ASME B31Q-2006

Pipeline Personnel Qualification

ASME Code for Pressure Piping, B31

AN AMERICAN NATIONAL STANDARD



The American Society of Mechanical Engineers

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FOREWORD

The transmission and distribution of gas and hazardous liquids in pipelines is one of the safest forms of transportation. However, investigations of pipeline accidents from 1975 through 1986 revealed that human error was a contributing factor to some failures. The failures prompted the United States National Transportation Safety Board (NTSB) to make explicit recommendations for the training, testing and qualification of pipeline employees in 1987. The qualification of pipeline personnel is an important measure against failures caused by human error.

The development of this standard originated from the need for the pipeline industry to take a rational and technical approach to operator qualification (OQ) and from regulatory actions in the United States from 1987 through 2003. In 1987, the United States Department of Transportation (DOT) issued a notice inviting public comment on the need for additional regulations or a certification program for the qualification of personnel who design, construct, operate and maintain gas or hazardous liquid pipelines. Shortly thereafter, work began in the United States Congress to amend the Pipeline Safety Laws to include OQ requirements. The Pipeline Safety Act of 1992 included language requiring that personnel responsible for the operation and maintenance of pipelines be tested for qualifications and certified to operate and maintain those pipelines.

In response to this congressional action, DOT published a Notice of Proposed Rulemaking (NPRM) in 1994 to establish specific training requirements for the qualification of pipeline workers. This training rule met with varying responses including a petition for withdrawal of the NPRM from pipeline industry representatives. In the meantime, Congress amended the 1992 law with the Pipeline Safety Improvement Act of 1996 requiring simply that individuals who operate or maintain pipelines be qualified. In addition, this Act required that the qualifications address the ability to recognize and react appropriately to abnormal operating conditions (AOCs) that may indicate a potentially dangerous situation or a condition exceeding design limits. In 1996, DOT withdrew the 1994 proposed rulemaking and simultaneously issued a notice to form a negotiated rulemaking committee (RegNeg Committee) to develop a final rule on the qualification of pipeline personnel.

The negotiated rulemaking process was intended to provide an opportunity for affected parties to present their views and reach a consensus on a proposed qualification rule. The RegNeg Committee members came from various organizations representing broad interests including industry, government, labor and the public. The committee met several times from 1997 through 1999, when consensus on the final rule was reached.

The Final Rule on the Qualification of Pipeline Personnel was issued by DOT on August 27, 1999. This final rule delineated the essential elements of a qualification program, and limited the scope of the rule with a four-part test for covered tasks. It also set timeframes for the development of the operators' qualification programs, and the completion of initial qualification of pipeline personnel in 2002.

The Final Rule was not prescriptive, and the resulting flexibility built into the performance-based rule made it difficult to measure operators' compliance with the rule. This led to the development of "protocols" to assist regulators in the evaluation of qualification programs. Protocols were finalized after a series of public meetings in 2003; however, differences still existed between the pipeline industry and DOT regarding the implementation, inspection and subsequent enforcement

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of the OQ rule. Both groups committed to the development of a national consensus standard on personnel qualification, where the outstanding issues could be resolved.

The pipeline industry approached ASME International to sponsor the development of a consensus standard on pipeline personnel qualification. The ASME Code for Pressure Piping, B31 Committee formed the B31Q Project Team on Qualification of Pipeline Operators. This project team met for the first time in August 2003 and began the task of crafting a technically based standard for the qualification of pipeline personnel.

The B31Q Project Team included representatives from federal and state regulatory agencies, contractors, industry associations, labor and three industry sectors - hazardous liquid, gas transmission, and local distribution companies. The project team met regularly over a period of twenty months to reach consensus on the content of the standard. Additional resources, including Subject Matter Experts (SMEs), industry associations and service providers were utilized regularly. In all, over 100 people worked diligently to retain as much of the existing framework of OQ as was feasible and to develop a technically based standard, recognizing the diverse needs of the industry and regulators. Non-mandatory appendices, which include a covered task list, have been added to provide additional guidance to assist pipeline operators in developing or modifying their personnel qualification programs.

This standard provides general and specific requirements for the qualification of pipeline personnel. The implementation of this standard is intended to minimize pipeline failures caused by human error. This standard does not impose a requirement to perform specific tasks that affect the safety or integrity of the pipeline. It does, however, set the requirements for qualification of individuals in the event these types of tasks are performed.

This standard establishes the requirements for identifying covered tasks that impact the safety or integrity of pipelines, for qualifying individuals to perform those tasks, and for managing the qualifications of pipeline personnel. Design and engineering tasks are excluded because assurance of their quality is provided by the fact that appropriately educated or experienced individuals perform these tasks using guidelines and procedures for the conduct of their work. In addition, the quality of the work product is generally confirmed procedurally through review and ultimately by field inspection and testing of the design that are required by the applicable ASME Code (B31.4 and B31.8 for hazardous liquid pipelines and gas pipelines, respectively) and jurisdictional authority. Design and engineering tasks involving analysis and integration of data associated with integrity management are excluded from this standard.

This standard applies to individuals performing any covered task. The standard allows qualification exemptions when provisions exist for validating the correct performance of covered tasks. Such provisions may include, but are not limited to, the following:

Acceptance testing performed by a non-qualified individual under the direction and observation of a qualified individual, which validates the work product of the task;

Performance of covered tasks in conformance with standards developed through the ANSI process;

Certification by the organization performing the covered task that the work product is in conformance with the standards or specifications established for the job, given that this certification is supported by the performing organization’s quality assurance or inspection program;

Inspections of the work product, performed by a qualified individual, either during or after completion of the task, thereby verifying that the task was performed correctly and in accordance with the established specification or procedures;

Pressure testing by a qualified individual to confirm the integrity of the item;

Quality assurance through pressure testing to confirm the integrity of the pipeline component.

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It is recognized that this standard is being issued at a time when numerous entities have previously developed and implemented qualification programs. Therefore, as part of implementation of this standard, the implementer should determine what changes to provisions of its existing program (e.g., span of control, subsequent qualification intervals, evaluation methods) are required to meet this standard. An individual qualified to perform a covered task under the existing program could be considered to be qualified under the program described by this standard. Individuals currently qualified under an existing program 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 performance evaluation for initial qualification under this standard, should be performed either during the implementation period or at the time of subsequent qualification.

Suggestions for the improvement of this standard are welcome. They should be addressed to The American Society of Mechanical Engineers, Secretary, B31 Standards Committee, Three Park Avenue, New York, NY 10016-5990.

This standard was approved as an American National Standard on July 10, 2006.

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1 INTRODUCTION

1.1 Scope

This Standard establishes the requirements for developing and implementing an effective Pipeline Personnel Qualification Program (qualification program) utilizing accepted industry practices. The standard also offers guidance and examples of acceptable practices to meet selected requirements. The standard specifies the requirements for identifying covered tasks that impact the safety or integrity of pipelines, for qualifying individuals to perform those tasks, and for managing the qualifications of pipeline personnel.

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

(a) design or engineering tasks

(b) tasks that are primarily intended to ensure personnel safety

The Standard permits qualification exemptions only when provisions for validating the correct performance of a covered task exist**.**

1.2 Purpose and Objectives

The purpose of this standard is to establish requirements for the qualification and management of qualifications for pipeline personnel. The implementation of this standard is intended to help minimize human error that would impact the safety or integrity of the pipeline.

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

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2 DEFINITIONS

ability - the mental and physical capacity to perform a task.

abnormal operating condition (AOC) - a condition that may indicate a malfunction of a component or deviation from normal operations that may: (a) Indicate a condition exceeding design limits; or (b) Result in a hazard(s) to persons, property, or the environment.

affected individual - an individual who performs a covered task(s) or who has qualification program implementation responsibility.

covered task - those tasks which can affect the safety or integrity of the pipeline.

DI analysis - an analysis that explores the difficulty (D) and importance (I) of each task.

DIF analysis - an analysis that explores the difficulty (D), importance (I) and frequency of performance (F) of each task.

direct and observe - the process by which a qualified individual oversees the work activities of a non-qualified individual(s), and is able to take immediate corrective action when necessary.

entity - any individual or organization utilizing any portion of this standard to develop or implement a qualification program or portion thereof, including pipeline operators, contractors, subcontractors, service providers, etc.

evaluation -a process established to determine an individual's ability to perform a covered task. The term can be used to refer to the process, instrument(s) or both. The process may entail one or more evaluation methods or one or more distinct evaluation instruments.

evaluation criteria - the specific knowledge and skill an individual must possess and demonstrate to be qualified to perform a covered task.

evaluation instrument -the materials that are used to conduct an evaluation, including but not limited to: written, oral interview, and performance evaluation materials.

evaluator - an individual selected or credentialed to conduct performance or oral interview evaluations to determine if the individual is qualified.

knowledge -a body of information applied directly to the performance of a task.

mutual aid -pipeline operator personnel assistance (aid) provided to another pipeline operator in the performance of covered tasks.

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

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

performance - a means of confirming that an individual performs covered

monitoring - 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,

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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; and

(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 non-qualified individuals that a qualified individual can direct and observe performing a covered task.

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, training tests that establish and document training.

frequently used abbreviations

AOC's - abnormal operating conditions

KSA - knowledge, skill and ability

SME **-** subject matter expert

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3 REFERENCES

The following is a list of publications that are referenced in this standard.

API 653 - Tank Inspection, Repair, Alteration and Reconstruction, 2001 Edition

API 1104 - Welding of Pipelines & Related Facilities, 19th Edition, 1999, & 10/2001 Errata

ASME Boiler & Pressure Vessel Code Section IX, Welding and Brazing Qualifications, 2004 Edition,

ASME B31.8S-2004 Supplement to B31.8 on Managing System Integrity of Gas Pipelines

ASNT Recommended Practice SNT-TC-1A Personnel Qualification and Certification in Nondestructive Testing 2001 Edition or ASNT Standard for Qualification of Nondestructive Testing Personnel -ASNT CP-189-2001.

Natural Gas Transmission Pipeline, Pipeline Integrity - Prevention, Detection & Mitigation Practices - GRI 00/0193, December 2000, Hartford Steam Boiler Inspection and Insurance Company

Fault Tree Development for the Nine Threats to Pipelines - Chen, Q. - C-FER Technologies, Report Number L114, Edmonton, Alberta, 2006

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4 QUALIFICATION PROGRAM

4.1 Development

An operator shall develop a qualification program that describes, in detail, how the requirements set forth in this standard are being addressed. This section identifies specific elements that shall be included in the program and references the section(s) in the standard where additional requirements and/or further details and guidance can be found. If alternative solutions that meet the intent of this standard are utilized, they must be properly justified and documented in the qualification program.

4.2 Processes and Procedures

A qualification program developed, documented and implemented in accordance with this standard shall describe or reference the processes and procedures to be followed to qualify and manage the qualifications of pipeline personnel.

The qualification program shall incorporate each of the following:

4.2.1 Introduction

The introduction to the qualification program shall

(a) identify the operating or business unit(s) of the entity to which the qualification program applies

(b) describe the purpose and scope for the program

(c) contain other information required within this standard or that is necessary to clarify the purpose and scope of the program

4.2.2 Definitions (See Section 2)

Key terms and phrases included within the qualification program shall be defined. Terms and phrases do not need to be defined if its use or meaning is consistent with the definitions found in Section 2. Definitions shall be included for any terms or phrases that are:

(a) unique to the qualification program; or

(b) defined different from what is found in Section 2 of this standard.

4.2.3 Determining Covered Tasks (See Section 5)

The qualification program shall describe the process used to identify covered tasks, which shall include one of the following methods:

(a) SME-covered Task Identification Process

(b) fault tree Covered Task Identification Process

(c) alternate process for determining covered tasks

(d) adoption of Covered Task List included as Appendix 5A

(e) include or reference the list of the identified covered tasks that are being utilized in the program

4.2.4 Abnormal Operating Conditions (AOCs) (See Section 6)

The qualification program shall

(a) describe the process used to identify AOCs, which shall include one of the following:

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(1) adoption of AOCs identified in Appendix 6A

(2) alternate process of determining AOCs

(b) describe the process used to ensure that individuals who perform covered tasks are able to recognize and react to the identified AOCs

4.2.5 Training (See Section 7)

The qualification program shall describe processes for determining when it is appropriate to provide for personnel training and how it is to be provided, when required.

4.2.6 Evaluations (See Section 8)

The qualification program shall include:

(a) a description of the evaluation process (including how evaluators and/or proctors are selected)

(b) evaluation criteria

(c) identification of evaluation methods to be used for each covered task

4.2.7 Qualifications (See Section 9)

The qualification program shall

(a) identify parties or organizations responsible for

(1) determining the qualifications an individual requires

(2) verifying the qualifications of individuals performing covered tasks

(3) suspending and reinstating, or revoking qualifications

(4) establishing and maintaining span of control ratios

(5) ensuring a qualified individual is assigned to direct and observe non-qualified individuals within span of control ratios

(6) establishing and maintaining subsequent qualification intervals

(b) describe how other applicable codes or standards will be integrated into the qualification process

(c) describe the process of managing initial and subsequent qualifications

(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.

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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.

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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. Appendix 5A 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 Appendix 5B, may be utilized in lieu of an alternate process or one of the processes described in either Para. 5.3 or 5.4.

If the covered task list in Non-mandatory Appendix 5A is used, the contents of Appendix 5A 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 Process

The SME Covered Task Identification Process shall use SMEs who are knowledgeable about tasks performed during the construction, operation, and maintenance of 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 they represent;

(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.

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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 which 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 Fig. 5-1 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

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(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 should be 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 of the primary fault levels are items that are controllable and therefore do not have tasks identified from that primary fault level. Others 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 to 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 Appendix 5A

A combination of 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 non-mandatory covered task list in Appendix 5A. The process is summarized in Appendix 5C and an example of evaluation criteria for tasks is given in Nonmandatory Appendix 5D.

If Appendix 5A is used, the following steps shall be taken:

(a) SMEs shall review Appendix 5A and determine which tasks are applicable to their pipelines.

(b) SMEs may remove tasks listed in Appendix 5A 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 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).

Appendix 5A covered tasks identification process 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 Appendix 5A 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.

