information applicable to the performance of a task.

mutual aid: pipeline operator personnel provided to another pipeline operator to enhance the performance of covered tasks.

on-the-job training: instruction at or near the work setting.

performance: demonstration of the knowledge, skills, and abilities (KSAs) required to complete a task.

performance monitoring: a means of confirming that 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.

pipeline: all parts of physical facilities through which gas, hazardous liquids, or carbon dioxide moves in transportation, including pipe, valves, fittings, flanges (including bolts and gaskets), regulators, pressure vessels, pulsation dampeners, relief valves, and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, pumping units, breakout tanks, and fabricated assemblies.

proctor: one selected to administer a written examination.

qualified: an individual that has been evaluated and can (a) perform assigned covered tasks (b) recognize and react to abnormal operating conditions

revocation: cancellation of an individual's qualification to perform an identified covered task(s).

safety or integrity: the state of a pipeline being operationally sound (as affected by maintenance, construction, and operation activities) or having the ability to withstand the stresses imposed during operations.

skill: the ability to perform mental and physical activities acquired or developed through training or experience.

span of control: the maximum number of nonqualified individuals that a qualified individual can direct and observe performing a covered task listed in the task list as a ratio of qualified to nonqualified individuals.

subject matter expert (SME): an individual who possesses knowledge and experience in the process/discipline they represent.

subsequent qualification: a process to evaluate, for continued qualification, an individual who is currently qualified to perform a covered task.

suspension: temporary prevention of a qualified individual from performing identified covered task(s).

task: a defined unit of work having an identifiable beginning and end and specific actions that are observable and measurable.

training: instructing individuals using materials designed to convey the skills and knowledge necessary to perform a particular task.

training program: the written description, processes, procedures, training materials, and training tests that establish and document training.

2.1 Frequently Used Abbreviations

Insert definition of "pipe"

pipe: the tubular component of a pipeline, to which valves, fittings and other components are attached.
(d) describe the process for assigning qualified individuals to perform covered tasks and how covered tasks performed during emergency response are handled
(e) describe the process for allowing performance of covered tasks by nonqualified individuals working under the direction and observation of a qualified person

4.2.8 Portability of Evaluations (See Section 10). If portable evaluations will be accepted, the operator shall describe how this is managed, monitored, and documented.

4.2.9 Program Effectiveness (See Section 11). The qualification program shall describe processes implemented to evaluate the effectiveness of the qualification program.

4.2.10 Communication of Program Requirements and Change (See Section 12). The qualification program shall describe how program requirements are communicated to affected individuals and how changes to program requirements are managed and communicated.

4.2.11 Documentation (See Section 13). The qualification program shall describe how documentation requirements will be met and how program documentation will be maintained.

5 DETERMINING COVERED TASKS

5.1 Introduction

Personnel who perform tasks that affect the safety or integrity of the pipeline shall be qualified. The tasks that affect the safety or integrity of the pipeline shall be identified and are defined as covered tasks.

5.2 Processes for Determining Covered Tasks

The qualification program shall use one of the methods described below to determine covered tasks. They are the SME Covered Task Identification Process described in para. 5.3 and the Fault Tree Covered Task Identification Process described in para. 5.4 or an alternate process. Nonmandatory Appendix A lists covered tasks that were obtained through the utilization of a combination of the Fault Tree Covered Task Identification Process and the SME Covered Task Identification Process. This list, which is summarized in Nonmandatory Appendix B, may be utilized in lieu of an alternate process or one of the processes described in either para. 5.3 or para. 5.4.

If the covered task list in Nonmandatory Appendix A is used, the contents of Nonmandatory Appendix A shall be reviewed in accordance with para. 5.5.

An alternate process may be used for determining covered tasks. The alternate process shall be a technically based process that considers safety or integrity-related activities. The process shall be documented in the qualification program.

5.3 SME Covered Task Identification

The SME Covered Task Identification Process shall use SMEs who are knowledgeable about tasks performed during the operation, maintenance, or construction of new pipelines or the rebuilding of existing pipelines that can impact the safety or integrity of the pipeline. The individual SMEs may be employees, contractors, or an industry group such as those that participate in a consortium. The SME's purpose is to review the tasks performed during the construction, operation, and maintenance of a pipeline to determine which tasks are to be considered covered tasks.

5.3.1 Selecting SMEs. The responsibility for selection of SMEs for participation in the SME Covered Task Identification Process shall be described in the qualification program. The objective in selecting the SMEs is to have a knowledge and experience base to provide a comprehensive review of the tasks.

(a) Selection of SMEs shall be based on the following criteria:

(1) knowledge — possesses knowledge in the process/discipline
(2) experience — has worked in the process/discipline

(b) Factors that may be useful in selecting the SMEs are as follows:

(1) training — has documentation proving their successful completion of training programs in the process/discipline
(2) credentials/certifications — possesses applicable and appropriate credentials and/or certifications expected of an expert in the process/discipline they represent or
(3) years of practical experience

5.3.2 Identifying Covered Tasks

(a) The SME individual or group shall identify a list of tasks that can be screened for covered tasks. Any of the following methods can be used as a starting point:

(1) Identify tasks that affect the safety or integrity of the pipeline through SME interviews.
(2) Through document reviews, identify tasks performed as a requirement of applicable codes, standards, policies, or procedures.
(3) Any other process that can identify possible or likely tasks within the scope of this Standard.

(b) After the list of tasks has been drafted, the SME individual or group shall use the following screening questions to determine tasks to be included in the covered task list:

(1) Does performance of the task affect the safety or integrity of a pipeline?
(2) Is the task performed for the construction, operation, or maintenance of the pipeline?

(c) If both of these questions are answered in the affirmative, then the task shall be identified as a covered task. If a task passes the screening test, i.e., the answer to both questions is “Yes,” but the SMEs do not believe it should become a covered task, the task and the rationale for not including it in the covered task list shall be documented.

5.4 Fault Tree Task Identification Process

The fault tree task identification process is an analysis tool or technique by which the relationship of many events that interact to produce a final result can be identified. These events are linked to the final result, or in some cases to another event, to depict the manner in which that contribution is made. For some complex events, multiple layers of events may be necessary to fully describe the interaction between these events. This layering of events forms the branches of the fault tree.

This process allows the structure or form of that interaction to be defined by using two simple logic relationships. These logic relationships are called the “and” and “or” gates. The type of gate or relationship depends on the contribution of each event or series of events to the final result. Events that must all occur in order to produce the final result interact through an “and” gate. Those events that may individually produce the final result interact through an “or” gate. Related events are grouped using this process and the type of relationship shown by the gate that is used (see Figure 5.4-1 and reference C-FER Technologies, Report Number L114, “Fault Tree Development for the Nine Threats to Pipelines”).

The fault tree task identification process is used in this Standard to identify the events or tasks that may lead to a particular threat impacting the safety or integrity of a pipeline and potentially result in a failure that could cause a hazard to persons, property, or the environment. This threat is considered the “top event” for each fault tree. The nine threat groupings in ASME B31.8S are used for the nine fault trees developed for this Standard. These threat groupings are as follows:

(a) natural hazards
(b) construction defects
(c) equipment failure
(d) internal corrosion
(e) incorrect operation
(f) stress-corrosion cracking
(g) external corrosion
(h) manufacturing defects
(i) third-party damage

Successive levels of events, such as processes that could contribute to or produce this undesired top event, are then identified in the construction of the fault tree. These processes should be identified by SMEs and ultimately related to the detection, prevention, or mitigation of the top event. These events are successively broken down by the level to which they contribute to the top event until a “primary fault” is reached. This primary fault may be a process or task that is performed on the pipeline and may contribute to the top event if not performed properly. Once the primary fault level is reached, then the SMEs identify tasks that are performed to prevent the primary fault from occurring. Not all primary fault levels are items that are controllable and therefore do not have tasks identified from that primary fault level. Other primary fault levels will have a task or numerous tasks identified that are conducted to prevent the occurrence of the primary fault. The SMEs perform this task identification.

The SMEs then consider any additional tasks performed for their pipelines and determine if the fault tree analysis has identified the tasks performed for the safety or integrity of their pipelines. These potential covered tasks can also be compared with a listing of best practices tasks, such as “Natural Gas Transmission Pipelines, Pipeline Integrity — Prevention, Detection, and Mitigation Practices,” for a completeness test that can be performed by a group of SMEs. Any task to be added shall pass the screening criteria described in para. 5.3.2.

The resulting list of tasks, after thorough evaluation of the fault trees by SMEs, becomes the covered task list for the qualification program.

5.5 Using the Task List in Nonmandatory Appendix A

Change may to could

The Fault Tree Task Identification Process described in para. 5.4 and the SME Covered Task List Identification Process described in para. 5.3 was utilized to develop the nonmandatory covered task list in Nonmandatory Appendix A. The process is summarized in Nonmandatory Appendix C, and an example of evaluation criteria for tasks is given in Nonmandatory Appendix D.

If Nonmandatory Appendix A is used, the following steps shall be taken:

(a) SMEs shall review Nonmandatory Appendix A and determine which tasks are applicable to their pipelines.

(b) SMEs may remove tasks listed in Nonmandatory Appendix A applicable to their pipelines if they determined that the tasks should not become covered tasks and the rationale for not including them in the covered task list is documented.