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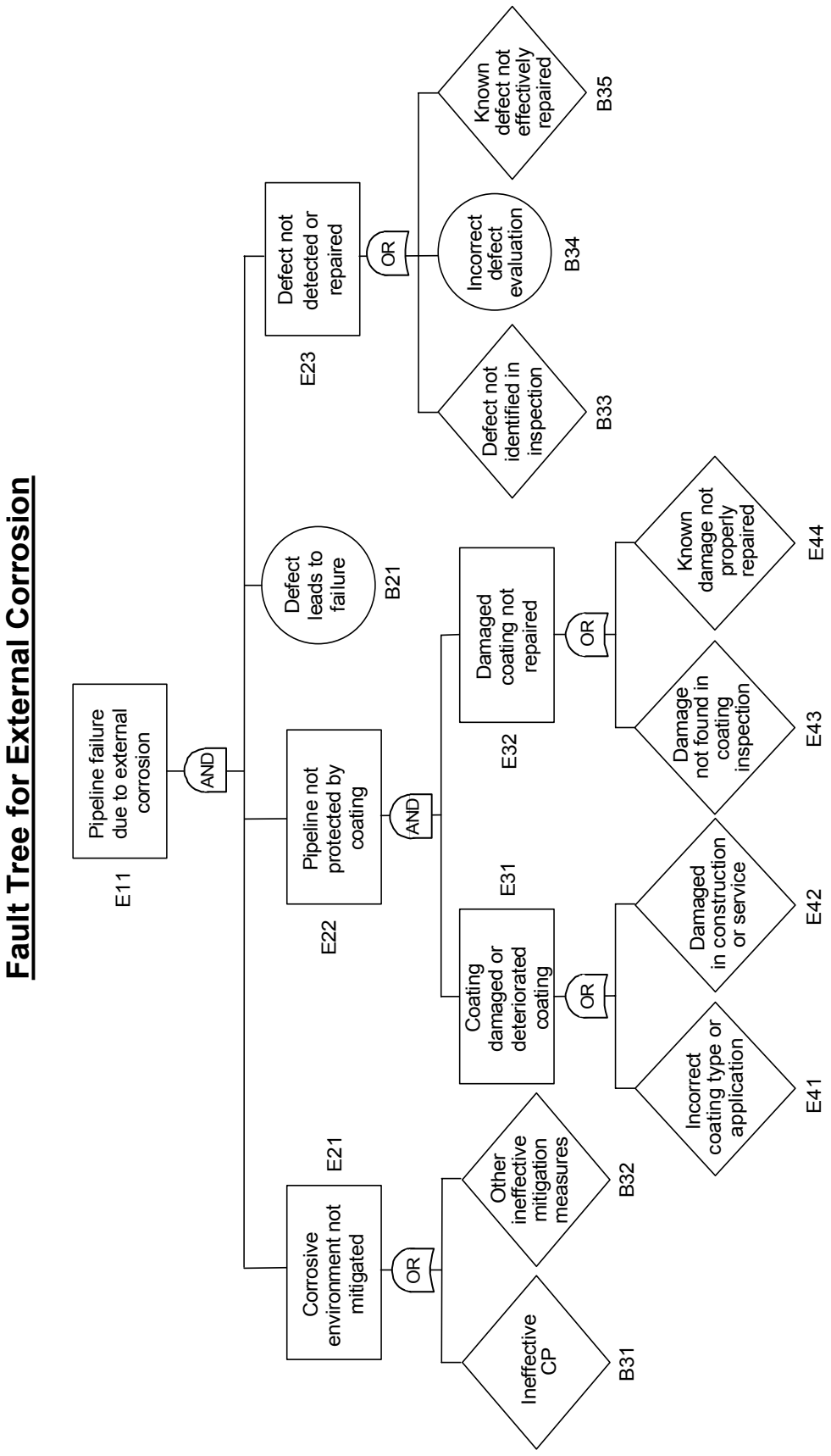


Fig. 5-1 Fault Tree Example

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Fig. 5-1 Fault Tree Example
Notes

B31	B35	E44
• Measure Structure-to-Electrolyte Potential • Conduct Close Interval Survey • Measure Soil Resistivity • Inspect and Monitor Galvanic Ground Beds/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 In-Service Cathodic Protection System • Inspect Rectifier and Obtain Readings • Maintain Rectifier • Diving – Measure structure to Electrolyte Potential • Diving – Install Galvanic Anodes on Submerged Pipelines	• Install Mechanical Clamps and Sleeves – Bolted • Fit-up of Weld Type Repair Sleeve • Install Composite Sleeves • Repair of Steel Pipe by Grinding • Tapping a Pipeline (Tap Diameter 2 Inch or Less) Tapping a Pipeline (Tap Diameter greater than 2 inch) • 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	• Coating Application and Repair – Brushed or Rolled • Coating Application and Repair – Sprayed • External Coating Application and Repair – Wrapped • Diving – External Coating Application and Repair
B33	E42	
• Measure External Corrosion • Measure Atmospheric Corrosion • Pressure Test – Non-liquid Medium – Test Pressure Less than 100 psi • Pressure Test – Non-liquid 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 aand Mechanical Damage – Buried or Submerged Pipeline	• Visually Inspect Pipe and Components Prior to Installation • Backfilling • Damage Prevention Inspection during Third Party Excavation or Encrouchment Activities as Determined Necassary by Operator • Installation of Steel Pipe in a Ditch • Installation of Steel Pipe in a Core • Installation of Steel Pipe Plowing/Pull-in	

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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.

Appendix 6A 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 Appendix 6A 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.

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7 TRAINING

This Paragraph 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 positions(s) responsible for

(a) determining the need for training an individual

(b) identifying training materials or sources

(c) assuring and documenting successful completion of necessary training

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.

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7.3 Training Materials and Implementation

7.3.1 Training Materials

Training materials 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-lead 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 a SME, or meet the education, experience and training requirements to be qualified for the covered task - qualification for the covered task is not required); and

(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 individuals' successful completion of the training shall be maintained.

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8 EVALUATION

This section establishes the minimum requirements to assure 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 for them 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; and

(b) selecting evaluators or proctors.

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.

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) prohibiting an individual from self-scoring of evaluations

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

(c) investigating and resolving suspected cheating

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

(e) resolving evaluation failure, including

(1) requirements for determining remedial action(s)

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

8.2 Evaluation Material(s) and Criteria

Evaluation materials shall be purchased or developed and maintained consistent with identified evaluation 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 a 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 and skills 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 Appendix 5D. Factors that may be considered when developing evaluation criteria include

(a) pipeline and personnel safety considerations;

(b) AOCs and other conditions adversely affecting the safety or integrity of the pipeline that may be either caused by or encountered during task performance

(c) technical knowledge required to perform the task, for example:

(1) applicable policies or procedures

(2) necessary sequence of performance

(3) base technical knowledge to perform the task (e.g., corrosion characteristics, electrical laws, federal and state regulatory requirements, equipment selection, equipment maintenance, equipment calibration, equipment operation)

(4) knowledge to account for variance required in task performance due to equipment differences

(5) knowledge to account for variance required in task performance due to conditions or context differences (e.g., cold weather, dry climate, performed for a different purpose)

(d) technical skills required to perform the task (e.g., welding, hot tapping, operating heavy equipment, crane operation), for example:

(1) demonstration of basic skills

(2) demonstration to account for substantial variance required in task performance due to equipment differences (e.g., different principles of operation of equipment)

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

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. Ability is verified through evaluation for knowledge and skills.

8.3 Method-Specific Evaluation Requirements

8.3.1 Written Evaluations

When written evaluations are used, they shall be developed and maintained using a process that:

(a) Prevents the disclosure of written evaluations and scoring keys (evaluation security);

(b) Includes administration instructions;

(c) Includes questions to probe an individual's knowledge and comprehension of all task criteria, unless the criteria are covered in another part of the evaluation process;

(d) Limits the use of True/False items to those situations that present two likely but only one correct choice. When 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 really knows the information or not. For these reasons, True/False items are only 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%; and

(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 even though the evaluation is being read for the individual, it is still considered a written evaluation.

8.3.2 Oral Interview Evaluations

When oral interview evaluations are used, they shall be developed and maintained utilizing a process that:

(a) Includes administration instructions;

(b) Assures administration of oral interview evaluations are performed by an evaluator selected in accordance with Para 8.1.1(b).

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(c) Includes questions to probe an individual's knowledge and comprehension of all task criteria, unless the criteria are covered in another part of the evaluation process;

(d) Establishes which, if any, questions may be answered with access to reference materials; and

(e) Requires evaluator judgment that the individual performed satisfactorily on each question. Given the subjective judgment of an evaluator, "satisfactory" does not necessarily mean perfect. For example, an evaluator may determine that an individual's answer to a question is "satisfactory" because all of the critical ideas were included, even though the answer may not have been as complete as the evaluator could answer it.

8.3.3 Performance Evaluations

When performance evaluations are used, to include observation during performance on the job, on the job training or simulation (e.g., use of simulators, equipment mock-ups, interactive scenarios), they shall be developed and maintained utilizing a process that:

(a) Includes administration instructions;

(b) Assures administration of performance evaluations are performed by an evaluator selected in accordance with Para. 8.1.1(b)(c)

(c) Specifies observable behavior or performance components to be checked by the evaluator;

(d) Establishes which behavior or performance components may be performed with access to reference materials;

(e) Specifies questions that should be asked to probe an individual's knowledge and comprehension, unless covered in another part of the evaluation process;

(f) Assures the performance evaluation occurs within an appropriate setting such as on-the-job, field simulation, or laboratory simulation. An appropriate setting is one that replicates the work setting to a sufficient degree to reflect performance on the job; and

(g) Requires evaluator judgment that the individual performed satisfactorily on each item.

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9 QUALIFICATIONS

(a) This Section establishes the minimum requirements for

(1) initial and subsequent qualification

(2) suspension and reinstatement, or revocation of qualifications

(3) assigning qualified and non-qualified individuals to perform covered tasks,

(4) establishing and maintaining span of control ratios and subsequent qualification intervals

(b) This standard applies to individuals performing any covered task. The standard does allow qualification exemptions when provisions exist for validating the correct performance of covered tasks. Such provisions may include, but are not limited to, the following:

(1) acceptance testing performed by a nonqualified individual while under the direction and observation of a qualified individual

(2) performance of covered tasks in conformance with standards developed through the ANSI process

(3) certification by the organization performing the covered task that the work product is in conformance with the standards or specifications established for the job, given that this certification is supported by the performing organization's quality assurance or inspection program

(4) inspections of the work product, performed by a qualified individual, either during or after completion of the task, thereby verifying that the task was performed correctly and in accordance with the established specification or procedures

(5) pressure testing by a qualified individual to confirm the integrity of the pipe

(6) quality assurance through pressure testing to confirm the integrity of the pipeline component

(c) Alternative solutions may be used as long as they meet the intent of this standard and are properly justified and documented.

9.1 Qualification Requirements

9.1.1 Responsibilities

The qualification program shall establish responsibility for

(a) determining the qualifications individuals require

(b) verifying the qualifications of individuals performing covered tasks

(c) ensuring a qualified individual is assigned to direct and observe non-qualified individuals within the established span of control ratios

(d) suspending and reinstating, or revoking qualifications

(e) establishing and maintaining span of control ratios

(f) establishing and maintaining subsequent qualification intervals

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9.1.2 Other Codes or Standards

Qualification requirements for selected covered tasks may be specified in an American National Standard (ANSI Standard), (for example, API 653, API 1104). If an entity chooses to qualify individuals under an American National Standard

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

(b) requirements, other than initial and subsequent qualification (certification) requirements, of this standard that are not included in that 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 KSAs 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 has been 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.

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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; or

(f) Whenever there is reasonable belief that an individual is no longer qualified to perform a covered task(s).

9.2.2 Reinstatement

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

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

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

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

If Para. 9.2.2 (a), (b), or (c) are 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. Revocation of qualification should be considered for, but not limited to, such items as:

(a) A suspended qualification is not resolved in accordance with Para. 9.2.2; or

(b) When 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.

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9.3 Qualification Requirements for Emergency Response

The first priority is to dispatch qualified individuals to respond to the emergency condition. However, non-qualified 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 non-qualified individuals on the appropriate actions for stabilizing the emergency condition.

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

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

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

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

9.4 Performance of Covered Tasks by Non-Qualified Individuals

A non-qualified 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 non-qualified 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 which 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 non-qualified 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 non-qualified 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 non-qualified 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 monitoring two unqualified individuals doing any combination of the two tasks.

9.4.2 Span of Control Ratio Development and Maintenance

The qualification program shall either adopt the span of control ratios in Appendix 5A 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.

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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 Appendix 5A, 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 (1) qualified individual to five (5) 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 a Difficulty, Importance and Frequency Analysis as described in Appendix 9A. The initial span of control ratios may not exceed one (1) qualified individual to five (5) not qualified 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 Appendix 5A Span of Control Ratios

If Appendix 5A is utilized for the covered task list, the listed spans of control for each respective task in the appendix may be used. The span of control ratios in Appendix 5A were established through SME consensus. The Appendix 5A span of control ratios do not exceed one to five. Assessment is not required if the span of control ratios in Appendix 5A are adopted or are more restrictive. Assessment of data is required to establish a rational basis to increase the adopted Appendix 5A span of control ratios.

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 Appendix 5A are adopted or are more frequent than those in Appendix 5A. Subsequent qualification intervals can be lengthened when data can be provided that shows a longer interval is prudent.

Subsequent qualification intervals may be established with a three-month grace period. For example, tasks with a one-year subsequent qualification interval may be stated as one year not to exceed 15

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months, three-year subsequent qualification interval stated as three years not to exceed 39 months, and five-year subsequent qualification intervals stated as five years not to exceed 63 months.

9.5.2 Methods

The subsequent qualification interval may be established by one of the following methods

(a) SME consensus in accordance with Para. 9.5.3

(b) difficulty and importance; or difficulty, importance and frequency analysis in accordance with Para. 9.5.4

(c) Adoption of Appendix 5A, 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 years. The subsequent qualification intervals set by this method shall be assessed and reduced if necessary. The subsequent qualification intervals may be set longer than five years if data establishes 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 and skill 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 Appendix 9A. The initial interval for subsequent qualification may not exceed five years. The subsequent qualification intervals shall be assessed and reduced if necessary. The subsequent qualification interval may be set longer than five years if data establishes a rational basis for a longer interval.

9.5.5 Adoption of Appendix 5A Subsequent Qualification Intervals

The subsequent qualification intervals in Appendix 5A were established by completing a Difficulty and Importance Analysis. The analysis was completed as described in Appendix 9A. Frequency data was not used due to the wide variation in frequencies encountered at the industry level. The Appendix 5A subsequent qualification intervals do not exceed five (5) years. Assessment is not required if the subsequent qualification intervals in Appendix 5A are adopted. The subsequent qualification interval in Appendix 5A may be increased if data establishes a rational basis for a longer interval.

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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.

10.1.3 Section 5 Determining Covered Tasks

The provider

(a) shall identify the covered tasks in Appendix 5A for which they will issue portable evaluations

(b) shall not change any of the steps listed in Appendix 5A for any task, unless agreed to by the acceptors

(c) may add tasks not listed in Appendix 5A as agreed to by the acceptors

10.1.4 Section 6 Abnormal Operating Conditions (AOCs)

The provider shall incorporate AOCs identified in Appendix 6A in their evaluation process for the portable evaluations.

10.1.5 Section 8 Evaluation

(a) The provider shall establish processes to assure that individuals are evaluated in accordance with the requirements of Section 8. The development and maintenance of portable evaluations, at a minimum, shall

(1) establish evaluation criteria for the steps for covered tasks identified in Appendix 5A and any tasks added by SME review

(2) supplement, as necessary, the steps for covered tasks identified in Appendix 5A to assure the evaluations are valid and reliable

(3) incorporate the AOCs identified in Appendix 6A that are applicable to the evaluations

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(4) utilize the evaluation methods specified in Appendix 5A that are applicable to the covered task being evaluated

(b) The acceptors shall establish the process for acceptance of portable evaluations. Portable evaluations may be accepted from a provider whose processes have been verified, by the acceptors or an organization authorized by the acceptors.

10.1.6 Section 9 Qualifications

Qualification requirements for selected covered tasks may be specified in an American National Standard (ANSI Standard), (for example, API 653, API 1104). If an entity chooses to qualify individuals under an American National Standard

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

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

10.1.7 Section 12 Communicating the Qualification Program and Managing Program Changes

The provider shall develop and implement processes for communication of changes consistent with the requirements of Section 12, including:

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

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

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

10.1.8 Section 13 Documentation Requirements

The provider shall develop and implement processes for

(a) generating and maintaining documentation, as it applies to each provider's processes and the individual's evaluation records. The specific requirements are in Section 13.

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

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11 PROGRAM EFFECTIVENESS

11.1 General

(a) The qualification program shall include a process to be implemented to appraise its effectiveness. This process shall be conducted periodically at an interval of three years not to exceed 39 months. The process shall determine whether the program is being implemented as documented, appraise whether it is effective as implemented, and include provisions to update the qualification program based on the results from the implementation and effectiveness appraisals.

(b) Program effectiveness shall be appraised using measures that permit timely assessments. At a minimum, the following two measures shall be tracked:

(a) Number of individuals performing covered tasks found to have contributed to an event or action that adversely affects the safety or integrity of the pipeline.

(b) Number of pipeline damages/leaks attributed to the performance of damage prevention or excavation activities by employees or contractor employees of an operator.

(c) Examples of implementation and effectiveness appraisals are provided in Appendix 11A.

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12 COMMUNICATING THE QUALIFICATION PROGRAM AND MANAGING PROGRAM CHANGES

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

(a) written notification

(b) electronic notification (i.e., internet, web page, email)

(c) department meetings

(d) training sessions

(e) other methods as appropriate

12.1 Communicating the Qualification Program

12.1.1 Program Requirements

Communication of qualification program requirements shall include

(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

12.1.2 Qualified Individuals

Communication to qualified individuals or individuals who will be qualified shall include:

(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 non-qualified individuals, including span of control requirements

(f) action to take if an individual loses one or more qualification(s)

12.1.3 Program Responsibilities

Communication to individuals with program responsibilities shall include:

(a) their role in the implementation of the qualification program

(b) qualification program requirements

(c) a list of covered tasks and AOCs

(d) qualification program procedures or processes they are responsible to implement

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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.

The qualification program management of change communication processes and procedure shall include the following

(a) description of the change

(b) assessment of the impact of the change on the qualification program and qualifications (see Para. 12.2.3)

(c) determination of the responsibility for communicating the change and any required actions; and

(d) methods to verify communication.

12.2.2 Conditions for Change

A number of conditions, whether temporary or permanent, may influence and require changes to the qualification program. The management of change process shall require identification of such changes.

The following list contains some of the changes that may affect individual qualifications or the qualification program

(a) modification or adoption of a new procedure or policy

(b) changes in applicable codes, standards and regulations

(c) changes in equipment

(d) changes in AOCs

(e) implementation of new processes or technology

(f) new information from equipment or product manufacturers

(g) changes to evaluation criteria

(h) modification to the covered task list

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(i) changes resulting from findings regarding investigation of events or actions that impact the safety or integrity of the pipeline

(j) changes from program effectiveness results

(k) changes from merger/acquisitions/divestitures

(l) changes resulting from employee and contractor feedback

12.2.3 Rating the Impact of Changes

Managing changes affecting covered tasks shall include a process for rating the impact of each change. Depending on the impact of the change on knowledge and skills required to perform covered tasks, qualified individuals may also require training or evaluation on the change. An example of an acceptable method to accomplish this would be to rate the impact of the change as one of the following:

Low Impact - requires no documented change communication. Low impact changes may include modifications that result in no material effect on the qualification program or covered tasks; such as grammatical changes to the qualification program or color deviations for paint.

Medium Impact - requires documented notification to affected individuals before they implement the change. Medium impact changes may include revisions to administrative procedures, evaluation methods, company procedures, or other items that affect the implementation of the qualification program, but do not require training or evaluation of qualified individuals.

High Impact - requires documented communication of change to affected individuals before they implement the change. High impact changes are those that affect the knowledge or skill required to perform a covered task or the knowledge to implement qualification program requirements. As a minimum, affected individuals shall be trained on high impact changes.

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13 DOCUMENTATION REQUIREMENTS

This section establishes the documentation requirements to create, manage, and maintain records associated with the qualification program. Existing documentation currently kept by entities may fulfill the requirements of this section. If alternative solutions have been included in the program, then the documentation shall demonstrate that these solutions meet the intent of this standard.

13.1 Documenting the Qualification Program (Section 4)

A qualification program shall be written and maintained in accordance with Section 4 of this standard.

13.2 Documenting Communication of the Qualification Program (Section 12)

Document the initial communication of the qualification program and its requirements to the affected individuals.

13.3 Documenting Identification of Covered Tasks (Sections 5, 8, and 9)

13.3.1 Process for Identifying Covered Tasks

Describe the process used to identify covered tasks. If SMEs do not believe a task in Appendix 5A or one where the answer is "yes" to both questions listed in Para. 5.3.2 should be covered, the task and the rationale for not including it in the covered task list shall be documented.

13.3.2 Covered Task List

Document the list of covered tasks determined by the process used to identify them.

13.3.3 Evaluation Criteria

Document the evaluation criteria for each covered task.

13.3.4 Evaluation Method

Document the appropriate evaluation method(s) for each covered task. If the task list in Appendix 5A is adopted, further documentation is not required.

13.3.5 Subsequent Qualification Interval

Document the subsequent qualification interval for each covered task. If the subsequent qualification intervals in the task list in Appendix 5A are adopted, further documentation is not required.

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 Appendix 5A 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.

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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 individuals' 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 than 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)

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(e) communication to affected individuals

13.10 Documenting Program Effectiveness Appraisals (Section 11)

All effectiveness appraisals shall be documented. The documentation shall include

(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; and

(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(s) 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 qualifications (Para. 13.7) shall be maintained for five years after the qualification date expires. The remaining qualification program documents (Paras. 13.1 through 13.6, and Paras. 13.8 though 13.10) shall be retained while they are effective and for five years from the date the documents revisions become obsolete.

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NONMANDATORY APPENDIX 5A - INTEGRATED TASK LIST

Definitions:

- L, G and D - These columns provide guidance on the potential applicability of a task to:
  - L - Hazardous Liquids Operation
  - G- Gas Transmission Operation
  - D - Local Distribution Operation

  Inclusion of these columns does not relieve an entity from the responsibility to review the Appendix 5A tasks and finalize a list of tasks that is applicable to their pipeline operations.
- Covered Task Hierarchy: Covered tasks are organized as follows: Task, Step and Criteria
  - Task - A defined unit of work, having an identifiable beginning and end, evaluated in accordance with Section 8.
  - Step - An action evaluated in accordance with Section 8, completed during the performance of a task.
  - Criteria - The knowledge, skills and ability to perform a step.
- Documentation (if applicable) - The act of completing and submitting required records and documents in an accurate and thorough manner, when required.
- Identify requirements - To define the requirements, as necessary, for performing the task, such as: procedures, specifications, and manufacturer instructions or recommendations.
- Job - A unit of work comprised of one or more tasks, for example, line abandonment.
- Inspection - To examine (visually or with test equipment) to determine compliance with specified requirements.
- Maintenance, Corrective - The repair, replacement, alteration or refurbishment of pipeline equipment and components.
- Maintenance, Preventive - Actions to keep components and equipment operating safely and efficiently.
- Place in service - To place pipeline, equipment or components in operation and introduce product.
- Visual inspection - To visually examine to determine compliance with identified requirements.
- Perform test equipment check - To verify test equipment is functioning within specified operating parameters
- P and W/O - These indicate the evaluation methods for initial and subsequent (sub) qualifications

  P - Performance evaluation method

  W/O - Written or oral evaluation method
- Level of Difficulty (1 = least, 5 = most)
- Level of Importance (1 = least, 5 = most)

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Task 0001 Measure Structure-To-Electrolyte Potential

(a) Task Guidance: This task includes using measurement equipment to take a reading of the potential between the structure (pipe, tanks, etc.) being tested and the soil and recording data.

(1) Identify requirements

(2) Perform test equipment check

(3) Identify & locate correct test point

(4) Measure and ensure accuracy of structure-to-electrolyte potential

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 1

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0011 Conduct Close Interval Survey

(a) Task Guidance: This task includes gathering electrical potential readings along the pipeline at specified intervals and recording data.

(1) Identify requirements

(2) Install and perform test equipment checks

(3) Identify & locate correct test point

(4) Perform survey

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0021 Measure Soil Resistivity

(a) Task Guidance: This task includes using measurement equipment to measure soil resistivity and recording data.

(1) Identify requirements

(2) Perform test equipment check

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(3) Identify & locate correct test point

(4) Measure and ensure accuracy of soil resistivity

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0031 Inspect And Monitor Galvanic Ground Beds/Anodes

(a) Task Guidance: This task includes inspecting and monitoring the electric potential of galvanic ground beds/anodes.

(1) Identify requirements

(2) Perform test equipment check

(3) Identify & locate correct test point

(4) Obtain current output

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0041 Installation And Maintenance of Mechanical Electrical Connections

(a) Task Guidance: This task includes making the mechanical connections and repair of tracer wire, test leads, bonds, shunts, etc.

(1) Identify requirements

(2) Perform test equipment check

(3) Install, repair or replace mechanical connection

(4) Verify mechanical integrity and electrical continuity

(5) Recognize & react to AOCs

(6) If required, complete documentation

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(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0051 Installation of Exothermic Electrical Connections

(a) Task Guidance: This task includes making exothermic (e.g. thermite, cadweld and pin-brazing) connections of tracer wire, test leads, bonds, shunts, etc.

(1) Identify requirements

(2) Perform test equipment check

(3) Perform exothermic connection

(4) Verify mechanical integrity and electrical continuity

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0061 Inspect or Test Cathodic Protection Bonds

(a) Task Guidance: This task includes inspecting the physical integrity and testing of cathodic protection bonds.

(1) Identify requirements

(2) Perform test equipment check

(3) Inspect or test bonds

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

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(g) Span of Control 1:1

Task 0071 Inspect or Test Cathodic Protection Electrical Isolation Devices

(a) Task Guidance: This task includes inspecting the physical integrity and testing electrical isolation devices. Task 0071 Inspect or Test Cathodic Protection Electrical Isolation Devices

(1) Identify requirements

(2) Perform test equipment check

(3) Inspect or test isolation devices

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0081 Install Cathodic Protection Electrical Isolation Devices

(a) Task Guidance: This task includes the installation of electrical isolation devices.

(1) Identify requirements

(2) Install isolation devices

(3) Recognize & react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0091 Troubleshoot in-Service Cathodic Protection System

(a) Task Guidance: This task applies to operational Cathodic Protection Systems and includes activities to determine why the CP system and components are not functioning and the identification of corrective action.

(1) Identify requirements

(2) Perform test equipment check

(3) Perform Cathodic Protection System Troubleshooting

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(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0101 Inspect Rectifier And Obtain Readings

(a) Task Guidance: This task includes inspecting the rectifier for damage and deterioration and obtaining readings as specified.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Obtain voltage & current output readings

(5) Recognize & react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 1

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0111 Maintain Rectifier

(a) Task Guidance: This task includes verification that the rectifier is functioning within specified parameters, after a rectifier has been hung and AC power connected, and prior to or during placing in service. This task also includes actions to repair or replace in service rectifiers or components.

(1) Identify requirements

(2) Perform test equipment check

(3) Test/troubleshoot rectifier

(4) Repair or replace defective rectifier components

(5) Place in service

(6) Adjust output

(7) Recognize & react to AOCs

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(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0121 Collect Sample For Internal Corrosion Monitoring

(a) Task Guidance: This task includes the collection and handling of samples (gas, liquid, solids) for internal corrosion monitoring and preventing contamination of the sample

(1) Identify requirements

(2) Collect sample

(3) Recognize & react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0131 Insert And Remove Coupons/Probes For Internal Corrosion Monitoring

(a) Task Guidance: This task includes inserting and removing coupons/probes for internal corrosion monitoring and preventing contamination or damage of the coupons/probes.

(1) Identify requirements

(2) Retract, remove and install coupon/probe

(3) Recognize & react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

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Task 0141 Visual Inspection For Atmospheric Corrosion

(a) Task Guidance: This task includes the inspection of pipe and pipeline components exposed to the atmosphere for the purpose of detecting atmospheric corrosion.

(1) Identify requirements

(2) Inspect protective coating

(3) Inspect for atmospheric corrosion

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0151 Visual Inspection of Buried Pipe and Components When Exposed

(a) Task Guidance: This task includes the inspection of buried pipe and pipeline components when exposed for the purpose of detecting external corrosion and evaluating coating integrity.

(1) Identify requirements

(2) Inspect protective coating

(3) Inspect external surfaces of pipe and components

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0161 Visual Inspection for Internal Corrosion

(a) Task Guidance: This task includes the inspection of the internal surface of pipe and pipeline components, including tapping coupons, when exposed for the purpose of detecting internal corrosion.

(1) Identify requirements

(2) Inspect protective coating

(3) Inspect internal surfaces of pipe, components and tapping coupons

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(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0171 Measure External Corrosion

(a) Task Guidance: This task includes activities to measure and characterize external corrosion, including investigation to determine the extent of corrosion and recording data.

(1) Identify requirements

(2) Prepare surface

(3) Perform test equipment check

(4) Take measurements (Length, depth, width, thickness, etc.)

(5) Identify characteristics of corrosion

(6) Recognize & react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 0181 Measure Internal Corrosion

(a) Task Guidance: This task includes activities to measure and characterize internal corrosion, including investigation to determine the extent of corrosion and recording data.

(1) Identify requirements

(2) Prepare surface

(3) Perform test equipment check

(4) Take measurements

(5) Identify characteristics of corrosion

(6) Recognize & react to AOCs

(7) If required, complete documentation

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(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 0191 Measure Atmospheric Corrosion

(a) Task Guidance: This task includes activities to measure and characterize atmospheric corrosion, including investigation to determine the extent of corrosion and recording data.

(1) Identify requirements

(2) Prepare surface

(3) Perform test equipment check

(4) Take measurements

(5) Identify characteristics of corrosion

(6) Recognize & react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0201 Visual Inspection of Installed Pipe and Components for Mechanical Damage

(a) Task Guidance: This task includes activities associated with the inspection of installed pipe and components for the purpose of detecting mechanical damage (e.g. dents, gouges, cracks).

(1) Identify requirements

(2) Inspect protective coating

(3) Inspect internal surfaces of pipe and components

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 0211 Measure and Characterize Mechanical Damage on Installed Pipe and Components

(a) Task Guidance: This task includes activities to measure and characterize mechanical damage (e.g. dents, gouges, cracks) on installed pipe and components, including investigation to determine the extent of damage and recording data.

(1) Identify requirements

(2) Prepare surface

(3) Take measurements (L, D, W)

(4) Recognize & react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 0221 Inspect, Test and Maintain Sensing Devices

(a) Task Guidance: This task includes verification that the sensing device, (e.g. pressure switches; pressure, temperature and differential transmitters), is functioning within specified parameters, after a sensing device has been installed, and prior to or during placing in service. This task also includes actions to repair or replace sensing devices and adjust set points or output.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Isolate from process

(6) Conduct performance test

(7) Remove and replace defective component(s)

(8) Adjust set points or output

(9) Place in service

(10) Recognize & react to AOCs

(11) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

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(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0231 Inspect, Test and Maintain Programmable Logic Controllers

(a) Task Guidance: This task includes verification that the PLC is functioning within specified parameters, after a PLC has been installed, and prior to or during placing in service. This task also includes actions to repair or replace PLCs and components, and adjusting set points or output as specified.

(1) Identify requirements

(2) Put the PLC in manual mode or remove from service

(3) Perform test equipment check

(4) Visually inspect PLC

(5) Test PLC

(6) Maintain PLC

(7) Conduct performance test

(8) Return PLC to manual mode or return to service

(9) Recognize & react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0241 Inspect, Test and Maintain Liquid Leak Detection Flow Computers

(a) Task Guidance: This task includes verification that the flow computer, when used in a computational pipeline monitoring leak detection system, is functioning within specified parameters, after a flow computer has been installed, and prior to or during placing in service. This task also includes actions to repair or replace flow computers and components, and adjusting set points or output as specified.

(1) Identify requirements

(2) Put in manual mode or remove from service

(3) Perform test equipment check

(4) Visually inspect

(5) Test

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(6) Maintain

(7) Conduct performance test

(8) Return manual mode or return to service

(9) Recognize & react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0251 Inspection and Testing, Corrective and Preventive Maintenance - Overfill Protection Systems

(a) Task Guidance: This task includes verification that the overfill protection system is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of the overfill protection system, and actions to verify operation and maintain the overfill protection system. This task includes adjusting the set point as specified.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Remove and replace defective electronic component(s)

(7) Adjust set point

(8) Place in service

(9) Recognize & react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

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Task 0261 Inspection, Testing, Corrective and Preventive Maintenance - Tank Gauges for Leak Detection

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

(1) Identify requirements

(2) Put the component in manual mode or remove from service

(3) Perform test equipment check

(4) Visually inspect component(s)

(5) Evaluate component(s)

(6) Maintain gauge(s)

(7) Conduct performance test

(8) Remove from manual mode or return to service

(9) Recognize & react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0271 Prove Flow Meters for Hazardous Liquid Leak Detection

(a) Task Guidance: This task includes data recording and calculations to manually verify (prove) the accuracy of flow meters for hazardous leak detection. This includes activities to bring prover online and to take off line. Qualification is not required when verification is performed automatically by flow computers or PLCs.

(1) Identify requirements

(2) Bring prover on line

(3) Perform test equipment check

(4) Visually inspect component(s)

(5) Prove meter

(6) Evaluate meter factor

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

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(c) Difficulty: 3

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0281 Maintain Flow Meters for Hazardous Liquid Leak Detection

(a) Task Guidance: This task includes verification that the flow meter, (e.g. line integrity meters), when used for hazardous liquid leak detection, is functioning within specified parameters, after a flow meter has been installed, and prior to or during placing in service. This task also includes actions to repair or replace flow meters and components, and adjusting output.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect component(s)

(4) Evaluate component(s)

(5) Maintain component(s)

(6) Adjust output

(7) Conduct performance test

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0291 Inspect, Test and Maintain Gravitometers/Densitometers for Hazardous Liquid Leak Detection

(a) Task Guidance: This task includes verification that the gravitometers/densitometers when used for leak detection, is functioning within specified parameters, after a gravitometers/densitometers has been installed, and prior to or during placing in service. This task also includes actions to repair or replace gravitometers/densitometers and components, and adjusting output.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect component(s)

(4) Maintain component(s)

(5) Conduct performance test

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(6) Adjust output

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 3

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0301 Manually Opening and Closing Valves

(a) Task Guidance: This task includes manually opening and closing valves, (e.g. pipeline start up and shutdown, flow direction, pigging, tank switching, etc.), at the valve site, either manually or using the valve actuator. It also includes valve identification, notifications and pressure verification. It does not include the operation of valves for:

- Adjusting and monitoring flow or pressure as addressed in Task 0311 - Adjust or Monitor Flow or Pressure - Manual Valve Operation
- Temporary isolation of service lines and service discontinuance as addressed in Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance.