(c) The SMEs shall add any unique tasks or tasks that stem from the development of new technology and that affect the safety or integrity of their pipelines. For each additional task, applicable items shall be developed in accordance with this Standard (e.g., abnormal operating conditions, training requirements, subsequent qualification intervals, evaluation criteria, spans of control, and evaluation methods).
Figure 5.4-1 Fault Tree for External Corrosion (Cont’d)

GENERAL NOTE:
- Measure structure-to-electrolyte potential
- Conduct close interval survey
- Measure soil resistivity
- Inspect and monitor galvanic ground bed/anodes
- Installation and maintenance of mechanical electrical connections
- Inspect or test cathodic protection bonds
- Inspect or test cathodic protection electrical isolation devices
- Install cathodic protection electrical isolation devices
- Troubleshoot active cathodic protection system
- Inspect rectifier, and obtain readings
- Maintain rectifier
- Diving — measure structure-to-electrolyte potential
- Diving — install galvanic anodes on submerged pipelines

B31
- Install mechanical clamps and sleeves — bolted
- Fit-up of weld-type repair sleeve
- Install compose sleeves
- Repair of steel pipe by grinding
- Tapping a pipeline (tap diameter 2 in. or less)
- Tapping a pipeline (tap diameter greater than 2 in.)
- Tapping a pipeline with a built-in cutter
- Tapping cast and ductile iron pipe and low-pressure steel pipe
- Bagging and stopping low-pressure pipe
- Stopper (stopple) pipe
- Squeeze off plastic pipe
- Squeeze off steel pipe
- Diving — install mechanical clamps or sleeves
- Diving — perform an underwater mechanical tap
- Diving — stopper (stopple) pipe

B35
- Measure external corrosion
- Measure atmospheric corrosion
- Pressure test (nonliquid medium); test pressure less than 100 psi
- Pressure test (nonliquid medium); test pressure greater than or equal to 100 psi
- Pressure test (liquid medium)
- Measure and characterize mechanical damage on installed pipe and components
- Diving — measure and describe corrosion and mechanical damage (buried or submerged pipeline)

E42
- Visually inspect pipe and components prior to installation
- Backfilling
- Damage prevention inspection during third-party excavation or encroachment activities as determined necessary by operator
- Installation of steel pipe in a ditch
- Installation of steel pipe in a bore
- Installation of steel pipe plowing/pull-in

E44
- Coating application and repair — brushed or rolled
- Coating application and repair — sprayed
- External coating application and repair — wrapped
- Diving — external coating application and repair

In all instances - change "pipeline" to "pipe"
The Task List Development Process described in Nonmandatory Appendix C considered that evaluation and work assignment processes vary between entities. It is recognized that a few previously identified covered tasks are recognized as jobs. The covered tasks identified in Nonmandatory Appendix A may be combined or subdivided to fit the corresponding evaluation or work assignment process an entity uses.

Conflict in items such as span of control and evaluation methods should be resolved by adopting the more demanding requirements.

6 ABNORMAL OPERATING CONDITIONS (AOCs)

Qualified individuals performing a covered task shall be able to recognize and properly react to AOCs that they might encounter during the performance of the task. For example, an individual that is performing a structure-to-electrolyte potential measurement should be able to recognize and react properly to an unplanned escape of product from the pipeline.

Nonmandatory Appendix E provides a list of AOCs that may be used in a qualification program. This list may be reviewed, and expected reactions may be communicated to those individuals performing covered tasks. Individuals who perform specific covered tasks shall be trained as appropriate or evaluated to determine if they can recognize and react to the AOCs. The evaluation may be a separate process, or it may be combined with the covered task training and evaluation.

If the list in Nonmandatory Appendix E is not utilized, a process shall be developed and implemented to identify AOCs based on the definition in this Standard. SMEs selected through the process identified in para. 5.3 shall be involved in the AOC identification process.

7 TRAINING

This section establishes minimum training requirements for the knowledge and skills required to perform covered tasks. Alternative solutions may be used as long as they meet the intent of this Standard and are properly justified and documented.

Preparing an individual to perform covered tasks requires consideration of the individual's knowledge and skills to perform the covered task. Some individuals may possess prior education, experience, and training that equips them with sufficient knowledge and skills to perform the covered tasks. For other individuals, training may be appropriate as a means to develop the knowledge and skills necessary to perform the covered tasks. Training is also an appropriate means to allow individuals to maintain the required knowledge and skills to continue performing covered tasks as they change.

7.1 Responsibility

7.1.1 Employers. Employers shall be responsible for identifying training needs and providing appropriate training for individuals requiring or maintaining qualifications.

7.1.2 Qualification Program. The qualification program shall identify the organizations or position(s) responsible for

(a) determining the need for training an individual
(b) identifying training materials or sources
(c) developing and implementing successful completion of

7.2 Identification of the Need for Training an Individual

7.2.1 Determining Training Needs. For situations such as those listed in para. 7.2.2, an individual's training needs shall be determined. An individual's current knowledge and skills resulting from prior education, experience, and training should be considered in determining if the individual requires training.

7.2.2 Situations for Considering Training. The need to train an individual should be considered for, but not limited to, situations where the individual

(a) requires qualification for a covered task not previously performed
(b) requires qualification for a covered task outside their knowledge and skills
(c) has had a qualification suspended or revoked
(d) fails an evaluation for qualification
(e) requires new or different knowledge or skills to perform a covered task
(f) will utilize new equipment or procedures to perform a covered task or
(g) has completed a portable evaluation (see section 10) and requires additional knowledge or skills to implement specific requirements that are outside the scope of the portable evaluation

7.3 Training Materials and Implementation

7.3.1 Training Materials. Training implementation shall be identified consistent with the training needs determined in para. 7.2. These materials shall be acquired or maintained consistent with the knowledge and skills needed to perform the covered task(s).

7.3.2 Training Implementation. Training should be conducted in a setting conducive to learning the subject knowledge or skills. Instructor-led or on-the-job training should be conducted by individuals selected based on the following considerations:

(a) demonstrated knowledge of the subject matter (e.g., the individual may be an SME or meet the education, experience, and training requirements to be qualified for
the covered task; qualification for the covered task is not required.

(b) possession of the knowledge, skill, and ability to provide the training using the selected training materials

7.3.3 Training Tests. If tests administered in conjunction with training are used as part of the evaluation process, they shall be developed, maintained, and implemented in accordance with section 8 of this Standard.

7.4 Training Documentation

7.4.1 Documenting Training Needs. When a need is identified for training to qualify an individual to perform a covered task, the requirement for the individual to complete training shall be documented.

7.4.2 Documenting Training. When training is required to support an individual's qualification, training information, such as an outline of the training course objectives as well as a record of the individual's successful completion of the training, shall be maintained.

8 EVALUATION

This section establishes the minimum requirements to ensure individuals are evaluated for the KSAs required to perform covered task(s). The evaluation instrument(s) and process shall be established in accordance with this Standard to maximize the validity and reliability of the evaluation. Alternative solutions may be used as long as they meet the intent of this Standard and are properly justified and documented.

The term evaluation 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. For example, one evaluation instrument may contain a checklist for observing an individual 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. Additionally, an evaluator should be able to make it possible for the individual to accurately demonstrate his or her KSAs during the evaluation.

8.1.2 Proctor Selection. Selection of proctors shall be based on the individual's ability to follow the evaluation instructions. Proctors shall only be used in the evaluation process where he or she is not involved in the judgment of an individual’s performance. For example, a proctor could administer a written test with an objective scoring key but not a performance evaluation or oral interview.

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)

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

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

(d) investigating and resolving suspected cheating

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

(f) 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

8.1.3 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) prevent unauthorized access to hardcopy 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.

8.2 Evaluation Material(s) and Criteria

Evaluation materials shall be purchased or developed and maintained consistent with identified evaluation needs. 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) basic 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)

(3) demonstration to account for variance required in task performance due to conditions or context differences (e.g., hot work versus work on evacuated pipeline)

(e) distinctive physical abilities required to perform the task (e.g., color vision or hearing for Control Center Operator tasks)

8.2.3 Evaluation Method Selection. Evaluation method(s) shall be selected for each task to reflect the purpose of the evaluation. For example, evaluation for knowledge is commonly done using a written evaluation or oral interview, and skill is commonly measured through performance evaluation. Physical ability is best verified while the individual’s skills are being evaluated through a performance evaluation.

Add language in red to the end of the existing section 8.2.3:

...through a performance evaluation. When selecting initial and subsequent evaluation methods, it is important to consider that all tasks require knowledge but not all tasks require skills. See Nonmandatory Appendix F for information about differentiating between knowledge, skill, and ability and selecting appropriate evaluation methods.

deciding which format to use for a written test, considerations include how well the format matches the requirements of the job and the odds of individuals getting the item(s) right by guessing. The true/false format provides a 50/50 chance of the individual getting the answer right by guessing. Further, there are very few things that are absolutes (always, never), which increases the chances of getting T/F items right whether the person knows the information or not. For these reasons, they are suggested for limited use.

(e) establishes which, if any, items may be completed with access to reference materials.

(f) minimizes the use of individual items that must be answered correctly in order to pass the evaluation. Written evaluations should contain a sufficient number of items to verify specific knowledge by more than one written item in order to compensate for the fact that the evaluation is imperfect and some items will be misinterpreted.

(g) sets a pass/fail score for written evaluations. Due to the fact that individuals miss items for reasons other than a lack of knowledge, such as misinterpretation of the question, misreading the question, poorly worded questions, differences in terminology, etc., the pass/fail score is normally set at less than 100%.

(h) ensures that when an individual is accommodated by having a written evaluation read to them, this reading is performed by a proctor in accordance with administration directions and without coaching the individual. Note that
(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

9.1.3 Qualification Process. Each individual who performs covered tasks on the pipeline shall be qualified through evaluation. The qualification process shall include an initial evaluation for qualification and a subsequent evaluation for qualification. Subsequent qualifications shall be completed within the specified subsequent qualification intervals established in accordance with para. 9.5 for each covered task.

9.1.3.1 Initial Qualification. Individuals shall be qualified initially for covered tasks they perform through either of the following options:
(a) evaluation in accordance with section 8, Evaluation or
(b) completion of training, if appropriate, in accordance with section 7, Training, followed by evaluation in accordance with section 8, Evaluation.