(1) Identify requirements

(2) Verify valve identification

(3) Identify segment(s) that requires manual valve operation

(4) Complete notifications

(5) Open and close valve

(6) Verify pressure

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

Task 0311 Adjust and Monitor Flow or Pressure - Manual Valve Operation

(a) Task Guidance: This task includes the adjustment of flow or pressure either manually or using the valve actuator at the valve site. It also includes valve identification, notifications and pressure verification. It does not include:

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- Manually opening and closing valves as addressed in Task 0301 - Manually Opening and Closing Valves
- Temporary isolation of service lines and service discontinuance as addressed in Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance.

(1) Identify requirements

(2) Verify valve identification

(3) Identify segment(s) that requires manual valve operation

(4) Complete notifications

(5) Operate valve to adjust and maintain required pressure

(6) Monitor pressure

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 0321 Valve Corrective Maintenance

(a) Task Guidance: This task includes the repair, replacement, alteration or refurbishment of valves, except valves for the temporary isolation of service lines and service discontinuance as addressed in Task 1191 - Maintenance of Service Valves Upstream of Customer Meters.

(1) Identify requirements

(2) Verify valve identification

(3) Perform valve corrective maintenance

(4) Lubricate valve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

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Task 0331 Valve - Visual Inspection and Partial Operation

(a) Task Guidance: This task includes visual inspection, partial operation (function test), and lubrication of valves, except valves for the temporary isolation of service lines and service discontinuance as addressed in Task 1191 - Maintenance of Service Valves Upstream of Customer Meters

(1) Identify requirements

(2) Verify identification of valves

(3) Visually inspect and partially operate (function test)

(4) Lubricate valve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0341 Valve - Preventive Maintenance

(a) Task Guidance: This task encompasses actions (e.g., lubrication, winterization, packing adjustment, etc), to keep valves operating safely and efficiently, except relief valves as addressed in:

- Task 0411 - Spring Loaded Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance
- Task 0421 - Pilot Operated Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance
- Task 0431 - Pneumatic Loaded Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance

(1) Identify requirements

(2) Verify identification of valves

(3) Perform preventive maintenance

(4) Lubricate valve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0351 Pneumatic Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect actuator/operator

(5) Perform preventive and corrective maintenance

(6) Adjust set point(s)

(7) Conduct performance test

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0361 Electric Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect actuator/operator

(5) Perform preventive and corrective maintenance

(6) Adjust set point(s)

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(7) Conduct performance test

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0371 Hydraulic Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect actuator/operator

(5) Perform preventive and corrective maintenance

(6) Adjust set point(s)

(7) Conduct performance test

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0381 Spring Loaded Pressure Regulating Device - Inspection and Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task

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also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently. This task excludes customer regulation addressed in:

- Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial
- Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0391 Pilot - Operated Pressure Regulating Device - Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently. This task excludes customer regulation addressed in:

- Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial
- Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting and Relief Device - Large Commercial and Industrial

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

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(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0401 Controller Type Pressure Regulating Device - Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently.

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

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Task 0411 Spring - Loaded Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

- Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial
- Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting and Relief Device - Large Commercial and Industrial

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0421 Pilot Operated Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

- Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial
- Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting and Relief Device - Large Commercial and Industrial

(1) Identify requirements

(2) Verify identification

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(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0431 Pneumatic Loaded Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

- Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial
- Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting and Relief Device - Large Commercial and Industrial

(1) Identify requirements

(2) Verify identification

(3) Perform test equipment check

(4) Visually inspect

(5) Conduct performance test

(6) Perform preventive and corrective maintenance

(7) Adjust set point(s)

(8) Place in service

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

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(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0441 Compressor Start-Up and Shutdown - Manual

(a) Task Guidance: This task includes manual startup and shutdown of a compressor (e.g. reciprocating, centrifugal, rotary) at the driver control panel.

(1) Identify requirements

(2) Determine if startup, return to service or shutdown is required

(3) Complete notifications

(4) Start compressor

(5) Return to service

(6) Remove from service

(7) Shutdown

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 4

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0451 Pump - Start-Up and Shutdown - Manual

(a) Task Guidance: This task includes manual startup and shutdown of a pump, (e.g. reciprocating, centrifugal, rotary, screw) at the driver control panel

(1) Identify requirements

(2) Determine if startup, return to service or shutdown is required

(3) Complete notifications

(4) Start pump

(5) Return to service

(6) Remove from service

(7) Shutdown

(8) Recognize and react to AOCs

(9) If required, complete documentation

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(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0461 Compressor Preventive Maintenance

(a) Task Guidance: This task encompasses actions (e.g., lubrication, adjustment, etc), to keep compressors operating safely and efficiently. This task does not include maintenance of the compressor driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Perform preventive maintenance

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0471 Reciprocating Compressor Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of reciprocating compressors. This task does not include maintenance of the compressor driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform corrective maintenance

(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

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(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0481 Centrifugal Compressor Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of centrifugal compressors. This task does not include maintenance of the compressor driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform corrective maintenance

(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0491 Rotary Compressor Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of rotary compressors. This task does not include maintenance of the compressor driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform corrective maintenance

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(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0501 Pump Preventive Maintenance

(a) Task Guidance: This task encompasses actions (e.g., lubrication, adjustment, etc), to keep pumps operating safely and efficiently. This task does not include maintenance of the pump driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Perform routine maintenance

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0511 Centrifugal Pump Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of centrifugal pumps. This task does not include maintenance of the pump driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform corrective maintenance

(6) Conduct function and performance tests

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(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0521 Reciprocating Pump Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of reciprocating pumps. This task does not include maintenance of the pump driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform corrective maintenance

(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0531 Rotary Pump Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of rotary pumps. This task does not include maintenance of the pump drive

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

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(4) Diagnose/troubleshoot

(5) Perform maintenance

(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0541 Screw Pump Inspection, Testing and Corrective Maintenance

(a) Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of screw pumps. This task does not include maintenance of the pump driver.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect

(4) Diagnose/troubleshoot

(5) Perform maintenance

(6) Conduct function and performance tests

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0551 Explosive Atmosphere Detection and Alarm System Performance Test, and Corrective Maintenance

(a) Task Guidance: This task includes verification that the fixed explosive atmosphere detection and alarm system is functioning within specified parameters, after installation, and prior to or during

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placing in service. This task also includes the performance test, and the repair or replacement of fixed explosive atmosphere detection and alarm system.

(1) Identify requirements

(2) Visually inspect

(3) Conduct performance tests

(4) Perform corrective maintenance

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 0561 Pressure Test - Nonliquid Medium - MAOP Less Than 100 Psi

(a) Task Guidance: This task includes achieving test pressure and durations, and record keeping.

(1) Identify requirements

(2) Prepare for test

(3) Perform test (includes data analysis and check for leaks

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 1

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0571 Pressure Test - Nonliquid Medium - MAOP Greater Than or Equal to 100 Psi

(a) Task Guidance: This task includes achieving test pressure and durations, and record keeping.

(1) Identify requirements

(2) Prepare for test

(3) Perform test (includes data analysis and check for leaks

(4) Recognize and react to AOCs

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(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0581 Pressure Test - Liquid Medium

(a) Task Guidance: This task includes achieving test pressure and durations, and record keeping.

(1) Identify requirements

(2) Prepare for test

(3) Perform test (includes data analysis and check for leaks

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0591 Leak Test at Operating Pressure

(a) Task Guidance: This task includes the detection of leaks at operating pressure either visually, (e.g. soap test), or with use of leak detection equipment.

(1) Identify requirements

(2) Perform test and check for leaks

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

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Task 0601 NDT - Radiographic Testing

(a) Task Guidance: This task includes radiographic testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT -TC-1A, or other recognized standard or practices.

(1) Identify requirements

(2) Perform radiographic testing

(3) Interpret test results

(4) Recognize and react to AOCs

(5) If required, complete documentation

(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 1:3

Task 0611 NDT - Liquid Penetrant Testing

(a) Task Guidance: This task includes liquid (dye) penetrant testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT- TC-1A, or other recognized standard or practice.

(1) Identify requirements

(2) Perform liquid penetrant testing

(3) Interpret test results

(4) Recognize and react to AOCs

(5) If required, complete documentation

(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 NDT - Magnetic Particle Testing

(a) Task Guidance: This task includes magnetic particle testing and evaluation of test results. Level II qualification should be in accordance with - SNT-TC -1A, or other recognized standard or practice.

(1) Identify requirements

(2) Perform magnetic particle testing

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(3) Interpret test results

(4) Recognize and react to AOCs

(5) If required, complete documentation

(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 0631 NDT - Ultrasonic Testing

(a) Task Guidance: This task includes ultrasonic testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT-TC-1A, or other recognized standard or practice. This task excludes wall thickness determination with a UT wall thickness device.

(1) Identify requirements

(2) Perform ultrasonic testing

(3) Interpret test results

(4) Recognize and react to AOCs

(5) If required, complete documentation

(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 0641 Visually Inspect 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) Identify inspection criteria

(2) Perform visual inspection

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0651 Routine Visual Inspection of Breakout Tanks

(a) Task Guidance: This task includes the scheduled visual inspection of breakout tanks and tank components to identify visually determinable damage and defects.

(1) Identify requirements

(2) Ensure proper tank to be inspected

(3) Perform visual inspection

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 3

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0661 Inspection of Breakout Tanks

(a) Task Guidance: This task includes the inspection of in-service or out of service breakout tanks and tank components. Qualification should be in accordance with API 653 or other acceptable standard or practice.

(1) Identify requirements

(2) Conduct inspection

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: As specified by acceptable standard or practice

(f) Evaluation Method: As specified by acceptable standard or practice

(g) Span of Control 1:3

Task 0671 Joining of Plastic Pipe - Solvent Cement

(a) Task Guidance: This task includes the assembly and joining of plastic pipe and components using solvent cement and inspection of completed joints.

(1) Identify requirements

(2) Prepare pipe and coupling

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(3) Join pipe

(4) Inspect completed joint

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0681 Joining of Plastic Pipe - Stab Fittings

(a) Task Guidance: This task includes the joining and inspection of plastic pipe with stab fittings and inspection of completed joints.

(1) Identify requirements

(2) Select fitting

(3) Prepare pipe and fitting

(4) Install fitting

(5) Visually inspect completed joint

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0691 Joining of Pipe - Non-Bottom Out Compression Couplings

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

(1) Identify requirements

(2) Select coupling

(3) Prepare pipe and fitting

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(4) Install coupling

(5) Visually inspect completed joint

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0701 Joining of Pipe - Bottom Out Compression Couplings

(a) Task Guidance: This task includes the joining of pipe 2 inch and less, with bottom out compression coupling and inspection of completed joints. A bottom out compression coupling is one that is designed to prevent over tightening by contact (bottoming out) of the nut with a square shoulder or mating surface.

(1) Identify requirements

(2) Select coupling

(3) Prepare pipe and fitting

(4) Install coupling

(5) Visually inspect completed joint

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0711 Joining of Pipe - Compression Couplings

(a) Task Guidance: This task includes the joining of pipe greater than 2 inch with compression coupling and inspection of completed joints.

(1) Identify requirements

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(2) Select coupling

(3) Prepare pipe and fitting

(4) Install coupling

(5) Visually inspect completed joint

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0721 Joining of Pipe - Threaded Joints

(a) Task Guidance: This task includes the joining of threaded pipe with threaded fittings, and the inspection of completed joints. The joining of components with threaded connections is addressed in the component-covered task.

(1) Identify requirements

(2) Perform joining in accordance with requirements

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0731 Joining of Pipe -- Flange Assembly

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

(1) Identify requirements

(2) Prepare flange surface

(3) Install gasket

(4) Align flanges

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(5) Install fasteners

(6) Tighten fasteners (in specified sequence to specified torque)

(7) Visually inspect completed joint

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:4

Task 0741 Joining of Pipe - Brazing or Soldering

(a) Task Guidance: This task includes the joining of copper pipe by brazing or soldering, and the inspection of completed joints. ASME Boiler & Pressure Vessel Code, Section IX, Welding & Brazing Qualifications is an example of an acceptable standard for qualification for this task.

(1) Identify requirements

(2) Perform joining in accordance with requirements

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:2

Task 0751 Joining of Plastic Pipe - Butt Heat Fusion: Manual

(a) Task Guidance: This task includes the assembly and joining of plastic pipe by butt heat fusion and inspection of completed joints.

(1) Identify requirements

(2) Perform joining equipment check

(3) Clean and face pipe

(4) Align and heat pipe ends

(5) Join pipe

(6) Visually inspect

(7) Recognize and react to AOCs

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(8) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0761 Joining of Plastic Pipe - Butt Heat Fusion: Hydraulic Machine

(a) Task Guidance: This task includes the assembly and joining of plastic pipe by butt heat fusion using a hydraulic machine, and inspection of completed joints

(1) Identify requirements

(2) Perform joining equipment check

(3) Clean and face pipe

(4) Align and heat pipe ends

(5) Join pipe

(6) Visually inspect

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0771 Joining of Plastic Pipe - Sidewall Heat Fusion

(a) Task Guidance: This task includes the assembly and joining of plastic pipe by sidewall heat fusion, and inspection of completed joints

(1) Identify requirements

(2) Perform joining equipment check

(3) Select fitting and clean pipe and fitting

(4) Set-up heat fusion equipment

(5) Heat fitting and pipe mating surfaces

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(6) Join fitting and pipe

(7) Visually inspect

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0781 Joining of Plastic Pipe - Electrofusion

(a) Task Guidance: This task includes the assembly and joining of plastic pipe by electrofusion, and inspection of completed joints

(1) Identify requirements

(2) Perform joining equipment check

(3) Select fitting and clean pipe and fitting

(4) Set-up electrofusion equipment

(5) Join fitting and pipe

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0791 Joining of Plastic Pipe - Socket Heat Fusion

(a) Task Guidance: This task includes the assembly and joining of plastic pipe by socket heat fusion, and inspection of completed joints

(1) Identify requirements

(2) Perform joining equipment check

(3) Set-up socket fusion equipment

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(4) Select fittings

(5) Prepare pipe ends and fittings

(6) Heat fittings and pipe ends

(7) Join pipe and fittings

(8) Visually inspect

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 1 year, if no joints made or whenever more than 3 joints or 3% of joints made, whichever is greater, are found unacceptable during pressure testing

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 0801 Welding

(a) Task Guidance: This task includes the assembly and joining of steel pipe by welding, and repair of welds, in accordance with welding procedures. Qualification should be in accordance with API 1104, ASME Section IX, Boiler and Pressure Vessel Code, or other acceptable standard or practice. Visual inspection of welding and welds is in accordance with Task 0811 - Visual Inspection of Welding and Welds

(1) Identify requirements

(2) Perform assembly or fit-up of parts

(3) Perform weld in accordance with welding procedure

(4) Visually examine for weld defects

(5) Recognize and react to AOCs

(6) If required, complete documentation

(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 1:0

Task 0811 Visual Inspection of Welding and Welds

(a) Task Guidance: This task includes inspection of the welding process, (e.g. equipment set up, material fit up/alignment, handling of welding materials, etc.), and inspection of welds to identify

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visually detectable defects. ASNT SNT -TC-1A (level II), ASME Boiler & Pressure Vessel Code, Section IX or API 1104 are examples of acceptable standards for qualification for this task.

(1) Identify inspection criteria

(2) Identify welding conditions and essential variables

(3) Verify welding process

(4) Visually inspect weld

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3

(f) Evaluation Method: As specified by acceptable standard or practice

(g) Span of Control 1:1

Task 0821 Tubing & Fitting Installation - Instrument, Control and Sampling

(a) Task Guidance: This task includes the preparation, bending, joining, and installation of instrument, control and sampling line tubing and fittings containing product.

(1) Identify requirements

(2) Identify location for tubing installation

(3) Select tubing and fittings

(4) Join tubing and fittings in accordance with requirements

(5) Install tubing and fittings

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0831 Cast - Iron Caulked Bell and Spigot Joints - Installation and Maintenance of Mechanical Leak Clamp(s)

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

(1) Identify requirements

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(2) Evaluate cast iron joint(s) to determine if requirements are met

(3) Install or maintain mechanical leak clamp(s)

(4) Visually inspect

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0841 Cast Iron Joints - Sealing: Encapsulation

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

(1) Identify requirements

(2) Evaluate cast iron joint(s) to determine if encapsulation requirements are met

(3) Install or maintain encapsulation

(4) Visually inspect

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0851 Internal Sealing - Cast Iron and Ductile Iron

(a) Task Guidance: This task includes the internal sealing of cast iron and ductile iron and inspection of sealant.

(1) Identify requirements

(2) Clean pipe and prepare internal pipe surface

(3) Perform internal sealing

(4) Visually inspect

(5) Recognize and react to AOCs

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(6) If required, complete documentation

(b) Potential Applicability: D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0861 Installation of Steel Pipe in a Ditch

(a) Task Guidance: After excavation is completed, this task includes the handling, lowering in, and fitting of steel pipe in a ditch to assure firm support.

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Visually inspect dish

(4) Install pipe with firm support to fit ditch

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 0871 Installation of Steel Pipe in a Bore

(a) Task Guidance: After boring is completed, this task includes the handling, pulling in and inspection of exposed pipe and coating.

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Install pipe to prevent pipe damage and coating damage

(4) Inspect pipe coating during installation

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

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(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0881 Installation of Steel Pipe Plowing/Pull-In

(a) Task Guidance: This task includes the handling, plowing/pull-in of steel pipe, and inspection of exposed pipe and coating.

(1) Identify requirements

(2) Select pipe

(3) Handle pipe to prevent damage

(4) Install pipe to prevent pipe damage and coating damage

(5) Inspect pipe coating during installation

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0891 Field Bending of Steel Pipe

(a) Task Guidance: This task includes the field bending of steel pipe as specified and inspection of completed field bends.

(1) Identify requirements

(2) Perform field bending of pipe

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

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Task 0901 Installation of Plastic Pipe in a Ditch

(a) Task Guidance: After excavation is completed, this task includes the handling, lowering in, and fitting of plastic pipe in a ditch to assure firm support. The installation of a tracer wire is addressed in Task 0941 - Install Tracer Wire.

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Visually inspect ditch

(4) Install pipe with firm support to fit ditch

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 0911 Installation of Plastic Pipe in a Bore

(a) Task Guidance: After boring is completed, this task includes the handling, pulling in and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 - Install Tracer Wire

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Install pipe to prevent pipe damage

(4) Inspect pipe during installation

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0921 Installation of Plastic Pipe Plowing/Pull-In

(a) Task Guidance: This task includes the handling, plowing/pull-in of plastic pipe, and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 - Install Tracer Wire.

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(1) Identify requirements

(2) Select pipe

(3) Handle pipe to prevent damage

(4) Install pipe to prevent pipe damage

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0931 Installation of Plastic Pipe by Plowing/Planting

(a) Task Guidance: This task includes the handling, plowing/planting of plastic pipe, and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 - Install Tracer Wire.

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Install pipe to prevent pipe damage

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 0941 Install Tracer Wire

(a) Task Guidance: This task includes the installation of a tracer wire on plastic pipe including verification of tracer wire mechanical integrity and electrical continuity. Electrical connections are addressed in:

- Task 0041 - Installation and Maintenance of Mechanical Electrical Connections
- Task 0051 - Installation of Exothermic Electrical Connections

(1) Identify requirements

(2) Install tracer wire

(3) Verify mechanical integrity and electrical continuity

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(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 0951 Installation of Pipe Above Ground

(a) Task Guidance: This task includes the handling and installation of pipe above ground.

(1) Identify requirements

(2) Handle pipe to prevent damage

(3) Install pipe with specified support

(4) Install to protect pipe and coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

Task 0961 Above Ground Supports and Anchors - Inspection, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the above ground supports and anchors are installed in accordance with specifications, prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of above ground supports and anchors, and actions to keep the above ground supports and anchors functioning as specified

(1) Identify requirements

(2) Visually inspect supports and anchors

(3) Perform preventive or corrective maintenance

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

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(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:4

Task 0971 Installation and Maintenance of Casing Spacers, Vents and Seals

(a) Task Guidance: This task includes the installation of casing spacers, vents and seals. This task also includes the evaluation, repair or replacement, of casing vents and seals.

(1) Identify requirements

(2) Evaluate to determine if requirements are met

(3) Perform corrective maintenance

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

Task 0981 Backfilling

(a) Task Guidance: This task includes visually inspecting backfill material, installation of pipe protective material (i.e. padding, shading, and rock shield), verification of firm support and placing backfill in lifts or layers as specified.

(1) Identify requirements

(2) Visually inspect backfill material

(3) Place material to provide firm support and protect pipe

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

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Task 0991 Coating Application and Repair - Brushed or Rolled

(a) Task Guidance: This task includes the surface preparation and application or repair of coatings using a brush or roller. This task includes painting to inhibit corrosion, and internal or external applications of coatings, on pipes, tanks, etc

(1) Identify requirements

(2) Prepare surface

(3) Apply coating

(4) Inspect coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 1001 Coating Application and Repair - Sprayed

(a) Task Guidance: This task includes the surface preparation and application or repair of coatings using a sprayer. This task includes painting to inhibit corrosion, and internal or external applications of coatings, on pipes, tanks, etc

(1) Identify requirements

(2) Prepare surface

(3) Apply coating

(4) Inspect coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 1011 External Coating Application and Repair - Wrapped

(a) Task Guidance: This task includes the surface preparation and application or repair of coatings using a wrap.

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(1) Identify requirements

(2) Prepare surface

(3) Apply coating

(4) Inspect coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:5

Task 1021 Apply or Repair Internal Coating Other Than by Brushing, Rolling or Spraying

(a) Task Guidance: This task includes the surface preparation, application, repair and inspection of internal coatings other than those applied by brushing, rolling, or spraying.

(1) Identify requirements

(2) Prepare surface

(3) Apply coating

(4) Inspect coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

Task 1031 Install or Repair Internal Liner

(a) Task Guidance: This task includes the surface preparation, installation, repair and inspection of an internal liner.

(1) Identify requirements

(2) Clean pipe and prepare internal pipe surface

(3) Install liner

(4) Visually inspect liner after installation

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(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:3

Task 1041 Install Mechanical Clamps and Sleeves - Bolted

(a) Task Guidance: This task includes the preparation, installation and inspection of bolted mechanical clamps and sleeves.

(1) Identify requirements

(2) Select and prepare clamp or sleeve

(3) Prepare pipe for installation of clamp or sleeve

(4) Install clamp or sleeve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 1051 Fit-Up of Weld Type Repair Sleeve

(a) Task Guidance: This task includes the preparation and fit-up of weld type repair sleeves. Welding the repair sleeve is covered in Task 0801 - Welding.

(1) Identify requirements

(2) Select and prepare sleeve

(3) Prepare surface for fit-up of sleeve

(4) Fit up sleeve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

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(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; 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) Identify requirements

(2) Select sleeve

(3) Prepare pipe for installation of sleeve

(4) Install sleeve

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O Or Mfr's Rec

(g) Span of Control 1:2 or Mfr's Rec

Task 1071 Repair of Steel Pipe by Grinding

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

(1) Identify requirements

(2) Remove defect by grinding

(3) Determine if minimum wall thickness requirements are met

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

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Task 1081 Tapping a Pipeline (Tap Diameter 2 Inch 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. Installation of fittings is addressed in:

- Task 0801 - Welding
- Task 1041 - Install Mechanical Clamps and Sleeves - Bolted
  - *(1)* Identify requirements
  - *(2)* Install tapping equipment
  - *(3)* Perform the tap
  - *(4)* Isolate tap (includes install completion plug)
  - *(5)* Remove the tapping equipment
  - *(6)* Recognize and react to AOCs
  - *(7)* If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:2

Task 1091 Tapping a Pipeline (Tap Diameter Greater Than 2 Inch)

(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. Installation of fittings is addressed in:

- Task 0801 - Welding
- Task 1041 - Install Mechanical Clamps and Sleeves - Bolted
  - *(1)* Identify requirements
  - *(2)* Install tapping equipment
  - *(3)* Perform the tap
  - *(4)* Isolate tap (includes install completion plug)
  - *(5)* Remove the tapping equipment
  - *(6)* Recognize and react to AOCs
  - *(7)* If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

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(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:2

Task 1101 Tapping 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. Installation of fittings is addressed in:

- Task 0771 - Joining of Plastic Pipe - Sidewall Heat Fusion
- Task 0781 - Joining of Plastic Pipe - Electrofusion
- Task 0801 - Welding
- Task 1041 - Install Mechanical Clamps and Sleeves - Bolted
  - *(1)* Identify requirements
  - *(2)* Perform the tap
  - *(3)* Isolate the tap
  - *(4)* Recognize and react to AOCs
  - *(5)* If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 1111 Tapping Cast and Ductile Iron Pipe, and Low Pressure Steel Pipe

(a) Task Guidance: This task includes tapping a pipe with or without an installed fitting. Installation of fittings, as specified, is addressed in Task 1041 - Install Mechanical Clamps and Sleeves - Bolted. This also includes installation of threaded fittings after the tap.

  (1) Identify requirements

  (2) Install tapping equipment

  (3) Perform the tap

  (4) Remove tapping equipment

  (5) Install threaded fitting, as specified, or isolate (e.g. plug) the tap

  (6) Recognize and react to AOCs

  (7) If required, complete documentation

(b) Potential Applicability: D

(c) Difficulty: 3

(d) Importance: 4

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(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:2

Task 1121 Bagging and Stopping Low Pressure Pipe

(a) Task Guidance: This task includes the insertion and removal of a bag on low-pressure pipe. It also includes pressure verification and monitoring pressure to assure system pressure requirements are maintained.

(1) Identify requirements

(2) Verify segment(s) that requires bagging and stopping

(3) Complete notifications

(4) Install bag or stopper

(5) Monitor pressure

(6) Remove bag or stopper

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:2

Task 1131 Stopper (Stopple) Pipe

(a) Task Guidance: This task includes the insertion and removal of a stopper (stopple). Also, it includes pressure verification and monitoring pressure to assure system pressure requirements are maintained.

(1) Identify requirements

(2) Identify segment(s) that requires stopping

(3) Complete notifications

(4) Install stopper

(5) Monitor pressure

(6) Remove stopper

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

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(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; 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 also includes the selection, installation and removal of squeeze off tools and monitoring pressure to assure system pressure requirements are maintained.

(1) Identify requirements

(2) Verify segment(s) that requires squeeze off

(3) Complete notifications

(4) Install squeezer

(5) Squeeze pipe

(6) Monitor pressure

(7) Release and remove squeezer

(8) Mark squeeze point on pipe

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; 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 also includes the selection, installation and removal of squeeze off tools and monitoring pressure to assure system pressure requirements are maintained.

(1) Identify requirements

(2) Verify segment(s) that requires squeeze off

(3) Complete notifications

(4) Install squeezer

(5) Squeeze pipe

(6) Monitor pressure

(7) Release and remove squeezer

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(8) Mark squeeze point on pipe

(9) Recognize and react to AOCs

(10) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:2

Task 1161 Installation of Customer Meters and Regulators - Residential and Small Commercial

(a) Task Guidance: This task includes locating, and hanging/setting the meter. Attaching a meter bracket does not require qualification as long as a qualified individual completes the installation in accordance with the steps in this task. Proving the integrity of customer piping and lighting customer utilization equipment is not included.

The removal and replacement of a meter is a job made up of at least this task and Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance. As such, a covered task has not been identified for the removal and replacement of residential and small commercial meters and regulators.

(1) Identify requirements

(2) Identify meter(s) and regulator(s) to be installed

(3) Identify meter and regulator installation location

(4) Install or verify the installation of the meter bracket

(5) Install meter(s) and regulator(s)

(6) Install and test relief device as specified

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1171 Installing Customer Meters - Large Commercial and Industrial

(a) Task Guidance: This task includes locating, and hanging/setting the meter. Attaching a meter bracket/support does not require qualification as long as a qualified individual completes the

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installation in accordance with the steps in this task. Proving the integrity of customer piping and lighting customer utilization equipment is not included.

The removal and replacement of a meter is a job made up of at least this task and Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance. As such a covered task has not been identified for the removal and replacement of large commercial and industrial meters and regulators.

(1) Identify requirements

(2) Identify meter(s) to be installed

(3) Identify meter installation location

(4) Install meter(s)

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1181 Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial

(a) Task Guidance: This task includes installing and maintaining pressure regulating, limiting, and relief device. It also includes locating vent and installation of vent piping.

(1) Identify requirements

(2) Visually inspect customer pressure regulating, limiting, and relief devices

(3) Test customer pressure regulating and limiting devices

(4) Test customer relief devices

(5) Install or maintain customer pressure regulating, limiting, and relief devices

(6) Check and adjust operating pressure set point(s) of customer pressure regulating, limiting, and relief devices

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

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(g) Span of Control 1:1

Task 1191 Maintenance of Service Valves Upstream of Customer Meter

(a) Task Guidance: This task includes removing, replacing and maintaining service valves upstream of customer meter.

(1) Identify requirements

(2) Visually inspect

(3) Maintain (lubricate, etc.)

(4) Isolate valve

(5) Remove and replace valve

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1201 Temporary Isolation of Service Lines and Service Discontinuance

(a) Task Guidance: This task includes closing and locking service valves upstream of the customer meter or installation of a mechanical device or fitting to prevent the flow of gas.

(1) Identify requirements

(2) Discontinue service or isolate service line

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 1

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1211 Odorization - Periodic Sampling

(a) Task Guidance: This task includes the periodic sampling of gas to verify concentration of odorant by use of instrumentation or verification of presence of odor by sniff test.

(1) Identify requirements

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(2) Perform odorometer test

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1221 Odorization - Odorizer Inspection, Testing, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes verification that the odorizer is functioning within specified parameters, after installation or replacement, and prior to or during placing in service. This task includes the repair, replacement, alteration or refurbishment of the odorizer, and actions to keep the odorizer operating safely and efficiently.

(1) Identify requirements

(2) Perform test equipment check

(3) Visually inspect odorizer

(4) Evaluate odorizer

(5) Perform preventive or corrective

(6) Check odorant concentration

(7) Adjust odorant output

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 1

(d) Importance: 2

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:5

Task 1231 Inside Gas Leak Investigation

(a) Task Guidance: This task includes the investigation of reported or discovered leaks of Operators lines inside a building in relation to emergency response. This also includes initiation of precautionary actions (make safe). Repairing and proving the integrity of customer piping and lighting customer utilization equipment is not included.

(1) Identify requirements

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(2) Perform test equipment check

(3) Perform leakage investigation

(4) Initiate precautionary actions

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1241 Outside Gas Leak Investigation

(a) Task Guidance: This task includes the investigation of reported or discovered outside leaks of the Operators lines. This also includes initiation of precautionary actions (make safe).

(1) Identify requirements

(2) Perform test equipment check

(3) Perform leakage investigation

(4) Initiate precautionary actions

(5) Visually inspect area of leakage

(6) Determine leak spread

(7) Grade (classify) the leak

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1251 Hazardous Liquid Leak Investigation

(a) Task Guidance: This task includes the investigation of reported or discovered leaks. This also includes initiation of precautionary actions (make safe).

(1) Identify requirements

(2) Perform test equipment check

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(3) Perform leakage investigation

(4) Initiate precautionary actions

(5) Visually inspect area of leakage

(6) Pinpoint the leak

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 3

(d) Importance: 5

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1261 Walking Gas Leakage Survey

(a) Task Guidance: This task includes conducting a walking gas leak survey utilizing gas detection survey equipment, documentation, and reporting an emergency condition

(1) Identify requirements

(2) Perform test equipment check

(3) Perform survey

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1271 Mobile Gas Leakage Survey - Flame Ionization

(a) Task Guidance: This task includes conducting a mobile (other than walking) gas leak survey utilizing flame ionization detection survey equipment, documentation, and reporting an emergency condition

(1) Identify requirements

(2) Perform test equipment check

(3) Perform survey

(4) Recognize and react to AOCs

(5) If required, complete documentation

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(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1281 Mobile Gas Leakage Survey - Optical Methane

(a) Task Guidance: This task includes conducting a mobile (other than walking) gas leak survey utilizing optical methane detection survey equipment, documentation, and reporting an emergency condition

(1) Identify requirements

(2) Perform test equipment check

(3) Perform survey

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1291 Locate Underground Pipelines

(a) Task Guidance: This task includes locating underground pipelines utilizing maps, records, and locating equipment. It also includes placing temporary markers or markings.