Evaluations for initial qualification shall include a performance evaluation, unless the covered task has been determined to require only an individual’s knowledge to correctly perform the task. Individuals qualified under a program prior to the issuance of this Standard can maintain their qualifications by meeting the subsequent qualification requirements established in this Standard. A documented performance evaluation, if not previously performed for a task that requires a performance evaluation for initial qualification under this Standard, should be performed either during the implementation period or at the time of subsequent qualification.

9.1.3.2 Subsequent Qualification. Subsequent qualifications by evaluation may utilize the same evaluation methods as those utilized for initial qualification or may utilize other methods that verify the required KSAs needed to perform each covered task.

When subsequent qualifications for covered tasks require performance evaluations, the verification of retention of required knowledge, skills, or distinctive physical abilities may be completed through a performance evaluation in accordance with section 8 or through documented performance monitoring or other means that confirm and document the individual is capable of performing covered 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:

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

(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 in accordance with para. 9.2.2.
(b) It is determined that an individual is no longer 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 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 postemergency 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 the following groups differ:

(a) An operator’s emergency response plan should identify and address how it will mitigate risks presented by nonqualified 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.

(b) Professional emergency response providers who perform covered tasks under contract on behalf of the operator shall be qualified.

(c) 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 and earthquakes), physical or cyberattacks, 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 paras. 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’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 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.

ADD BELOW EXISTING HIGHLIGHTED TEXT

The measures defined in this document as span-of-control define the process for nonqualified individuals to train and gain experience. If an individual performs the task as part of their normally assigned duties, employers should consider qualifying these individuals under the requirements described in para 9.1.3.

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.

9.4.1 Direct and Observe. A span-of-control ratio that indicates the number of nonqualified individuals who can perform a task under the direction and observation of a qualified individual shall be set for each task (development of the span of control is described in para 9.4.2). Factors that the qualified individual should consider that may require the reduction of a span of control include noise, visual obstructions, weather, or job-site conditions that make it more difficult for an individual to observe others. A span of control of 1:0 indicates that the task may not be performed by any nonqualified individual, even under the direction and observation of a qualified individual.

This Standard recognizes that a single qualified individual may, on occasion, direct and observe more than one nonqualified individual performing different covered tasks. These tasks may have different span-of-control ratios. If the performance of these multiple covered tasks is occurring at the same time, the qualified individual must adhere to the most restrictive span-of-control ratio for a given task.

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The qualified individual in any span-of-control situation is accountable for the work and shall

(a) Be qualified through evaluation on all aspects of the covered task(s).
(b) Direct and observe the entire performance of the task by the nonqualified individual(s) or clearly assign direction of the nonqualified individual(s) to another qualified individual.
(c) Be physically present and able to take immediate action to prevent or mitigate an AOC.
(d) Remain able to intervene with immediate corrective action as necessary throughout task performance.
(e) Stop the performance of the task if any unsafe condition should arise.
(f) Instruct the nonqualified individuals to stop work if the qualified individual is unable to meet any of the above criteria.

9.4.2 Span-of-Control Ratio Development and Maintenance.

The qualification programs shall either adopt the span-of-control ratios in Nonmandatory Appendix A or include processes or procedures to establish and assess the span-of-control ratio for each covered task. The methods for establishing and assessing the span-of-control ratios are described in paras 9.4.2.1 through 9.4.2.4.

9.4.2.1 Methods. The span-of-control ratio may be established by one of the following methods:

(a) SME consensus in accordance with para 9.4.2.2
(b) difficulty and importance or difficulty, importance, and frequency analysis in accordance with para 9.4.2.3
(c) adoption of Nonmandatory Appendix A span-of-control ratios in accordance with para. 9.4.2.4
(d) any other process that provides a rational and verifiable basis for the span-of-control ratio

9.4.2.2 SME Consensus. The initial span-of-control ratios may not exceed one qualified individual to five nonqualified individuals. SMEs shall set the span-of-control ratio considering the difficulty associated with directing and observing the task performance. The span-of-control ratios set by this method shall be assessed and reduced if necessary. The span-of-control ratios may be increased if analysis of data establishes a rational basis for a greater ratio.

As a minimum, SMEs will set the span-of-control ratio considering such factors as

(a) difficulty and importance of the tasks associated with the qualification
(b) task and job-site factors that affect the ability of the qualified individual to direct and observe

9.4.2.3 Difficulty (D) and Importance (I) or Difficulty, Importance, and Frequency (F) Analysis. The span-of-control ratio may be established by completion of a difficulty and importance or difficulty, importance, and frequency analysis as described in Nonmandatory Appendix G. The initial span-of-control ratios may not exceed one qualified individual to five nonqualified individuals. The span-of-control ratio shall be assessed and reduced if necessary. The span-of-control ratios may be increased if analysis of data establishes a rational basis for a greater ratio.

9.4.2.4 Adoption of Nonmandatory Appendix A Span-of-Control Ratios. If Nonmandatory Appendix A is utilized for the covered task list, the listed spans of control for each respective task in the Appendix may

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If the work conditions prevent a qualified individual from meeting the above criteria for each nonqualified individual operating under their control, a reduction in the span-of-control ratio, or the sole performance of the work by a qualified individual, may be necessary.

Factors that should be considered by a qualified individual to identify the condition-specific span-of-control ratio should include but not be limited to noise levels, the distance between individuals, visual obstructions, adverse weather, communication barriers or other job-site conditions affecting direction and observation. A span-of-control of 1:0 indicates that the task may not be performed by a nonqualified individual, even under the direction and observation of a qualified individual.

There may also be situations in which individuals support work on a covered task but are not required to be qualified. If an individual is performing a function that could meet the defined requirements of a covered task (see section 5, Determining Covered Tasks), the individual shall qualified or work under the span-of-control ratio. However, if the function of an individual does not meet the requirements of a covered task, that individual is considered a helper and is not required to hold the qualification or to work under the span-of-control (e.g., carrying tools to a job site).
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 provides further guidance on the establishment of portability, where more than one entity mutually agrees to accept further guidance on the establishment of portability, for a given task.

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.

9.4.1 Direct and Observe. A span-of-control ratio that indicates the number of nonqualified individuals who can perform a task under the direction and observation of a qualified individual shall be set for each task (development of the span of control is described in para. 9.4.2). Factors that the qualified individual should consider that may require the reduction of a span of control include noise, visual obstructions, weather, or job-site conditions that make it more difficult to observe others. A span of control is that the task may not be performed by any nonqualified individual, even under the direction and observation of a qualified individual.

This Standard recognizes that a single qualified individual may, on occasion, direct and observe more than one nonqualified individual performing different covered tasks. These tasks may have different span-of-control ratios. If the performance of these multiple covered tasks is occurring at the same time, the qualified individual must adhere to the most restrictive span-of-control ratio for a given task. For example, a qualified individual is directing and observing a nonqualified crew performing two covered tasks. Task 1 has a span-of-control ratio of 1:3, while Task 2 has a span-of-control ratio of 1:2. Per the requirements of the Standard, the qualified individual could only be responsible for two unqualified individuals doing two tasks.

9.4.2 Span-of-Control Ratio Development and Maintenance. The qualification program shall either adopt the span-of-control ratios in Nonmandatory Appendix A or include processes or procedures to establish and assess the span-of-control ratio for each covered task. The methods for establishing and assessing the span-of-control ratios are described in paras. 9.4.2.1 through 9.4.2.4.

9.4.2.1 Methods. The span-of-control ratio may be established by one of the following methods:

(a) SME consensus in accordance with para. 9.4.2.2
(b) difficulty and importance or difficulty, importance, and frequency analysis in accordance with para. 9.4.2.3
(c) adoption of Nonmandatory Appendix A span-of-control ratios in accordance with para. 9.4.2.4
(d) any other process that provides a reasonable and verifiable basis for the span-of-control ratio

9.4.2.2 SME Consensus. The initial span-of-control ratios may not exceed one qualified individual to five nonqualified individuals. SMEs shall set the span-of-control ratio considering the difficulty associated with directing and observing the task performance. The span-of-control ratios set by this method shall be assessed and reduced if necessary. The span-of-control ratios may be increased if analysis of data establishes a rational basis for a greater ratio.

As a minimum, SMEs will set the span-of-control ratio considering such factors as

(a) difficulty and importance of the tasks associated with the qualification
(b) task and job-site factors that affect the ability of the qualified individual to direct or observe

9.4.2.3 Difficulty (D) and Importance (I) or Difficulty, Importance, and Frequency (F) Analysis. The span-of-control ratio may be established by completion of a difficulty and importance or difficulty, importance, and frequency analysis as described in Nonmandatory Appendix G. The initial span-of-control ratios may not exceed one qualified individual to five nonqualified individuals. The span-of-control ratio shall be assessed and reduced if necessary. The span-of-control ratios may be increased if analysis of data establishes a rational basis for a greater ratio.

9.4.2.4 Adoption of Nonmandatory Appendix A Span-of-Control Ratios. If Nonmandatory Appendix A is utilized for the covered task list, the listed spans of control for each respective task in the Appendix may

Change may to shall
be used. The span-of-control ratios in Nonmandatory Appendix A were established through SME consensus. The Nonmandatory Appendix A span-of-control ratios do not exceed one to five. Assessment is not required if the span-of-control ratios in Nonmandatory Appendix A are adopted or if other, more restrictive span-of-control ratios are used.

9.5 Subsequent Qualification Interval

9.5.1 Development and Implementation. The qualification program shall include processes or procedures to establish the subsequent qualification interval for each qualification. The processes and procedures shall include assessment to identify subsequent qualification intervals that require reduction, unless the subsequent qualification intervals in Nonmandatory Appendix A are adopted or unless the subsequent qualification intervals in Nonmandatory Appendix A are adopted or other, more frequent intervals are used. Subsequent qualification intervals can be lengthened when data are provided to show a longer interval is prudent.

Subsequent qualification intervals may be established with a 3-month grace period. For example, tasks with a 1-yr subsequent qualification interval may be stated as 1 yr not to exceed 15 months, 3-yr subsequent qualification interval stated as 3 yr not to exceed 39 months, and 5-yr subsequent qualification intervals stated as 5 yr not to exceed 63 months.

9.5.2 Methods. The subsequent qualification interval may be established by any of the following methods:

(a) SME consensus in accordance with para. 9.5.3
(b) difficulty and importance analysis in accordance with para. 9.5.4
(c) adoption of Nonmandatory Appendix A subsequent qualification interval(s) in accordance with para. 9.5.5
(d) any other process that provides a rational and verifiable basis for the interval

9.5.3 SME Consensus. The subsequent qualification intervals may be established by use of SMEs. The initial subsequent qualification intervals may not exceed 5 yr. The subsequent qualification intervals set by this method shall be assessed and reduced if necessary. The subsequent qualification intervals may be set longer than 5 yr if data establish a rational basis for a longer interval.

As a minimum, SMEs will set the subsequent qualification interval considering such factors as

(a) difficulty and importance of the tasks associated with the qualification
(b) potential for loss of knowledge, skill, or distinctive physical abilities over time
(c) manufacturer or vendor recommendations
(d) other technical issues that may impact the safety or integrity of the pipeline

9.5.4 Difficulty and Importance Analysis or Difficulty, Importance, and Frequency Analysis. The subsequent qualification interval may be established by completion of a difficulty and importance analysis or a difficulty, importance, and frequency analysis as described in Nonmandatory Appendix G. The initial interval for subsequent qualification may not exceed 5 yr. The subsequent qualification intervals shall be assessed and reduced if necessary. The subsequent qualification interval may be set longer than 5 yr if data establish a rational basis for a longer interval.

9.5.5 Adoption of Nonmandatory Appendix A Subsequent Qualification Intervals. The subsequent qualification intervals in Nonmandatory Appendix A were established by completing a difficulty and importance analysis. The analysis was completed as described in Nonmandatory Appendix G. Frequency data were not used due to the wide variation in frequencies encountered at the industry level. The Nonmandatory Appendix A subsequent qualification intervals do not exceed 5 yr. Assessment is not required if the subsequent qualification intervals in Nonmandatory Appendix A are adopted. The subsequent qualification interval in Nonmandatory Appendix A may be increased if data establish a rational basis for a longer interval.

10 PORTABILITY

This section is nonmandatory and has been written to provide a common basis for utilizing and developing portable evaluations. A portable evaluation is an evaluation that more than one entity has mutually agreed to accept as meeting the requirements of this section (hereinafter referred to as acceptors).

Entities that choose to issue or accept portable evaluations shall describe or document how the minimum requirements of this section will be met. An entity (hereinafter referred to as a provider) may issue and manage portable evaluations. The acceptors shall describe how to determine if the portable evaluation is acceptable.

10.1 Evaluation Portability Requirements

The portable evaluation requirements of this section shall be implemented, as specified in paras. 10.1.1 through 10.1.8.

10.1.1 Section 2, Definitions. The definitions in section 2 shall apply to the processes for accepting, issuing, and managing portable evaluations.

10.1.2 Section 3, References and Standards. The references and standards in section 3 shall apply to the processes for accepting, issuing, and managing portable evaluations where applicable.
The qualification program shall incorporate processes or qualification program procedures or processes for managing and communicating changes affecting the qualification program. The qualification program procedures or processes shall include the following:

(a) their responsibilities in the implementation of the qualification program
(b) a list of covered tasks and AOCs
(c) a method for determining their qualification status and the qualification status of individuals they may direct and observe
(d) the requirement to perform only covered tasks for which they have been qualified, unless directed and observed by a qualified individual
(e) procedures for directing and observing nonqualified individuals, including span-of-control requirements
(f) action to take if an individual loses one or more qualification(s)

Additional examples of program effectiveness measures may be found in Nonmandatory Appendix I, section 1-2.

Revise para. 11.1 (3) to read as follows:

(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.

12.1.1 Program Requirements. Communication of qualification program requirements shall include the following:

(a) identification of the types of information that need to be communicated
(b) determination of which affected parties should receive such communication
(c) identification of how this information is communicated
(d) description of how assurance is provided that needed communications have occurred

12.2 Managing Program Changes

The qualification program shall include processes or procedures for managing and communicating changes that impact qualified individuals and individuals with program implementation responsibility. The processes and procedures should be flexible enough to accommodate changes having different levels of impact. Changes affecting the qualification program may be integrated into existing processes for managing changes to documents.

12.2.1 Management of Change Process. The management of change process is intended to ensure that qualified individuals and individuals with program implementation responsibility are provided appropriate and up-to-date information on changes affecting covered tasks and the qualification program. The management of change process ensures that, as the qualification program or a covered task changes, qualified individuals performing covered tasks remain qualified to perform those tasks. The management of change also ensures that individuals with program implementation responsibility have the information necessary to discharge those responsibilities.

For example, equipment changes may require a corresponding technical or procedural change. Personnel operating or maintaining such equipment need to understand and be able to follow these changed procedures.
13.3.6 Span of Control. Document the span of control for each covered task. If the spans of control in the task list in Nonmandatory Appendix A are adopted, further documentation is not required.

13.4 Documenting Abnormal Operating Conditions (AOCs) (Section 6)

Document the list of AOCs that apply.

13.5 Documenting Training Needs (Section 7)

When a need is identified for training to qualify an individual to perform a covered task, the requirement for the individual to complete training shall be documented.

13.6 Documenting Training

When training is required to support an individual's qualification, training information such as an outline of the training course objectives, as well as a record of the individual's successful completion of the training, shall be documented and maintained.

13.7 Documenting an Individual's Qualification

For each qualification granted to an individual, the information specified in paras. 13.7.1 through 13.7.7 shall be on file and recorded as supporting documentation.

13.7.1 Qualified Individual. The name of the qualified individual along with a unique identifier.

13.7.2 Covered Task. The covered task for which the individual was qualified.

13.7.3 AOCs. Document that the qualified individual has been successfully evaluated on his/her ability to recognize and react appropriately to AOCs.

13.7.4 Evaluation Method. The method(s) used to evaluate the individual, if different from that prescribed in the program.

13.7.5 Qualification Date. The date of qualification.

13.7.6 Testing. If testing is used to support an individual's qualification, successful completion of the test shall be documented.

13.7.7 Evaluator. The name of the individual conducting the evaluation along with a unique identifier. A proctor is not considered an evaluator.

13.8 Documenting Credentials of an Evaluator (Section 8)

Evaluator credentials or the process used to select evaluators shall be documented. Refer to para. 8.1.1(b).

13.9 Documenting Program Changes (Section 12)

The following are the documentation requirements for changes to the qualification program:
(a) date of change
(b) effective date of change
(c) description and basis of change
(d) category of change (refer to section 12)
(e) communication to affected individuals

13.10 Documenting Program Effectiveness Appraisals (Section 11)

All effectiveness appraisals shall be documented. The documentation shall include the following:
(a) name of company
(b) date
(c) location(s)
(d) list of the program elements reviewed during the effectiveness appraisal
(e) name of the individual(s) performing the effectiveness appraisal
(f) results, recommendations, and changes implemented

13.11 Maintenance of Documents

Individuals responsible for documentation shall ensure that documents are legible, accurate, completed appropriately, and traceable to the item(s) and/or activity(ies) to which they apply.

13.11.1 Formatting. Documents may be originals, copies, or electronic. Electronic documents may be scanned images, spreadsheets, or databases.

13.11.2 Record Life. Documents generated for an individual's qualification (para. 13.7) shall be maintained for 5 yrs after the qualification date expires. The remaining qualification program documents (paras. 13.1 through 13.6 and paras. 13.8 through 13.10) shall be retained while they are effective and for 5 yrs from the date the documents’ revisions become obsolete.

14 BIBLIOGRAPHY

The following is a list of publications that support this Standard:
API 510, Pressure Vessel Inspection Code: In-service Inspection, Rating, Repair, and Alteration
API Spec 12F, Specification for Shop-Welded Tanks for Storage of Production Liquids
API STD 620, Design and Construction of Large, Welded, Low-Pressure Storage Tanks
API STD 650, Welded Tanks for Oil Storage
API STD 1163, In-line Inspection Systems Qualification
API STD 2510, Design and Construction of LPG Installations
(a) Apply penetrant, and leave on for applicable dwell time.
(b) Remove penetrant with absorbent towel containing solvent remover. (Do not spray solvent onto inspection area.)
(c) Apply developer, and leave on for applicable dwell time.
(5) Interpret test results.
   (a) Mark any rejected areas of pipe for repair or removal.
(6) Document, as required.
   (b) Potential applicability: L, G, D
   (c) Difficulty: acceptable standard, therefore, data not collected
   (d) Importance: acceptable standard, therefore, data not collected
   (e) Interval: as specified by acceptable standard or practice
   (f) Evaluation method: as specified by acceptable standard or practice
   (g) Span of control: 1:2

Task 0621 Perform Magnetic Particle Testing (NDT)

(a) Task Guidance. This task includes magnetic particle testing and evaluation of test results. This task should be performed by a person qualified in accordance with ASNT SNT-TC-1A (Level II) or other recognized standard or practice.
(1) Select task procedure(s) and appropriate equipment.
(2) Ensure surface area is properly prepared for inspection.
(3) Perform magnetic particle testing.
   (a) Apply particles while magnetizing the inspection surface area.
   (b) Inspect pipe in a multidirectional manner that ensures full coverage of the areas of interest.
(4) Interpret test results.
   (a) Mark any rejected areas of pipe for repair or removal.
(5) Document, as required.
(6) Document, as required.
(7) Potential applicability: L, G, D
(8) Difficulty: acceptable standard, therefore, data not collected
(9) Importance: acceptable standard, therefore, data not collected
(10) Interval: as specified by acceptable standard or practice
(11) Evaluation method: as specified by acceptable standard or practice
(12) Span of control: 1:2