(1) Identify requirements

(2) Select method for locating

(3) Perform test equipment check

(4) Visually inspect locate area

(5) Locate pipelines and place temporary marker(s)

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: P&W /O

(g) Span of Control 1:1

Task 1301 Install and Maintain Pipeline Markers

(a) Task Guidance: This task includes determining the location, placing and maintaining permanent pipeline markers

(1) Identify requirements

(2) Evaluate to determine if pipeline marker requirements are met

(3) Install or maintain line marker

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:4

Task 1311 Inspect Pipeline Surface Conditions - Patrol 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) Identify requirements

(2) Perform patrol

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1321 Damage Prevention During Excavation Activities by or on Behalf of The Operator

(a) Task Guidance: This task includes assuring the performance of damage prevention activities during excavation activities (e.g. verifying underground pipelines are marked, providing required

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notifications, use of spotter/swamper to guide equipment operator, probing, hand digging, pot holing to verify location of bore-head, etc.)

(1) Identify requirements

(2) Implement damage prevention actions during excavation activities

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:1

Task 1331 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) Identify requirements

(2) Perform inspection to enforce damage prevention during and after third party excavation or encroachment activities

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:1

Task 1341 Provide or Assure Adequate Pipeline Support During Operator Initiated Excavation Activities

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

(1) Identify requirements

(2) Install bridging, bracing, or other specified support

(3) Recognize and react to AOCs

(4) If required, complete documentation

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(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:3

Task 1351 Vault Inspection and Maintenance

(a) Task Guidance: This task applies to the inspection and maintenance of vaults housing pressure regulating and pressure limiting equipment, having a volumetric internal content of 200 cubic feet or more. It includes inspection of ventilating equipment, vault cover, sufficient drainage and structural integrity. Investigation to identify product leakage is addressed in:

- Task 1231 - Inside Gas Leak Investigation
- Task 1241 - Outside Gas Leak Investigation
- Task 1251 - Hazardous Liquid Leak Investigation

(1) Identify requirements

(2) Inspect vault and ventilating equipment

(3) Recognize and react to AOCs

(4) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:1

Task 1361 Station Emergency Shutdown System - Inspection, Testing and Corrective Maintenance

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

(1) Identify requirements

(2) Visually inspect shutdown device(s)

(3) Conduct performance test

(4) Perform corrective maintenance

(5) Recognize and react to AOCs

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(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1371 Operate Gas Pipeline - System Control Center Operations

(a) Task Guidance: This task includes the remote operation of a gas pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure, remotely starting and stopping compressors, etc.).

(1) Identify requirements

(2) Monitor system operation

(3) Determine if action is needed to maintain or adjust pressure

(4) Complete required notifications of pressure adjustment

(5) Adjust or maintain pressure by remotely starting, stopping or changing the operating parameters of compressors

(6) Adjust or maintain pressure remotely by changing pressure regulating set points

(7) Adjust or maintain pressure by remotely operating valves

(8) Adjust or maintain pressure by directing manual operation of compressors, pressure regulating equipment and valves

(9) Verify pressure adjustment brings system within required operating parameters

(10) Recognize and react to AOCs

(11) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 5

(d) Importance: 4

(e) Interval: 3 Years plus Annual AOC Training or Evaluation

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1381 Operate Gas Pipeline - Local Facility Remote-Control Operations

(a) Task Guidance: This task includes the local facility remote control operations of a gas pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure, remotely starting and stopping compressors, etc.).

(1) Identify requirements

(2) Monitor system operation

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(3) Determine if action is needed to maintain or adjust pressure

(4) Complete required notifications of pressure adjustment

(5) Adjust or maintain pressure by remotely starting, stopping or changing the operating parameters of compressors

(6) Adjust or maintain pressure remotely by changing pressure regulating set points

(7) Adjust or maintain pressure by remotely operating valves

(8) Adjust or maintain pressure by directing manual operation of compressors, pressure regulating equipment and valves

(9) Verify pressure adjustment brings system within required operating parameters

(10) Recognize and react to AOCs

(11) If required, complete documentation

(b) Potential Applicability: G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1391 Operate Liquids Pipeline - System Control Center Operations

(a) Task Guidance: This task includes the remote operation of a hazardous liquids pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure and flow, remotely starting and stopping pumps, monitor for pipeline leaks, etc.).

(1) Identify requirements

(2) Monitor system operation including monitoring for pipeline leaks

(3) Determine if action is needed to maintain or adjust pressure, temperature or flow

(4) Complete required notifications of pressure, temperature or flow adjustment

(5) Adjust or maintain pressure, temperature or flow by remote operation of pumps, auxiliary equipment; regulating equipment, or valves

(6) Adjust or maintain pressure, temperature or flow by directing manual operation of pumps, auxiliary equipment; regulating equipment, or valves

(7) Verify adjustments bring system within required operating parameters

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 5

(d) Importance: 4

(e) Interval: 3 Years plus Annual AOC Training or Evaluation

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(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1401 Operate Liquids Pipeline - Local Facility Remote-Control Operations

(a) Task Guidance: This task includes the local facility remote operation of a hazardous liquids pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure and flow, remotely starting and stopping pumps, monitor for pipeline leaks, etc.).

(1) Identify requirements

(2) Monitor system operation

(3) Determine if action is needed to maintain or adjust pressure, temperature or flow

(4) Complete required notifications of pressure, temperature or flow adjustment

(5) Adjust or maintain pressure, temperature or flow by remote operation of pumps, auxiliary equipment; regulating equipment, or valves

(6) Adjust or maintain pressure, temperature or flow by directing manual operation of pumps, auxiliary equipment; regulating equipment, or valves

(7) Verify adjustments bring system within required operating parameters

(8) Recognize and react to AOCs

(9) If required, complete documentation

(b) Potential Applicability: L

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:1

Task 1411 Indirect Inspection Techniques

(a) Task Guidance: This task includes indirect inspection, (e.g. Alternating current voltage gradient, close interval survey (Task 0011), direct current voltage gradient, soil resistivity (Task 0021) etc.)

(1) Identify requirements

(2) Perform test equipment check

(3) Conduct indirect inspection

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1421 Direct Examination Techniques

(a) Task Guidance: This task includes direct examination, (e.g. Ultrasonic testing, coating holiday testing, visual inspection, etc.).

(1) Identify requirements

(2) Perform test equipment check

(3) Perform direct examination

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:1

Task 1431 Diving - Measure Structure to Electrolyte Potential

(a) Task Guidance: This task includes using measurement equipment to take a reading of the potential between the underwater structure and electrolyte (fresh or salt water), and record data.

(1) Identify requirements

(2) Perform test equipment check

(3) Identify and locate test point

(4) Measure structure-to-electrolyte potential

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 1

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1441 Diving - External Coating Application and Repair

(a) Task Guidance: This task includes the surface preparation and application or repair of coatings using marine suitable hand applied coatings.

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(1) Identify requirements

(2) Prepare surface

(3) Apply coating

(4) Inspect coating

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1451 Diving - Visual/Tactile Inspection for Corrosion and Mechanical Damage - Buried or Submerged Pipeline

(a) Task Guidance: This task includes activities associated with the visual/tactile inspection of buried or submerged pipelines when exposed for the purpose of detecting corrosion and mechanical damage and evaluating coating integrity.

(1) Identify requirements

(2) Inspect protective coating

(3) Visually inspect external and internal surfaces of pipe and components

(4) Visually inspect for leaks

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1461 Diving - Measure and Describe Corrosion and Mechanical Damage - Buried or Submerged Pipeline

(a) Task Guidance: This task includes activities to measure and characterize corrosion or mechanical damage on buried or submerged pipeline. It includes the investigation to determine the extent of corrosion and recording data.

(1) Identify requirements

(2) Prepare surface

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(3) Perform test equipment check

(4) Take measurements

(5) Describe corrosion or mechanical damage

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1471 Diving - Install Galvanic Anodes on Submerged Pipelines

(a) Task Guidance: This task includes the installation of galvanic anodes on submerged pipelines.

(1) Identify requirements

(2) Surface preparation

(3) Install anode(s)

(4) Perform electrical connection

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 1

(e) Interval: 5 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1481 Diving - Locate Buried Underwater Pipelines

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

(1) Identify requirements

(2) Identify method for line locate

(3) Perform test equipment check

(4) Visually inspect for other facilities that may affect line locating

(5) Locate and place temporary marker(s)

(6) Determine pipeline depth of cover

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(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 3

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:0

Task 1491 Diving - Movement of in-Service Underwater Pipeline

(a) Task Guidance: This task includes movement of in-service underwater pipeline, (e.g. installation of slings, water jetting).

(1) Identify requirements

(2) Verify pressure reduction

(3) Move segment to new location

(4) Provide support during segment disturbance

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: W/O; Sub: W/O

(g) Span of Control 1:0

Task 1501 Diving - Install, Replace or Repair Support Structures on Existing Underwater Pipelines

(a) Task Guidance: This task includes installing, replacing and repairing support structures on existing underwater pipelines.

(1) Identify requirements

(2) Inspect existing support

(3) Install, replace or repair supports

(4) Recognize and react to AOCs

(5) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 4

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(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1511 Diving - Perform General Flange Assembly Procedures

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

(1) Identify requirements

(2) Prepare flange surface

(3) Align pipe ends

(4) Install gasket

(5) Install studs

(6) Tighten studs (in specified sequence to specified torque as required)

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

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, etc.) on underwater pipelines.

(1) Identify requirements

(2) Prepare end connector

(3) Identify segment characteristics

(4) Prepare pipe for installation of end connector

(5) Install end connector

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

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(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1531 Diving - Install Mechanical Clamps or Sleeves

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

(1) Identify requirements

(2) Prepare clamp or sleeve

(3) Identify segment characteristics

(4) Prepare pipe for installation of clamp or sleeve

(5) Install end connector

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1541 Diving - Perform an Underwater Mechanical Tap

(a) Task Guidance: This task includes performing tapping including the installation of the isolation valve and tapping equipment. Installation of fittings is addressed in:

- Task 1531 - Diving - Install Mechanical Clamps or Sleeves
- Task 1601 - Diving - Welding

(1) Identify requirements

(2) Perform leak test

(3) Perform the tap

(4) Isolate tap

(5) Remove tapping equipment

(6) Retrieve coupon

(7) Recognize and react to AOCs

(8) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

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(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

(g) Span of Control 1:0

Task 1551 Diving - Stopper (Stopple) Pipe

(a) Task Guidance: This task includes the insertion and removal of a stopper (stopple). It also includes pressure verification.

(1) Identify requirements

(2) Identify segment(s) that requires stopping

(3) Install stopper

(4) Remove stopper

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: P&W/O

(g) Span of Control 1:0

Task 1561 Diving - Valve - Inspection, Preventive and Corrective Maintenance

(a) Task Guidance: This task includes the inspection, partial operation and lubrication of valves. It also includes the repair or replacement of valve actuator/operator.

(1) Identify requirements

(2) Verify identification of valves

(3) Visually inspect and partially operate

(4) Lubricate valve

(5) Repair or replace valve actuator/operator

(6) Recognize and react to AOCs

(7) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 4

(e) Interval: 3 Years

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

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Task 1571 Diving - NDT - Magnetic Particle Testing

(a) Task Guidance: This task is includes magnetic particle testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT-TC-1A, or other acceptable standard or practice.

(1) Identify requirements

(2) Perform magnetic particle testing

(3) Interpret test results

(4) Recognize and react to AOCs

(5) If required, complete documentation

(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 1:0

Task 1581 Diving - NDT - Manipulate Probe for Ultrasonic Testing

(a) Task Guidance: This task includes the diver manipulating the probe (transducer) as directed by a Level II. Level I qualification should be in accordance with ASNT SNT-TC-1A, or other acceptable standard or practice. Level II qualification is addressed in Task 0631 - NDT - Ultrasonic Testing

(1) Identify requirements

(2) Manipulating the probe (transducer)

(3) Recognize and react to AOCs

(4) If required, complete documentation

(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 1:0

Task 1591 Diving - NDT - Radiographic Testing

(a) Task Guidance: This task includes placing the film and camera/source directed by a Level II. Level I qualification should be in accordance with ASNT SNT-TC-1A, or other acceptable standard or practice. Level II qualification is addressed in Task 0601 - NDT - Radiographic Testing

(1) Identify requirements

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(2) Place the film and camera/source

(3) Recognize and react to AOCs

(4) If required, complete documentation

(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 1:0

Task 1601 Diving - Welding

(a) Task Guidance: This task includes the assembly and joining of steel pipe by welding, and repair of welds, in accordance with welding procedures. Qualification should be in accordance with API 1104, ASME Section IX, Boiler and Pressure Vessel Code, or other acceptable standard or practice. Visual inspection of welding and welds is in accordance with Task 1611 - Diving - Visual Inspection of Welding and Welds

(1) Identify requirements

(2) Perform assembly or fit-up of parts

(3) Perform weld in accordance with welding procedure

(4) Visually examine for weld defects

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 4

(d) Importance: 4

(e) Interval: As specified by acceptable standard or practice

(f) Evaluation Method: As specified by acceptable standard or practice

(g) Span of Control 1:0

Task 1611 Diving - Visual Inspection of Welding and Welds

(a) Task Guidance: This task includes inspection of the welding process, (e.g. equipment set up, material fit up/alignment, handling of welding materials, etc.), and inspection of welds to identify visually detectable defects. API 1104 is an example of a standard for qualification for this task.

(1) Identify requirements

(2) Identify welding conditions and essential variables

(3) Verify welding process

(4) Visually inspect weld

(5) Recognize and react to AOCs

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(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 3

(d) Importance: 3

(e) Interval: 3

(f) Evaluation Method: As specified by acceptable standard or practice

(g) Span of Control 1:1

Task 1621 Diving - Manually Operate Valves

(a) Task Guidance: This task includes manually opening and closing valves, (e.g. pipeline start up and shutdown, flow direction, pigging, etc.), at the valve site. It also includes valve identification, notifications and pressure verification.

(1) Identify requirements

(2) Verify identification of valve

(3) Complete notifications

(4) Visually inspect weld

(5) Recognize and react to AOCs

(6) If required, complete documentation

(b) Potential Applicability: L, G, D

(c) Difficulty: 2

(d) Importance: 2

(e) Interval: 5

(f) Evaluation Method: Initial: P&W/O; Sub: W/O

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NONMANDATORY APPENDIX 5B
SUMMARY OF INTEGRATED TASK LIST

Task 0001 Measure Structure-to-Electrolyte Potential

Task Guidance: This task includes using measurement equipment to take a reading of the potential between the structure (pipe, tanks, etc.) being tested and the soil and recording data.

Task 0011 Conduct Close Interval Survey

Task Guidance: This task includes gathering electrical potential readings along the pipeline at specified intervals and recording data.

Task 0021 Measure Soil Resistivity

Task Guidance: This task includes using measurement equipment to measure soil resistivity and recording data.

Task 0031 Inspect and Monitor Galvanic Ground Beds/Anodes

Task Guidance: This task includes inspecting and monitoring the electric potential of galvanic ground beds/anodes.

Task 0041 Installation and Maintenance of Mechanical Electrical Connections

Task Guidance: This task includes making the mechanical connections and repair of tracer wire, test leads, bonds, shunts, etc.

Task 0051 Installation of Exothermic Electrical Connections

Task Guidance: This task includes making exothermic (e.g. thermite, cadweld and pin-brazing) connections of tracer wire, test leads, bonds, shunts, etc.

Task 0061 Inspect or Test Cathodic Protection Bonds

Task Guidance: This task includes inspecting the physical integrity and testing of cathodic protection bonds.

Task 0071 Inspect or Test Cathodic Protection Electrical Isolation Devices

Task Guidance: This task includes inspecting the physical integrity and testing electrical isolation devices.

Task 0081 Install Cathodic Protection Electrical Isolation Devices

Task Guidance: This task includes the installation of electrical isolation devices

Task 0091 Troubleshoot In-Service Cathodic Protection System

Task Guidance: This task applies to operational Cathodic Protection Systems and includes activities to determine why the CP system and components are not functioning and the identification of corrective action.

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Task 0101 Inspect Rectifier and Obtain Readings

Task Guidance: This task includes inspecting the rectifier for damage and deterioration and obtaining readings as specified.

Task 0111 Maintain Rectifier

Task Guidance: This task includes verification that the rectifier is functioning within specified parameters, after a rectifier has been hung and AC power connected, and prior to or during placing in service. This task also includes actions to repair or replace in service rectifiers or components.

Task 0121 Collect Sample for Internal Corrosion Monitoring

Task Guidance: This task includes the collection and handling of samples for internal corrosion monitoring and preventing contamination of the sample.