Task 0631 Perform Ultrasonic Testing (NDT)

(a) Task Guidance. This task includes ultrasonic testing (UT) and evaluation of test results. This task should be performed by a person qualified in accordance with ASNT SNT-TC-1A (Level II) or other recognized standard or practice. This task excludes wall thickness determination with a UT wall thickness device.
(1) Select task procedure(s) and appropriate equipment.
(2) Ensure surface area is properly prepared for inspection.
(3) Perform ultrasonic testing.
   (a) Identify pipe diameter, pipe wall thickness, weld configuration, and other variables that will affect the quality of the inspection.
   (b) Calibrate equipment to ensure proper sensitivity and range are established.
   (c) Apply couplant and scan area of inspection in a manner that ensures full coverage is obtained.
   (d) Verify calibration upon completion of examination.
(4) Interpret test results.
   (a) Mark any rejected areas of pipe for repair or removal.
(5) Document, as required.
(6) Potential applicability: L, G, D
(7) Difficulty: acceptable standard, therefore, data not collected
(8) Importance: acceptable standard, therefore, data not collected
(9) Interval: as specified by acceptable standard or practice
(10) Evaluation method: as specified by acceptable standard or practice
(11) Span of control: 1:2

Task 0641 Perform Visual Inspection of Pipe and Components Prior to Installation

(a) Task Guidance. This task includes the visual inspection of pipe and pipeline components, prior to installation, to identify visually determinable damage and defects.
(1) Select task procedure(s) and appropriate equipment.
(2) Perform visual inspection for the following as applicable:
   (a) missing, damaged, or disbonded coating
   (b) cuts, dents, gouges, and cracks
   (c) bends and buckling
   (d) missing or damaged parts and components
(3) Document, as required.
(4) Potential applicability: L, G, D
(5) Difficulty: 2
(6) Importance: 2
(7) Interval: 5 yr
(8) Evaluation method
Record #18-924

*NEW TASK* resulting from record 16-933 to identify additional tasks found in API 653. The NDT tasks were some of the first that were identified and discussed by the committee.

Task 0637 Perform Vacuum Box Inspection of Tank Welds (NDT)

(a) Task Guidance. This task includes vacuum box technique of bubble leak testing to locate leaks in a pressure boundary. The purpose of this task is to check soundness of annular joints, bottom (long seam & short seam) and welding joints for annular plates.

(1) Select task procedure(s) and appropriate equipment.
(2) Determine appropriate areas of the tank for conducting the test as indicated by company representative, industry standard, or procedure.
(3) Verify the equipment is calibrated.
   (-a) Bottom is sealed against tank surface by a sponge rubber gasket.
   (-b) Test scheme contains suitable connections, necessary valve, and calibrated vacuum gauge.
(4) Demonstrate ability to use test equipment.
   (-a) Demonstrate test scheme with sample test block by applying bubble solution at site before conducting the test.
   (-b) Ensure bubble solution should produce a film that doesn’t break away rapidly.
(5) Ensure testing area is cleaned and visually inspect joints prior to performing vacuum test.
(6) Apply bubble solution.
(7) Connect the vacuum device to the vacuum box.
(8) Perform vacuum box inspection.
   (-a) Ensure gauge registers a partial vacuum of 21 Kpa (3.05 psia) for inspection of the joints.
   (-b) Ensure each adjacent placement of the vacuum box overlaps prior tested area by a minimum of 2”.
   (-c) Maintain the vacuum for at least 10 seconds after reaching the designated vacuum.
   (-d) Accept the tested area only when no continuous bubble formation is observed as bubbles produced by air sucked through the welded seam can detect the presence of a defect.
(9) Clean the test area after the test is completed.
(10) Document, as required.

(b) Potential applicability: L
(c) Difficulty: 3
(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
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. (50 (21) mm) 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:
(-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.
(-e) Remove machine.
(7) 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: P & W/O
(g) Span of control: 1:2

(21) Task 1091 Tap a Pipeline [Tap Diameter Greater Than 2 in. (50 mm)]

(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
(-b) valve
(-c) tapping machine
(-d) cutter and pilot combination
(3) Prepare to perform tap.
(-a) Inspect fitting.
(-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.
(-e) Remove machine.
(7) 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: P & W/O
(g) Span of control: 1:2

(22) Task 1101 Tap a Pipeline With a Built-In Cutter

(a) Task Guidance. This task includes tapping a pipe with an installed fitting that contains a built-in cutter. 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) Determine the travel or tap requirements of the fitting selected.
(3) Perform the tap.
(-a) Lower cutter.
(-b) Bottom out cutter.
Task 1131 Perform Stopping of Pipe

(a) Task Guidance. This task includes the insertion and removal of a stopper (stopple). This task also includes pressure verification and pressure monitoring to ensure system pressure requirements are maintained.

1. Select task procedure(s) and appropriate equipment.
2. Identify the segments to be affected by the stopping procedure.
   -a) Identify single or multiple feeds.
   -b) Identify operating pressure.
   -c) Verify multiple fitting(s) or valve(s) to be used in stopping procedure.
3. Complete notifications, as appropriate.
4. Install equipment, in accordance with manufacturer's specifications.
   -a) Perform equipment check.
   -b) Install valve.
   -c) Install appropriate equipment to remove the completion plug, if applicable.
   -d) Verify sealing element size.
   -e) Select appropriate gaskets, if applicable.
   -f) Install machine.
   -g) Install equalization hose, and equalize equipment with line product, if applicable.
   -h) Open valve.
   -i) Verify functional leak test.
   -j) Install pressure gage(s) to monitor system pressures.
3. Insert, and properly seat.
5. Monitor pressure.
6. Remove equipment, in accordance with manufacturer's specifications.
   -a) Remove from pipeline.
   -b) Close valve, and relieve pressure from equipment.
   -c) Install completion equipment, and equalize, if applicable.
   -d) Open valve, and insert the completion plug.
   -e) Close valve, if applicable.
   -f) Remove completion machine from valve.
7. 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: P & W/O
(g) Span of control: 1:2

Task 1141 Squeeze Off Plastic Pipe

(a) Task Guidance. This task includes the squeeze off of plastic pipe. This task also includes the selection, installation, and removal of squeeze-off tools and monitoring of pressure to ensure system pressure requirements are maintained.

1. Select task procedure(s) and appropriate equipment.
2. Identify segment(s) of pipe that will need to be squeezed off.
   -a) Verify single feed or multiple feeds.
   -b) Verify operating pressure.
3. Make notifications, as appropriate.
4. Ensure static ground equipment is in place, as applicable.
5. Install squeeze-off tool, in accordance with manufacturer's specifications.
   -a) Ensure the tool is square to the pipe with the squeeze plates parallel to each other.
   -b) Inspect the pipe for cuts, scrapes, gouges, or anomalies before placing of the squeeze-off tool.
   -c) Ensure squeeze location is free of obstruction.
   -d) Ensure pipe is supported.
   -e) Verify stop blocks are correct for the pipe size.
   -a) Engage the squeeze-off tool.
   -b) Continue steady squeeze while allowing pipe to cold flow in accordance with pipe manufacturer's specifications.
   -c) Discontinue squeeze once the blocks engage each other.
7. Monitor pressure, as applicable.
8. Release and remove squeezer, in accordance
9. Mark squeeze point on pipe.
   -a) Ensure tape or some other method is used to identify the squeeze-off point.
10. Document, as required.

(b) Potential applicability: G, D
(c) Difficulty: 3
(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

Task 1151 Squeeze Off Steel Pipe

(a) Task Guidance. This task includes the squeeze off of steel pipe. This task also includes the selection, installation, and removal of squeeze-off tools and monitoring of pressure to ensure system pressure requirements are maintained.

1. Select task procedure(s) and appropriate equipment.
Task 1311 Inspect Pipeline Surface Conditions by Patrolling Right-of-Way or Easement

(a) Task Guidance. This task includes performing right-of-way or easement patrol (e.g., walking, flying, or driving) to visually identify signs of leaks, encroachments, conditions of the right-of-way, or any other signs of potential impact to pipeline safety or integrity. Includes reporting an emergency condition.

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

(2) Perform patrol, examining for the following:

- (a) signs of leaks
  - (1) dead vegetation
  - (2) vapor cloud
  - (3) odor
  - (4) visual or auditory evidence of escaped product

- (b) encroachments
  - (1) disturbed or displaced soil
  - (2) unauthorized structures/equipment on or near the right-of-way

- (c) signs of conditions with potential impact to pipeline safety or integrity
  - (1) unintentional exposed pipeline
  - (2) earth movement
  - (3) vandalism
  - (4) missing or damaged markers

(3) Make notifications, as appropriate.

(4) Document, as required.

(b) Potential applicability: L, G, D

c) Difficulty: 2

d) Importance: 4

e) Interval: 5 yr

(f) Evaluation method

(1) Initial: P & W/O

(2) Sub: W/O

(g) Span of control: 1:1

Task 1331 Perform Damage Prevention Inspection During Third-Party Excavation or Encroachment Activities as Determined Necessary by Operator

(a) Task Guidance. When an operator inspects third-party excavations or encroachment activities, this task includes the inspection of those activities and actions to protect the operators’ facilities, such as work stoppage and requiring proper support for operators’ pipeline facility.

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

(2) Damage prevention activities prior to excavation.

- (a) Verify that company facilities are located and marked.

- (b) Verify physical location, as applicable.

(3) Implement damage prevention actions during excavation activities, as applicable.

- (a) Provide spotter for equipment operator.

- (b) Properly support and protect pipeline when exposed.

- (c) Hand dig when necessary.

(4) If damage occurs or is found, stop excavation, and notify proper personnel.

(5) Document, as required.

(b) Potential applicability: L, G, D

c) Difficulty: 3

d) Importance: 4

e) Interval: 3 yr

(f) Evaluation method

(1) Initial: W/O

(2) Sub: W/O

(g) Span of control: 1:1
-a) Inspect equipment.
-b) Verify equipment is calibrated.
-c) Test equipment with known sources, as applicable.

4) Prepare surface (performed by diver).
   -a) Thoroughly clean area to be tested (e.g., marine growth, sediment, scale).
   -b) Remove coating to expose pipe, as applicable.
   -c) Ensure pits are free of debris.

5) Perform visual/tactile inspection of the pipeline/facility and report findings (performed by diver). Identify types and characteristics of the following:
   -a) corrosion: pits, rust, scale, etc.
   -b) mechanical damage: dent, gouge, buckle, ovality, etc.

6) Measure and classify marine growth (performed by diver).
   -a) Classify marine growth as soft or hard growth.
   -b) Measure thickness using probe, soft tape measure, or other appropriate equipment.
   -c) Report type, thickness, and coverage percentage.

7) Measure pit depth and diameter with pit gauge. Obtain multiple readings and outline or map areas of severe pitting (performed by diver).
   -a) depth, width, and length
   -b) orientation and location

8) Place transducer to take ultrasonic thickness measurements (performed by diver).
   -a) Hold firmly in contact with the surface.
   -b) Obtain multiple readings.
   -c) Post-calibrate the ultrasonic thickness meter after taking measurements.

9) Document, as required.

Task 1471 Diving: Install Galvanic Anodes on Underwater Pipeline

(a) Task Guidance. This task includes the installation of galvanic anodes on submerged pipelines. This task does not include welding or measuring structure-to-electrolyte potential as addressed in:
   - Task 0801, Perform Welding
   - Task 1431, Diving: Measure Structure-to-Electrolyte Potential

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

Task 1481 Diving: Perform Temporary Marking of Underwater Pipeline

(a) Task Guidance. This task includes locating buried underwater pipelines utilizing probes or water jets, etc. This task also includes placing temporary markers (e.g., sonar reflectors, buoys).

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) depth of water
   -c) client preference

3) Perform test equipment check to verify that equipment functions within specified parameters.

Potential applicability: L, G, D

Difficulty: 2

Importance: 3

Interval: 5yr

Evaluation method

1) Initial: P & W/O
2) Sub: W/O
3) Span of control: 1:0
(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):
   - Install temporary supports to stabilize pipeline: lift bags, cranes, 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. (450 mm) or more. Determine pipeline separation by pneumoathometer readings.
   - Inspect temporary supports between pipelines (mats or bags).
   - Inspect for improper use of rigging.

(7) Document, as required.

(b) Potential applicability: L, G, D
(c) Difficulty: 2
(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

(21) Task 1511 Diving: Perform Underwater Flange Assembly and Disassembly

(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.
   - 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 pneumatic hose.
   - Properly align flanges.
(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.

(22) 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.
   - 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.
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 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

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.

   (1) Perform pressure test, if applicable.

(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 1551 Diving: Perform Stopping of Pipe

(a) Task Guidance. This task includes the insertion and removal of a stopper (stopple) as well as pressure verification. This task does not include the items addressed in Task 1541, Diving: Perform an Underwater Mechanical Tap.

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 to remove coating and clean pipeline.
   - (a) water blaster
   - (b) buffer
   - (c) grit blaster
   - (d) scraper
4. Identify segment(s) that requires stopping, confirm pipeline operations, and conduct pipeline quality checks.
   - (a) Locate site, and remediate excavated area, as required.
   - (b) Ensure coating is removed.
   - (c) Perform visual/tactile inspection.
     - (1) Inspect plugs, fittings, and equipment.
     - (2) Verify sealing elements are in good condition.
   - (d) 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.
   - (e) Ensure pipeline pressure and flow rate are appropriate according to requirements.
   - (f) Ensure isolation measures have been implemented.
5. Install plugging machine according to appropriate procedures.
   - (a) Place dead-man anchor on bottom as connection point for the inverter line of the lift bag.
   - (b) Ensure equipment is not lowered directly above the pipeline.
   - (c) Avoid accidental contact of equipment with the pipeline or natural bottom during installation.
   - (d) Ensure proper alignment of plugging machine on flange.
   - (e) Install and tighten bolts according to manufacturer procedures.
6. Pressure test equipment seals, if required.
7. Install stopper.
   - (a) Equalize pressure, open valve, and lower the plug into the pipeline until a seal is obtained.
   - (b) Retract plugging shaft.
### Table B-1 Covered Tasks and Status History by Categories (Cont’d)

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<tr>
<td>1151</td>
<td>Squeeze off Steel Pipe</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>1201</td>
<td>Isolate Service Lines Temporarily Including Service Discontinuance</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td></td>
<td><strong>Inspection and/or Investigation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0201</td>
<td>Perform Visual Inspection of Installed Pipe and Components for Mechanical Damage</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>0211</td>
<td>Measure and Characterize Mechanical Damage on Installed Pipe and Components</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>0641</td>
<td>Perform Visual Inspection of Pipe and Components Prior to Installation</td>
<td>Revised</td>
<td>2014</td>
</tr>
</tbody>
</table>
### Table B-1 Covered Tasks and Status History by Categories (Cont'd)

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Task Title</th>
<th>Latest Status</th>
<th>Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0531</td>
<td>Inspect, Test, and Maintain Rotary Pump</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>0541</td>
<td>Inspect, Test, and Maintain Screw Pump</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td><strong>Pumps (Cont'd)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1651</td>
<td>Perform Purging of Pipeline Facilities</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>1661</td>
<td>Perform Purging of Hazardous Liquids Pipeline</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>1081</td>
<td>Tap a Pipeline [Tap Diameter 2 in. (50 mm) and Less]</td>
<td>Revised</td>
<td>2021</td>
</tr>
<tr>
<td>1091</td>
<td>Tap a Pipeline [Tap Diameter Greater Than 2 in. (50 mm)]</td>
<td>Revised</td>
<td>2021</td>
</tr>
<tr>
<td>1101</td>
<td>Tap a Pipeline With a Built-In Cutter</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td><strong>Valves and Actuators</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0301</td>
<td>Open and Close Valves Manually</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0311</td>
<td>Operate Valves Manually to Adjust Flow/Pressure and Monitor for Changes</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0321</td>
<td>Perform Valve Corrective Maintenance</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0331</td>
<td>Perform Valve Visual Inspection and Partial Operation</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0341</td>
<td>Perform Valve Preventive Maintenance</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0351</td>
<td>Inspect, Test, and Maintain Pneumatic Actuator/Operator</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>0361</td>
<td>Inspect, Test, and Maintain Electric Actuator/Operator</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>0371</td>
<td>Inspect, Test, and Maintain Hydraulic Actuator/Operator</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td>1191</td>
<td>Maintain Service Valve Upstream of Customer Meter</td>
<td>Revised</td>
<td>2014</td>
</tr>
<tr>
<td><strong>Vaults</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1351</td>
<td>Inspect and Maintain Vault</td>
<td>Revised</td>
<td>2021</td>
</tr>
<tr>
<td><strong>Welding</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0801</td>
<td>Perform Welding</td>
<td>Revised</td>
<td>2018</td>
</tr>
<tr>
<td>0811</td>
<td>Perform Visual Inspection of Welding and Welds</td>
<td>Revised</td>
<td>2018</td>
</tr>
</tbody>
</table>
Table D-1 is an example of evaluation criteria for a task, Measure Structure-to-Electrolyte Potential, Task 0001. This example was created by taking an existing evaluation for the task and listing the criteria as they correspond to the steps for portability. Listing criteria according to the steps is not necessary, but for portable evaluation providers, it may help show how the steps are covered by the evaluation. Using the same method for initial and subsequent qualification is always an option. When initial qualification requires performance along with written or oral evaluation, but use of only written or oral testing is justified for subsequent qualification, those criteria evaluated by performance can be measured with written or oral questions for subsequent qualification. For example, Step 2 criteria require the individual to “verify equipment functions within specified parameters.” Rather than performing the verification, for subsequent qualification, the individual could be questioned on the steps he or she would perform, how the step or steps might change dependent on the situation, why each step is needed, etc. It is important that the same criteria are covered in both initial and subsequent qualification, even if the method is allowed to be different.

<table>
<thead>
<tr>
<th>Table D-1 Task 0001, Measure Structure-to-Electrolyte Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step</strong></td>
</tr>
<tr>
<td>1. Select task procedure(s) and appropriate equipment.</td>
</tr>
<tr>
<td>2. Perform test equipment check.</td>
</tr>
<tr>
<td>(a) Verify half-cell condition.</td>
</tr>
<tr>
<td>(b) Verify calibration of proper equipment.</td>
</tr>
<tr>
<td>(c) Verify equipment functions within specified parameters.</td>
</tr>
<tr>
<td>3. Identify and locate correct test point.</td>
</tr>
<tr>
<td>(a) Verify location.</td>
</tr>
<tr>
<td>(b) Verify location of half-cell placement.</td>
</tr>
<tr>
<td>4. Measure and ensure accuracy of structure-to-electrolyte potential.</td>
</tr>
<tr>
<td>(a) Connect lead to structure.</td>
</tr>
<tr>
<td>(b) Contact half cell with electrolyte.</td>
</tr>
<tr>
<td>(c) Verify polarity.</td>
</tr>
<tr>
<td>(d) Obtain reading.</td>
</tr>
<tr>
<td>5. Document, as required.</td>
</tr>
</tbody>
</table>
D) Do people get better at the task with a lot of practice? If yes, skill is normally required.

C) Is practice required to learn to perform the task? If yes, skill is normally required.

D) If a person has not performed the task for some time, will they have trouble with the coordination required to perform the task? If yes, skill is normally required.