Task 0131 Insert and Remove Coupons/Probes for Internal Corrosion Monitoring

Task Guidance: This task includes inserting and removing coupons/probes for internal corrosion monitoring and preventing contamination or damage of the coupons/probes.

Task 0141 Visual Inspection for Atmospheric Corrosion

Task Guidance: This task includes the inspection of pipe and pipeline components exposed to the atmosphere for the purpose of detecting atmospheric corrosion.

Task 0151 Visual Inspection of Buried Pipe and Components When Exposed

Task Guidance: This task includes the inspection of buried pipe and pipeline components when exposed for the purpose of detecting external corrosion and evaluating coating integrity.

Task 0161 Visual Inspection for Internal Corrosion

Task Guidance: This task includes the inspection of the internal surface of pipe and pipeline components, including tapping coupons, when exposed for the purpose of detecting internal corrosion.

Task 0171 Measure External Corrosion

Task Guidance: This task includes activities to measure and characterize external corrosion, including investigation to determine the extent of corrosion and recording data.

Task 0181 Measure Internal Corrosion

Task Guidance: This task includes activities to measure and characterize internal corrosion, including investigation to determine the extent of corrosion and recording data.

Task 0191 Measure Atmospheric Corrosion

Task Guidance: This task includes activities to measure and characterize atmospheric corrosion, including investigation to determine the extent of corrosion and recording data.

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Task 0201 Visual Inspection of Installed Pipe and Components for Mechanical Damage

Task Guidance: This task includes activities associated with the inspection of installed pipe and components for the purpose of detecting mechanical damage (e.g. dents, gouges, cracks).

Task 0211 Measure and Characterize Mechanical Damage on Installed Pipe and Components

Task Guidance: This task includes activities to measure and characterize mechanical damage (e.g. dents, gouges, cracks) on installed pipe and components, including investigation to determine the extent of damage and recording data.

Task 0221 Inspect, Test and Maintain Sensing Devices

Task Guidance: This task includes verification that the sensing device, (e.g. pressure switches; pressure, temperature and differential transmitters), is functioning within specified parameters, after a sensing device has been installed, and prior to or during placing in service. This task also includes actions to repair or replace sensing devices and adjust set points or output.

Task 0231 Inspect, Test and Maintain Programmable Logic Controllers

Task Guidance: This task includes verification that the PLC is functioning within specified parameters, after a PLC has been installed, and prior to or during placing in service. This task also includes actions to repair or replace PLCs and components, and adjusting set points or output as specified.

Task 0241 Inspect, Test and Maintain Liquid Leak Detection Flow Computers

Task Guidance: This task includes verification that the flow computer, when used in a computational pipeline monitoring leak detection system, is functioning within specified parameters, after a flow computer has been installed, and prior to or during placing in service. This task also includes actions to repair or replace flow computers and components, and adjusting set points or output as specified.

Task 0251 Inspection and Testing, Corrective and Preventive Maintenance - Overfill Protection Systems

Task Guidance: This task includes verification that the overfill protection system is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of the overfill protection system, and actions to verify operation and maintain the overfill protection system. This task includes adjusting the set point as specified.

Task 0261 Inspection and Testing, Corrective and Preventive Maintenance - Tank Gauges for Leak Detection

Task Guidance: This task includes verification that the tank gauge is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of the tank gauge, and actions to verify operation and maintain the tank gauge.

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Task 0271 Prove Flow Meters for Hazardous Liquid Leak Detection

Task Guidance: This task includes data recording and calculations to manually verify (prove) the accuracy of flow meters for leak detection. This includes activities to bring prover online and to take off line. Qualification is not required when verification is performed automatically by flow computers or PLCs.

Task 0281 Maintain Flow Meters for Hazardous Liquid Leak Detection

Task Guidance: This task includes verification that the flow meter (e.g., line integrity meters), when used for leak detection, is functioning within specified parameters, after a flow meter has been installed, and prior to or during placing in service. This task also includes actions to repair or replace flow meters and components, and adjusting output.

Task 0291 Inspect, Test and Maintain Gravitometers/Densitometers for Hazardous Liquid Leak Detection

Task Guidance: This task includes verification that the gravitometers/densitometers when used for leak detection, is functioning within specified parameters, after a gravitometers/densitometers has been installed, and prior to or during placing in service. This task also includes actions to repair or replace gravitometers/densitometers and components, and adjusting output.

Task 0301 Manually Opening and Closing Valves

Task Guidance: This task includes manually opening and closing valves, (e.g., pipeline start up and shutdown, flow direction, pigging, tank switching, etc.), at the valve site, either manually or using the valve actuator. It also includes valve identification, notifications and pressure verification. It does not include the operation of valves for:

(a) Adjusting and monitoring flow or pressure as addressed in Task 0311 - Adjust and Monitor Flow or Pressure - Manual Valve Operation;

(b) Temporary isolation of service lines and service discontinuance as addressed in Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance.

Task 0311 Adjust and Monitor Flow or Pressure - Manual Valve Operation

Task Guidance: This task includes the adjustment of flow or pressure either manually or using the valve actuator at the valve site. It also includes valve identification, notifications and pressure verification. It does not include:

(a) Manually opening and closing valves as addressed in Task 0301 - Manually Opening and Closing Valves;

(b) Temporary isolation of service lines and service discontinuance as addressed in Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance.

Task 0321 Valve Corrective Maintenance

Task Guidance: This task includes the repair, replacement, alteration or refurbishment of valves, except valves for the temporary isolation of service lines and service discontinuance as addressed in Task 1191 - Maintenance of Service Valves Upstream of Customer Meters.

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Task 0331 Valve - Visual Inspection and Partial Operation

Task Guidance: This task includes visual inspection, partial operation (function test), and lubrication of valves, except valves for the temporary isolation of service lines and service discontinuance as addressed in Task 1191 - Maintenance of Service Valves Upstream of Customer Meters.

Task 0341 Valve - Preventive Maintenance

Task Guidance: This task encompasses actions (e.g., lubrication, winterization, packing adjustment, etc), to keep valves operating safely and efficiently, except relief valves as addressed in:

(a) Task 0411 - Spring Loaded Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance;

(b) Task 0421 - Pilot Operated Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance;

(c) Task 0431 - Pneumatic Loaded Pressure Limiting and Relief Device - Inspection and Testing, Preventive and Corrective Maintenance.

Task 0351 Pneumatic Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

Task 0361 Electric Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

Task 0371 Hydraulic Actuator/Operator Inspection and Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the actuator/operator is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair, replacement, alteration or refurbishment of actuator/operator, and actions to keep actuator/operator operating safely and efficiently.

Task 0381 Spring Loaded Pressure Regulating Device - Inspection and Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently. This task excludes customer regulation addressed in:

(a) Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial;

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(b) Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial.

Task 0391 Pilot Operated Pressure Regulating Device - Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently. This task excludes customer regulation addressed in:

(a) Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial;

(b) Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial.

Task 0401 Controller Type Pressure Regulating Device - Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure-regulating device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure regulating device, and actions to keep the pressure-regulating device operating safely and efficiently.

Task 0411 Spring Loaded Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

(a) Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial;

(b) Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial.

Task 0421 Pilot Operated Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

(a) Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial;

(b) Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial.

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Task 0431 Pneumatic Loaded Pressure Limiting and Relief Device - Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the pressure limiting or relief device is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of pressure limiting or relief device, and actions to keep the pressure limiting or relief device operating safely and efficiently. This task excludes customer regulation addressed in:

(a) Task 1161 - Installation of Customer Meters and Regulators - Residential and Small Commercial;

(b) Task 1181 - Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial.

Task 0441 Compressor Start-up and Shutdown - Manual

Task Guidance: This task includes manual startup and shutdown of a compressor, (e.g., reciprocating, centrifugal, rotary) at the driver control panel.

Task 0451 Pump - Start-up and Shutdown - Manual

Task Guidance: This task includes manual startup and shutdown of a pump, (e.g., reciprocating, centrifugal, rotary, screw) at the driver control panel.

Task 0461 Compressor Preventive Maintenance

Task Guidance: This task encompasses actions (e.g., lubrication, adjustment, etc), to keep compressors operating safely and efficiently. This task does not include maintenance of the compressor driver.

Task 0471 Reciprocating Compressor Inspection, Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of reciprocating compressors. This task does not include maintenance of the compressor driver.

Task 0481 Centrifugal Compressor Inspection, Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of centrifugal compressors. This task does not include maintenance of the compressor driver.

Task 0491 Rotary Compressor Inspection, Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt compressor is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of rotary compressors. This task does not include maintenance of the compressor driver.

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Task 0501 Pump Preventive Maintenance

Task Guidance: This task encompasses actions (e.g., lubrication, adjustment, etc), to keep pumps operating safely and efficiently. This task does not include maintenance of the pump driver.

Task 0511 Centrifugal Pump Inspection and Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of centrifugal pumps. This task does not include maintenance of the pump driver.

Task 0521 Reciprocating Pump Inspection and Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of reciprocating pumps. This task does not include maintenance of the pump driver.

Task 0531 Rotary Pump Inspection and Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of rotary pumps. This task does not include maintenance of the pump driver.

Task 0541 Screw Pump Inspection and Testing and Corrective Maintenance

Task Guidance: This task includes verification that a new, replaced, or rebuilt pump is functioning within specified parameters, prior to or during placing in service. This task includes the repair, alteration or refurbishment of screw pumps. This task does not include maintenance of the pump driver.

Task 0551 Explosive Atmosphere Detection and Alarm System Performance Test, and Corrective Maintenance

Task Guidance: This task includes verification that the permanently installed explosive atmosphere detection and alarm system is functioning within specified parameters, after installation, and prior to or during placing in service. This task also includes the performance test, and the repair or replacement of fixed explosive atmosphere detection and alarm system.

Task 0561 Pressure Test - Nonliquid Medium -MAOP Less Than 100 psi

Task Guidance: This task includes achieving test pressure and durations, and record keeping.

Task 0571 Pressure Test - Nonliquid Medium - MAOP Greater Than or Equal To 100 psi

Task Guidance: This task includes achieving test pressure and durations, and record keeping.

Task 0581 Pressure Test - Liquid Medium

Task Guidance: This task includes achieving test pressure and durations, and record keeping.

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Task 0591 Leak Test at Operating Pressure

Task Guidance: This task includes the detection of leaks at operating pressure either visually, (e.g. soap test), or with use of leak detection equipment.

Task 0601 NDT - Radiographic Testing

Task Guidance: This task includes radiographic testing and evaluation of test results. Qualification should be in accordance with ASNT SNT-TC-1A or other acceptable standard or practices.

Task 0611 NDT - Liquid Penetrant Testing

Task Guidance: This task includes liquid (dye) penetrant testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT TC-1A, or other acceptable standard or practice.

Task 0621 NDT - Magnetic Particle Testing

Task Guidance: This task includes magnetic particle testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT TC-1A, or other acceptable standard or practice.

Task 0631 NDT - Ultrasonic Testing

Task Guidance: This task includes ultrasonic testing and evaluation of test results. Level II qualification should be in accordance with ASNT SNT TC -1A, or other acceptable standard or practice. This task excludes wall thickness determination with a UT wall thickness device.

Task 0641 Visually Inspect Pipe and Components Prior to Installation

Task Guidance: This task includes the visual inspection of pipe and pipeline components, prior to installation, to identify visually determinable damage and defects.

Task 0651 Routine Visual Inspection of Breakout Tanks

Task Guidance: This task includes the scheduled visual inspection of breakout tanks and tank components to identify visually determinable damage and defects.

Task 0661 Inspection of Breakout Tanks

Task Guidance: This task includes the inspection of in-service or out of service breakout tanks and tank components. Qualification should be in accordance with API 653 or other acceptable standard or practice.

Task 0671 Joining of Plastic Pipe - Solvent Cement

Task Guidance: This task includes the assembly and joining of plastic pipe and components using solvent cement and inspection of completed joints.

Task 0681 Joining of Plastic Pipe - Stab Fittings

Task Guidance: This task includes the joining and inspection of plastic pipe with stab fittings and inspection of completed joints.

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Task 0691 Joining of Pipe - Non-Bottom Out Compression Couplings

Task Guidance: This task includes the joining of pipe 2 inch and less, with non-bottom out compression couplings and inspection of completed joints. A non-bottom out compression coupling is one that requires tightening to a specified torque or number of turns.

Task 0701 Joining of Pipe - Bottom Out Compression Couplings

Task Guidance: This task includes the joining of pipe 2 inch and less, with bottom out compression coupling and inspection of completed joints. A bottom out compression coupling is one that is designed to prevent over tightening by contact (bottoming out) of the nut with a square shoulder or mating surface.

Task 0711 Joining of Pipe - Compression Couplings

Task Guidance: This task includes the joining of pipe greater than 2 inch with compression coupling and inspection of completed joints.

Task 0721 Joining of Pipe - Threaded Joints

Task Guidance: This task includes the joining of threaded pipe with threaded fittings, and the inspection of completed joints. The joining of components with threaded connections is addressed in the component covered task.

Task 0731 Joining of Pipe - Flange Assembly

Task Guidance: This task includes the assembly of flanges, bolting in sequence and torqueing, as specified.

Task 0741 Joining of Pipe - Brazing or Soldering

Task Guidance: This task includes the joining of copper pipe by brazing or soldering, and the inspection of completed joints.

Task 0751 Joining of Plastic Pipe - Butt Heat-Fusion: Manual

Task Guidance: This task includes the assembly and joining of plastic pipe by butt heat fusion and inspection of completed joints.

Task 0761 Joining of Plastic Pipe - Butt Heat-Fusion: Hydraulic Machine

Task Guidance: This task includes the assembly and joining of plastic pipe by butt heat fusion using a hydraulic machine, and inspection of completed joints.

Task 0771 Joining of Plastic Pipe - Sidewall Heat Fusion

Task Guidance: This task includes the assembly and joining of plastic pipe by sidewall heat fusion, and inspection of completed joints.

Task 0781 Joining of Plastic Pipe - Electrofusion

Task Guidance: This task includes the assembly and joining of plastic pipe by electrofusion, and inspection of completed joints.

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Task 0791 Joining of Plastic Pipe - Socket Heat Fusion

Task Guidance: This task includes the assembly and joining of plastic pipe by socket heat fusion, and inspection of completed joints.

Task 0801 Welding

Task Guidance: This task includes the assembly and joining of steel pipe by welding, and repair of welds, in accordance with welding procedures. Qualification should be in accordance with API 1104, ASME Section IX, Boiler and Pressure Vessel Code, or other acceptable standard or practice. Visual inspection of welding and welds is in accordance with Task 0811 Visual Inspection of Welding and Welds.

Task 0811 Visual Inspection of Welding and Welds

Task Guidance: This task includes inspection of the welding process, (e.g. equipment set up, material fit up/alignment, handling of welding materials, etc.), and inspection of welds to identify visually detectable defects.

Task 0821 Tubing & Fitting Installation - Instrument, Control and Sampling

Task Guidance: This task includes the preparation, bending, joining, and installation of instrument, control and sampling line tubing and fittings containing product.

Task 0831 Cast Iron - Caulked Bell and Spigot Joints - Installation and Maintenance of Mechanical Leak Clamp(s)

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

Task 0841 Cast Iron Joints - Sealing: Encapsulation

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

Task 0851 Internal Sealing - Cast Iron and Ductile Iron

Task Guidance: This task includes the internal sealing of cast iron and ductile iron and inspection of sealant.

Task 0861 Installation of Steel Pipe in a Ditch

Task Guidance: After excavation is completed, this task includes the handling, lowering in, and fitting of steel pipe in a ditch to assure firm support.

Task 0871 Installation of Steel Pipe in a Bore

Task Guidance: After boring is completed, this task includes the handling, pulling in and inspection of exposed pipe and coating.

Task 0881 Installation of Steel Pipe Plowing/Pull-in

Task Guidance: This task includes the handling, plowing/pull-in of steel pipe, and inspection of exposed pipe and coating.

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Task 0891 Field Bending of Steel Pipe

Task Guidance: This task includes the field bending of steel pipe as specified and inspection of completed field bends.

Task 0901 Installation of Plastic Pipe in a Ditch

Task Guidance: After excavation is completed, this task includes the handling, lowering in, and fitting of plastic pipe in a ditch to assure firm support. The installation of a tracer wire is addressed in Task 0941 - Install Tracer Wire.

Task 0911 Installation of Plastic Pipe in a Bore

Task Guidance: After boring is completed, this task includes the handling, pulling in and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 -Install Tracer Wire.