E) Would a decrease in a person's ability to hear or see colors make them unable to perform the task? If yes, distinctive physical ability is likely required.

F) Did it take long to learn how to perform the task? If no, a minimal amount of knowledge or skill is likely required, so evaluating knowledge should be sufficient.

G) Could someone be successfully talked through performing the task who has not performed it before? If yes, the task is mainly knowledge based.

H) Could someone perform the task by following policies and procedures who has not performed it before? If yes, the task is mainly knowledge based.

The tasks on the covered task list require some type of knowledge, so written or oral (W/O) was listed as a requirement for each task. For tasks where a skill or a distinctive physical ability is necessary, a performance evaluation (P) was added.

When SMEs determine a task will be too difficult or impossible to evaluate for knowledge without seeing the knowledge applied through performance (e.g., certain troubleshooting tasks), performance evaluation may be added as a minimum requirement for both initial and subsequent qualification.

When SMEs determine it is important to be sure that an individual can properly apply their knowledge, performance evaluation may be added as a minimum requirement for the initial qualification. Remember that this exercise is to establish the minimum requirements. Once the individual has proven the ability to apply the knowledge during initial qualification, evaluation that the knowledge is maintained is sufficient for subsequent qualification. However, from a practical standpoint, some will choose to have individuals apply the knowledge through a performance evaluation for both initial and subsequent qualification. The minimum requirements set through this or any process may always be exceeded.

Note that even though the subsequent qualification method(s) may differ from initial qualification, it is expected that all criteria be covered by the method(s) used each time.

Add the following text in between sentences mark with the highlighted area:

...subsequent qualification. If skills or abilities for a particular task are likely to degrade due to low task repetition, the performance assessment in subsequent evaluation may be appropriate. The minimum...
NONMANDATORY APPENDIX H
IMPLEMENTATION OF ASME B31Q

H-1 SCOPE

The purpose of this Appendix is to provide guidance to organizations for the implementation of the ASME B31Q Standard. First, guidance is provided for the comparison between the organization’s program and ASME B31Q. Second, guidance is provided for the implementation of the ASME B31Q task list.

H-2 PROGRAM COMPARISON

Differences between an organization’s operator qualification (OQ) program and ASME B31Q do not necessarily indicate a deficiency. They indicate where changes may be considered to document current practices or to converge with this Standard. Table H-2-1 is a detailed list of program requirements, which may be used to compare an OQ program to the ASME B31Q Standard. Table H-2-2 provides an example comparison for the first five items. Once the comparison is made to identify where the organization’s current OQ program diverges from ASME B31Q, the organization can choose to make appropriate changes. Documentation of this review and program changes may be done in accordance with ASME B31Q, section 11, Program Effectiveness, and section 13, Documentation Requirements.

H-3 IMPLEMENTATION OF NONMANDATORY APPENDIX A, THE ASME B31Q TASK LIST

This section provides guidance for implementing the Nonmandatory Appendix A task list to include creation and implementation of an ASME B31Q-compatible task list. Figures H-3-1 and H-3-2 provide flow charts of the process, and Table H-3-1 provides an example of a 1-yr transition plan for implementing the ASME B31Q task list.

H-3.1 Creation of a Compatible Task List in Accordance With ASME B31Q

Figure H-3-1 provides a flowchart of the steps described in this paragraph.

H-3.1.1 Review ASME B31Q Task List. The first action needed to implement the ASME B31Q task list is to have a group of subject matter experts (SMEs) review the list to determine which tasks on the list apply to the organization’s operations.

H-3.1.1.1 Obtain the most current ASME B31Q Pipeline Personnel Qualification Task List document (Nonmandatory Appendix A) for reference. Permission may need to be obtained from ASME to use and share this document within the organization.

H-3.1.1.2 Once the ASME B31Q task list has been reviewed, select SMEs for the task review meeting. Guidance for selecting SMEs for this type of review is covered in para. 5.3.1.

H-3.1.1.3 Hold an SME meeting to review the ASME B31Q task list for applicable tasks in accordance with para. 5.5(a). If there are any tasks in the ASME B31Q list that should not be included in the organization’s task list, the rationale for exclusion in accordance with para. 5.5(b). The result of the review is an SME-validated ASME B31Q task list of applicable tasks.

H-3.1.2 Review Organization’s Current Task List. The second action needed to implement the ASME B31Q task list is to have a group of SMEs review the organization’s current task list. The SMEs determine tasks that may not be on the ASME B31Q list that need to continue as covered tasks.

H-3.1.2.1 Obtain the organization’s current OQ covered task list.

H-3.1.2.2 Once the task list for review is obtained, select SMEs for the task review meeting. Guidance for selecting SMEs for this type of review is covered in para. 5.3.1.

H-3.1.2.3 Hold the SME meeting to review the organization’s current task list for applicable tasks that may need to be added to the ASME B31Q task list in accordance with para. 5.5(c) that are unique to the organization’s operation or relate to the development of new technology. If there are any tasks in the organization’s current task list that SMEs agree should not be included in the final list, document their rationale for exclusion. This documentation is not required in accordance with para. 5.5(c) but is a good practice, since there may be questions about those changes. The result of the review is an SME-validated list of unique or new technology-related tasks.
### Table H-2-1 OQ Program Comparison to ASME B31Q Standard (Cont’d)

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement in ASME B31Q Standard</th>
<th>Comments</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.1</td>
<td>Document the evaluation process, which establishes responsibilities for establishing and maintaining the evaluation process and evaluations and selecting evaluators and/or proctors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1.1(b)</td>
<td>Use evaluators when a judgment must be made about an individual’s performance and select in accordance with para. 5.3.1, based on the ability to administer the evaluation in accordance with the requirements and to make it possible for the individual to accurately demonstrate his or her KSAs during evaluation</td>
<td>the evaluator's KSAs to be accurately demonstrated during evaluation</td>
<td></td>
</tr>
<tr>
<td>8.1.2</td>
<td>Include in the evaluation process policies or procedures for prohibiting an individual from self-scoring, verifying the identity of the individual being evaluated, investigating and resolving suspected cheating, concluding an evaluation early when unsafe or unsatisfactory actions are being demonstrated, and resolving evaluation failure to include determining remedial actions and the minimum allowable time between evaluation attempts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.1</td>
<td>SMEs have verified that the content of the evaluation(s) cover the criteria required for performance of the task(s) and address conditions that may either be caused by or encountered during performance of the task that adversely impact the safety or integrity of the pipeline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.2</td>
<td>For each task, document evaluation criteria that represent the knowledge, skills, and distinctive physical abilities an individual must possess and demonstrate to be considered qualified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.3</td>
<td>Select evaluation method(s) for each task to reflect the purpose of the evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3.1</td>
<td>When used, develop and maintain written evaluations using a process that prevents disclosure of written evaluations and scoring keys, includes administration instructions, includes questions to probe an individual’s knowledge and comprehension of all task criteria, limits use of True/False items, establishes which if any items may be completed using reference materials, minimizes the use of individual items that must be answered correctly in order to pass, sets pass/fail score, and ensures that when an individual is accommodated by having a written evaluation read to them it is performed in accordance with administration directions and without coaching</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table H-2-1 OQ Program Comparison to ASME B31Q Standard (Cont’d)

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement in ASME B31Q Standard</th>
<th>Comments</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.1</td>
<td>Document the evaluation process, which establishes responsibilities for establishing and maintaining the evaluation process and evaluations and selecting evaluators and/or proctors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1.1(b)</td>
<td>Use evaluators when a judgment must be made about an individual’s performance and select in accordance with para. 5.3.1, based on their ability to administer the evaluation in accordance with the requirements and to make it possible for the individual to accurately demonstrate his or her KSAs during evaluation</td>
<td>Revise to: the evaluator’s</td>
<td></td>
</tr>
<tr>
<td>8.1.2</td>
<td>Include in the evaluation process policies or procedures for prohibiting an individual from self-scoring, verifying the identity of the individual being evaluated, investigating and resolving suspected cheating, concluding an evaluation early when unsafe or unsatisfactory actions are being demonstrated, and resolving evaluation failure to include determining remedial actions and the minimum allowable time between evaluation attempts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1.3</td>
<td>To protect the integrity of evaluations, operators shall have provisions in place to prevent the use of unauthorized reference materials, clarify written test items as authorized, configure testing hardware and software to prevent unauthorized access and copying of electronic test materials, prevent unauthorized access to hardcopy evaluation materials and document test proctor and evaluator roles and responsibilities related to each of these items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.1</td>
<td>SMEs have verified that the content of the evaluation(s) cover the criteria required for performance of the task(s) and address conditions that may either be caused by or encountered during performance of the task that adversely impact the safety or integrity of the pipeline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.2</td>
<td>For each task, document evaluation criteria that represent the knowledge, skills, and distinctive physical abilities an individual must possess and demonstrate to be considered qualified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.3</td>
<td>Select evaluation method(s) for each task to reflect the purpose of the evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3.1</td>
<td>When used, develop and maintain written evaluations using a process that prevents disclosure of written evaluations and scoring keys, includes administration instructions, includes questions to probe an individual’s knowledge and comprehension of all task criteria, limits use of True/False items, establishes which if any items may be completed using reference materials, minimizes the use of individual items that must be answered correctly in order to pass, sets pass/fail score, and ensures that when an individual is accommodated by having a written evaluation read to them it is performed in accordance with administration directions and without coaching</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table H-2-1 OQ Program Comparison to ASME B31Q Standard (Cont’d)**

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement in ASME B31Q Standard</th>
<th>Comments</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1.3.1</td>
<td>Ensure that evaluation for initial qualification includes a performance evaluation, unless the covered task has been determined to require only an individual’s knowledge to correctly perform the task</td>
<td>Verification of retention of required distinctive physical abilities should or may be completed through a performance evaluation in accordance with section 8 or through documented performance monitoring or other means that confirm and document the individual is capable of performing the covered task(s)</td>
<td>In the subsequent qualification process, verify that any suspension related to the qualification has been satisfactorily resolved</td>
</tr>
<tr>
<td>9.1.3.2</td>
<td>Ensure that evaluations for subsequent qualification utilize methods that verify the required KSAs needed to perform each covered task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td>Include processes or procedures to suspend and reinstate or revoke a qualification(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2.1</td>
<td>Ensure that the suspension and reinstatement process or procedure includes, when necessary, notifying the individual and those who are responsible to assign the performance of covered tasks to the individual</td>
<td>Provide guidance for determining when a suspension is appropriate to include a list of common situations where suspension should be considered</td>
<td></td>
</tr>
<tr>
<td>9.2.2</td>
<td>Reinstate suspended qualifications when it has been determined and documented that the individual was and still is qualified, the individual has completed action that resolves the concern that caused the suspension, or the qualification has been reestablished in accordance with the requirements for initial qualification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.2.3</td>
<td>Ensure that the revocation process or procedure includes, when necessary, notifying the individual and those who are responsible to assign the performance of covered tasks to the individual</td>
<td>Consider revocation of qualification when a suspended qualification is not resolved or when it is determined that an individual is no longer qualified</td>
<td></td>
</tr>
<tr>
<td>9.2.4</td>
<td>If it is determined that an individual is to be qualified for a revoked qualification, they shall be qualified in accordance with initial qualification procedures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table H-2-1 OQ Program Comparison to ASME B31Q Standard (Cont’d)

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement in ASME B31Q Standard</th>
<th>Comments</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure that tasks performed after the emergency condition has been stabilized or terminated are performed by qualified individuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Professional emergency responders, such as firefighters, do not need to be qualified to perform covered tasks unless they are under contract to perform them on behalf of the operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individuals who perform covered tasks through a mutual aid arrangement shall perform emergency response tasks consistent with the qualification requirements for emergency responders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4</td>
<td>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. The qualified individual in any span-of-control situation is accountable for the work and shall be qualified through evaluation on all aspects of the covered task(s), direct and observe the entire performance of the task by the nonqualified individual(s) or clearly assign direction of the nonqualified individual(s) to another qualified individual, be physically present and able to take immediate action to prevent or mitigate an AOC, remain able to intervene with immediate corrective action as necessary throughout task performance, stop the performance of the task if any unsafe condition should arise and instruct the nonqualified individuals to stop work if the qualified individual is unable to meet any of the above criteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4.1</td>
<td>A span-of-control ratio that indicates the number of nonqualified individuals who can perform a task under the direction and observation of a qualified individual shall be set for each task. When a single qualified individual directs and observes more than one nonqualified individual performing different covered tasks, the qualified individual must adhere to the most restrictive span-of-control ratio for a given task.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4.2</td>
<td>Ensure that the qualification program either adopts the span-of-control ratios in <em>Nonmandatory Appendix A</em> or includes processes or procedures to establish and assess the span-of-control ratio for each covered task.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table H-2-1 OQ Program Comparison to ASME B31Q Standard (Cont’d)

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Requirement in ASME B31Q Standard</th>
<th>Comments</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5.1</td>
<td>Ensure that the qualification program includes processes or procedures to establish the subsequent qualification interval for each qualification. The processes and procedures shall include assessment to identify subsequent qualification intervals that require reduction, unless the subsequent qualification intervals in Nonmandatory Appendix A are adopted or are more frequent. Intervals can be lengthened when data can be provided that show a longer interval is prudent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5.1</td>
<td>Subsequent qualification intervals may be established with a 3-month grace period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Portability is a nonmandatory section in this Standard. Entities that choose to issue or accept portable evaluations shall describe or document how the minimum requirements of this section will be met for sections 2, 3, 5, 6, 8, 9, 12, and 13.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1</td>
<td>Ensure that the qualification program includes a process to appraise its effectiveness and shall be conducted periodically at an interval of 3 yr not to exceed 39 months.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1(a)</td>
<td>Determine whether the program is being implemented as documented or use Nonmandatory Appendix I.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1(b)</td>
<td>Appraise whether the program is effective as implemented.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1(c)</td>
<td>Include provisions to update the qualification program based on the results in compliance with the management of change process used for the OQ program.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1(c)(2)</td>
<td>The operator shall measure the number of individuals whose performance of a covered task(s) adversely affected the safety or integrity of the pipeline. 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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.1(3)</td>
<td>The operator shall incorporate changes to the program to address any deficiencies found as a result of the implementation appraisals, the program measures review, and other available internal and external data.</td>
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<td>12.1.1</td>
<td>Ensure that communication of qualification program requirements includes the following: identification of the types of information that need to be communicated, determination of which affected parties should receive such communication, identification of how this information is communicated, and a description of how assurance is provided that needed communications have occurred.</td>
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<tr>
<td>Paragraph</td>
<td>Requirement in ASME B31Q Standard</td>
<td>Comments</td>
<td>Determination</td>
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<tr>
<td>13.3.4</td>
<td>Document the appropriate evaluation method(s) for each covered task, unless the task list in Nonmandatory Appendix A is adopted</td>
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<tr>
<td>13.3.5</td>
<td>Document the subsequent qualification interval for each covered task, unless the task list in Nonmandatory Appendix A is adopted</td>
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<tr>
<td>13.3.6</td>
<td>Document the span-of-control for each covered task, unless the task list in Nonmandatory Appendix A is adopted</td>
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<tr>
<td>13.4</td>
<td>Document the list of AOCs that apply</td>
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<tr>
<td>13.5</td>
<td>When a need is identified for training to qualify an individual to perform a covered task, document the requirement for the individual to complete training</td>
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<tr>
<td>13.6</td>
<td>When training is required to support an individual’s qualification, document and maintain training information such as an outline of the training course objectives, as well as a record of the individual’s successful completion of the training</td>
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<td>13.7</td>
<td>For each qualification granted to an individual, ensure the following is on file and recorded as supporting documentation: the name of the qualified individual along with a unique identifier, the covered task for which the individual was qualified, the individual has been successfully evaluated on his/her ability to recognize and react to AOCs, the method used to evaluate the individual if different from that prescribed in the program, the date of qualification, successful completion of the test if testing is used, and the name of the evaluator along with his/her unique identifier if an evaluator conducted the evaluation</td>
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<td>13.8</td>
<td>Include evaluator credentials or the process used to select evaluators</td>
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<td>13.9</td>
<td>Ensure program changes include: date of change, effective date of change, description and basis of change, category of change, and communication to affected individuals</td>
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<tr>
<td>13.10</td>
<td>Ensure all effectiveness appraisals shall be documented to include name of organization, date, location(s), list of the program elements reviewed during the effectiveness appraisal, name of the individual(s) performing the effectiveness appraisal, and results, recommendations, and changes implemented</td>
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<tr>
<td>13.11</td>
<td>Ensure documents are legible, accurate, completed appropriately, and traceable to the item(s) and/or activity(ies) to which they apply</td>
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NONMANDATORY APPENDIX I
PROGRAM IMPLEMENTATION AND EFFECTIVENESS APPRAISALS

I-1 PROGRAM IMPLEMENTATION APPRAISAL

Program implementation appraisals should apply to the elements of the program, including development, implementation, data analysis, and support services. These appraisals should determine whether or not the functions of an operation comply with the qualification program. These appraisals may be conducted by internal organizations or outside agencies. Prior to performing the appraisal, the scope and procedures of the appraisal should be clearly defined. Implementation appraisals should consider both qualification management and the qualification program.

(a) Questions that may be addressed in evaluating qualification management include the following:

(1) Are covered tasks being completed by qualified individuals or by nonqualified individuals being directed and observed by a qualified individual within the span of control of the qualification program?
(2) Are covered tasks being performed using the appropriate procedures?
(3) Are evaluations being performed by appropriate methods and evaluators?
(4) Are suspended and revoked qualifications being managed as stated in the qualification program?
(5) Are reviews of events or actions that adversely affected the safety or integrity of the pipeline conducted? Are follow-up actions taken?
(6) Are changes to the qualification process being communicated and implemented according to the qualification program?
(7) Are qualification records current and complete?

(b) Questions that may be addressed in appraising the qualification program include the following:

(1) Are the responsibilities of individuals under the qualification program clearly and formally defined?
(2) Are the individuals involved in the qualification program properly informed and aware of the program and all of their activities as stated in the qualification program?
(3) Are evaluations being performed by appropriate methods and evaluators?
(4) Are qualification records current and complete?
(5) Are changes to the qualification process being communicated and implemented according to the qualification program?
(6) Are records maintained pursuant to the requirements of this Standard and qualification program? Examples of those documents include:
   (-a) qualification program
   (-b) evaluation records
   (-c) evaluator records
   (-d) training records
   (-e) quality assurance documents
   (-f) management of change documents

I-2 PROGRAM EFFECTIVENESS APPRAISAL

In addition to the two required measures, the following measures may be considered to appraise program effectiveness:

(a) effectiveness of the methods of evaluation for individual qualifications
(b) number of events or actions that adversely affect the safety or integrity of the pipeline within a specific time frame
(c) number of individuals with qualifications suspended or revoked
(d) number of reasonable cause investigations
(e) review of feedback received from evaluators, employees, contractors, other affected individuals, and governing agency feedback regarding
   (1) training
   (2) evaluation issues
   (3) procedural issues
   (4) AOC recognition and reaction issues
   (5) subsequent qualification intervals’ effectiveness
   (6) span of control effectiveness or
(f) review of the findings of program implementation appraisals

As a result of these appraisals, the operator shall consider changes to the evaluation criteria, selection of evaluation methods, spans of control, subsequent qualification intervals, and other program and task level adjustments as required to ensure program effectiveness.