Task 0921 Installation of Plastic Pipe Plowing/Pull-in

Task Guidance: This task includes the handling, plowing/pull-in of plastic pipe, and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 -Install Tracer Wire.

Task 0931 Installation of Plastic Pipe by Plowing/Planting

Task Guidance: This task includes the handling, plowing/planting of plastic pipe, and inspection of exposed pipe. The installation of a tracer wire is addressed in Task 0941 -Install Tracer Wire.

Task 0941 Install Tracer Wire

Task Guidance: This task includes the installation of a tracer wire on plastic pipe including verification of continuity. Electrical connections are addressed in:

(a) Task 0041 - Installation and Maintenance of Mechanical Electrical Connections;

(b) Task 0051 - Installation of Exothermic Electrical Connections.

Task 0951 Installation of Pipe Above Ground

Task Guidance: This task includes the handling and installation of pipe above ground.

Task 0961 Above Ground Supports and Anchors - Inspection, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the above ground supports and anchors are installed in accordance with specifications, prior to or during placing in service. This task also includes the repair or replacement, alteration or refurbishment of above ground supports and anchors, and actions to keep the above ground supports and anchors functioning as specified.

Task 0971 Installation and Maintenance of Casing Spacers, Vents and Seals

Task Guidance: This task includes the installation of casing spacers, vents and seals. This task also includes the evaluation, repair or replacement, of casing vents and seals.

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Task 0981 Backfilling

Task Guidance: This task includes visually inspecting backfill material, installation of pipe protective material (i.e. padding, shading, and rock shield), verification of firm support and placing backfill in lifts or layers as specified.

Task 0991 Coating Application and Repair - Brushed or Rolled

Task Guidance: This task includes the surface preparation and application or repair of coatings using a brush or roller. This task includes painting to inhibit corrosion, and internal or external applications of coatings, on pipes, tanks, etc.

Task 1001 Coating Application and Repair - Sprayed

Task Guidance: This task includes the surface preparation and application or repair of coatings using a sprayer. This task includes painting to inhibit corrosion, and internal or external applications of coatings, on pipes, tanks, etc.

Task 1011 External Coating Application and Repair - Wrapped

Task Guidance: This task includes the surface preparation and application or repair of coatings using a wrap.

Task 1021 Apply or Repair Internal Coating other than by Brushing, Rolling or Spraying.

Task Guidance: This task includes the surface preparation, application, repair and inspection of internal coatings other than those applied by brushing, rolling, or spraying.

Task 1031 Install or Repair Internal Liner

Task Guidance: This task includes the surface preparation, installation, repair and inspection of an internal liner.

Task 1041 Install Mechanical Clamps and Sleeves - Bolted

Task Guidance: This task includes the preparation, installation and inspection of bolted mechanical clamps and sleeves.

Task 1051 Fit-up of Weld Type Repair Sleeve

Task Guidance: This task includes the preparation and fit-up of weld type repair sleeves. Welding the repair sleeve is covered in Task 0801 Welding.

Task 1061 Install Composite Sleeves

Task Guidance: This task includes the preparation and installation of composite sleeves.

Task 1071 Repair of Steel Pipe by Grinding

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

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Task 1081 Tapping a Pipeline (Tap Diameter 2 Inch and Less)

Task Guidance: This task includes performing tapping including the installation of the isolation valve and tapping equipment, and removal of isolation valve, as specified. Installation of fittings is addressed in:

(a) Task 0801 - Welding;

(b) Task 1041 - Install Mechanical Clamps and Sleeves - Bolted.

Task 1091 Tapping a Pipeline (Tap Diameter greater than 2 Inch)

Task Guidance: This task includes performing tapping including the installation of the isolation valve and tapping equipment, and removal of isolation valve, as specified. Installation of fittings is addressed in:

(a) Task 0801 - Welding;

(b) Task 1041 - Install Mechanical Clamps and Sleeves - Bolted.

Task 1101 Tapping a Pipeline with a Built-in Cutter

Task Guidance: This task includes tapping a pipe with an installed fitting that contains a built-in cutter. Installation of fittings is addressed in:

(a) Task 0771 - Joining of Plastic Pipe - Sidewall Heat Fusion;

(b) Task 0781 - Joining of Plastic Pipe - Electrofusion

(c) Task 0801 - Welding;

(d) Task 1041 - Install Mechanical Clamps and Sleeves - Bolted.

Task 1111 Tapping Cast and Ductile Iron Pipe, and Low Pressure Steel Pipe

Task Guidance: This task includes tapping a pipe with or without an installed fitting. Installation of fittings, as specified, is addressed in Task 1041 - Install Mechanical Clamps and Sleeves - Bolted. This also includes installation of threaded fittings after the tap.

Task 1121 Bagging and Stopping Low Pressure Pipe

Task Guidance: This task includes the insertion and removal of a bag on low pressure pipe. It also includes pressure verification.

Task 1131 Stopper (Stopple) Pipe

Task Guidance: This task includes the insertion and removal of a stopper (stopple). It also includes pressure verification.

Task 1141 Squeeze off Plastic Pipe

Task Guidance: This task includes the squeeze off of plastic pipe. This also includes the selection, installation and removal of squeeze off tools.

Task 1151 Squeeze off Steel Pipe

Task Guidance: This task includes the squeeze off of steel pipe. This also includes the selection, installation and removal of squeeze off tools.

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Task 1161 Installation of Customer Meters and Regulators - Residential and Small Commercial

Task Guidance: This task includes locating, and hanging/setting the meter. Attaching a meter bracket does not require qualification as long as a qualified individual completes the installation in accordance with the steps in this task. Proving the integrity of customer piping and lighting customer utilization equipment is not included.

The removal and replacement of a meter is a job made up of at least this task and Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance. As such a covered task has not been identified for the removal and replacement of residential and small commercial meters and regulators.

Task 1171 Installing Customer Meters - Large Commercial and Industrial

Task Guidance: This task includes locating, and hanging/setting the meter. Attaching a meter bracket/support does not require qualification as long as a qualified individual completes the installation in accordance with the steps in this task. Proving the integrity of customer piping and lighting customer utilization equipment is not included.

The removal and replacement of a meter is a job made up of at least this task and Task 1201 - Temporary Isolation of Service Lines and Service Discontinuance. As such a covered task has not been identified for the removal and replacement of large commercial and industrial meters and regulators.

Task 1181 Installing and Maintaining Customer Pressure Regulating, Limiting, and Relief Device - Large Commercial & Industrial

Task Guidance: This task includes installing and maintaining pressure regulating, limiting, and relief device. It also includes locating vent and installation of vent piping.

Task 1191 Maintenance of Service Valves Upstream of Customer Meter

Task Guidance: This task includes removing, replacing and maintaining service valves upstream of customer meter.

Task 1201 Temporary Isolation of Service Lines and Service Discontinuance

Task Guidance: This task includes closing and locking service valves upstream of the customer meter or installation of a mechanical device or fitting to prevent the flow of gas.

Task 1211 Odorization - Periodic Sampling

Task Guidance: This task includes the periodic sampling of gas to verify concentration of odorant by use of instrumentation or verification of presence of odor by sniff test.

Task 1221 Odorization - Odorizer Inspection, Testing, Preventive and Corrective Maintenance

Task Guidance: This task includes verification that the odorizer is functioning within specified parameters, after installation or replacement, and prior to or during placing in service. This task includes the repair, replacement, alteration or refurbishment of the odorizer, and actions to keep the odorizer operating safely and efficiently.

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Task 1231 Inside Gas Leak Investigation

Task Guidance: This task includes emergency response for reported or discovered leaks of Operator lines inside a building. It includes initiating precautionary actions and determining if the source of the leak is from the operators' facility. Determining the location of leaks on customer piping, repairing and proving the integrity of customer piping, and lighting customer utilized equipment is not included.

Task 1241 Outside Gas Leak Investigation

Task Guidance: This task includes emergency response to reported or discovered outside leaks. It includes initiating precautionary actions, determining if the source of the leak is from the operators' facility, and for leaks on the operators' pipeline, determining leak spread and grading the leak. Determining the location of leaks on customer piping or another operators' pipeline is not included.

Task 1251 Hazardous Liquid Leak Investigation

Task Guidance: This task includes the investigation of reported or discovered leaks. This also includes initiation of precautionary actions ("make safe").

Task 1261 Walking Gas Leakage Survey

Task Guidance: This task includes conducting a walking gas leak survey utilizing gas detection survey equipment, documentation, and reporting an emergency condition.

Task 1271 Mobile Gas Leakage Survey - Flame Ionization

Task Guidance: This task includes conducting a mobile (other than walking) gas leak survey utilizing flame ionization detection survey equipment, documentation, and reporting an emergency condition.

Task 1281 Mobile Gas Leakage Survey - Optical Methane

Task Guidance: This task includes conducting a mobile (other than walking) gas leak survey utilizing optical methane detection survey equipment, documentation, and reporting an emergency condition.

Task 1291 Locate Underground Pipelines

Task Guidance: This task includes locating underground pipelines utilizing maps, records, and locating equipment. It also includes placing temporary markers or markings.

Task 1301 Install and Maintain Pipeline Markers

Task Guidance: This task includes determining the location, placing and maintaining permanent pipeline markers.

Task 1311 Inspect Pipeline Surface Conditions - Patrol Right of Way or Easement

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.

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Task 1321 Damage Prevention during Excavation Activities By or On Behalf of the Operator

Task Guidance: This task includes assuring the performance of damage prevention activities during excavation activities (e.g., verifying underground pipelines are marked, providing required notifications, use of spotter/swamper to guide equipment operator, probing, hand digging, pot holing to verify location of bore-head, etc.).

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

Task Guidance: When third party excavation or encroachment activities occur, this task includes inspection of those activities (e.g., verifying underground pipelines are marked, providing required notifications, use of spotter/swamper to guide equipment operator, probing, hand digging, pot holing to verify location of bore-head, etc.).

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.

Task 1341 Provide or Assure Adequate Pipeline Support During Operator Intiated Excavation Activities

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

Task 1351 Vault Inspection and Maintenance

Task Guidance: This task applies to the inspection and maintenance of vaults housing pressure regulating and pressure limiting equipment, having a volumetric internal content of 200 cubic feet or more. It includes inspection of ventilating equipment, vault cover, sufficient drainage and structural integrity. Investigation to identify product leakage is addressed in:

(a) Task 1231 - Inside Gas Leak Investigation;

(b) Task 1241 - Outside Gas Leak Investigation;

(c) Task 1251 - Hazardous Liquid Leak Investigation.

Task 1361 Station Emergency Shutdown System - Inspection, Testing and Corrective Maintenance

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

Task 1371 Operate Gas Pipeline - System Control Center Operations

Task Guidance: This task includes the remote operation of a gas pipeline, (e.g., monitor operating parameters, notifications, remotely adjusting and maintaining pressure, remotely starting and stopping compressors, etc.).

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Task 1381 Operate Gas Pipeline - Local Facility Remote-Control Operations

Task Guidance: This task includes the local facility remote control operations of a gas pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure, remotely starting and stopping compressors, etc.).

Task 1391 Operate Liquids Pipeline - System Control Center Operations

Task Guidance: This task includes the remote operation of a hazardous liquids pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure and flow, remotely starting and stopping pumps, monitor for pipeline leaks, etc.).

Task 1401 Operate Liquids Pipeline - Local Facility Remote-Control Operations

Task Guidance: This task includes the local facility remote operation of a hazardous liquids pipeline, (e.g. monitor operating parameters, notifications, remotely adjusting and maintaining pressure and flow, remotely starting and stopping pumps, monitor for pipeline leaks, etc.).

Task 1411 Indirect Inspection Techniques

Task Guidance: This task includes indirect inspection, [e.g., Alternating current voltage gradient, close interval survey (Task 0011), direct current voltage gradient, soil resistivity (Task 0021) etc.].

Task 1421 Direct Examination Techniques

Task Guidance: This task includes direct examination, (e.g., Ultrasonic testing, coating holiday testing, visual inspection, etc.).

Task 1431 Diving - Measure Structure to Electrolyte Potential

Task Guidance: This task includes using measurement equipment to take a reading of the potential between the underwater structure and electrolyte (fresh or salt water), and record data.

Task 1441 Diving - External Coating Application and Repair

Task Guidance: This task includes the surface preparation and application or repair of coatings using marine suitable hand applied coatings.

Task 1451 Diving - Visual/Tactile Inspection for Corrosion and Mechanical Damage - Buried or Submerged Pipeline

Task Guidance: This task includes activities associated with the visual/tactile inspection of buried or submerged pipelines when exposed for the purpose of detecting corrosion and mechanical damage and evaluating coating integrity.

Task 1461 Diving - Measure and Describe Corrosion and Mechanical Damage - Buried or Submerged Pipeline

Task Guidance: This task includes activities to measure and characterize corrosion or mechanical damage on buried or submerged pipelines. It includes the investigation to determine the extent of corrosion and recording data.

Task 1471 Diving - Install Galvanic Anodes on Submerged Pipelines

Task Guidance: This task includes the installation of galvanic anodes on submerged pipelines.

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Task 1481 Diving - Locate Buried Underwater Pipelines

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

Task 1491 Diving - Movement of In-Service Underwater Pipeline

Task Guidance: This task includes movement of in-service underwater pipeline, (e.g., installation of slings, water jetting).

Task 1501 Diving - Install, Replace or Repair Support Structures on Existing Underwater Pipelines

Task Guidance: This task includes installing, replacing and repairing support structures on existing underwater pipelines.

Task 1511 Diving - Perform General Flange Assembly Procedures

Task Guidance: This task includes the assembly of flanges, bolting in sequence and torqueing, as specified.

Task 1521 Diving - Install Pipe End Connectors

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

Task 1531 Diving - Install Mechanical Clamps or Sleeves

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

Task 1541 Diving - Perform an Underwater Mechanical Tap

Task Guidance: This task includes performing tapping including the installation of the isolation valve and tapping equipment. Installation of fittings is addressed in:

(a) Task 1531 - Diving - Install Mechanical Clamps or Sleeves;

(b) Task 1601 - Diving - Welding.

Task 1551 Diving - Stopper (Stopple) Pipe

Task Guidance: This task includes the insertion and removal of a stopper (stopple). It also includes pressure verification.

Task 1561 Diving - Valve - Inspection, Preventive and Corrective Maintenance

Task Guidance: This task includes the inspection, partial operation and lubrication of valves. It also includes the repair or replacement of valve actuator/operator.

Task 1571 Diving - NDT - Magnetic Particle Testing

Task Guidance: This task is includes magnetic particle testing and evaluation of test results. Level II qualification should be in accordance with ASNT-TC-1A, or other acceptable standard or practice.

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Task 1581 Diving - NDT - Manipulate Probe for Ultrasonic Testing

Task Guidance: This task includes the diver manipulating the probe (transducer) as directed by a Level II. Level I qualification should be in accordance with ASNT -TC-1A, or other acceptable standard or practice. Level II qualification is addressed in Task 0601 - NDT - Radiographic Testing.

Task 1591 Diving - NDT - Radiographic Testing

Task Guidance: This task includes placing the film and camera/source directed by a Level II. Level I qualification should be in accordance with ASNT -TC-1A, or other acceptable standard or practice. Level II qualification is addressed in Task 0601 - NDT - Radiographic Testing.

Task 1601 Diving - Welding

Task Guidance: This task includes the assembly and joining of steel pipe by welding, and repair of welds, in accordance with welding procedures. Qualification should be in accordance with API 1104, ASME Section IX, Boiler and Pressure Vessel Code, or other acceptable standard or practice. Visual inspection of welding and welds is in accordance with Task 1611 - Diving - Visual Inspection of Welding and Welds.

Task 1611 Diving - Visual Inspection of Welding and Welds

Task Guidance: This task includes inspection of the welding process, (e.g. equipment set up, material fit up/alignment, handling of welding materials, etc.), and inspection of welds to identify visually detectable defects.

Task 1621 Diving - Manually Operate Valves

Task Guidance: This task includes manually opening and closing valves, (e.g. pipeline start up and shutdown, flow direction, pigging, etc.), at the valve site. It also includes valve identification, notifications and pressure verification.

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NONMANDATORY APPENDIX 5C
TASK LIST DEVELOPMENT PROCESS

The development of the Task List in Appendix 5A was a comprehensive process. Various sectors of the pipeline industry were considered: hazardous liquids, gas transmission, gas distribution, large and small operators, contractors and service providers. The task list is also designed to support the benefits of portable evaluations. The following table describes the process utilized to arrive at the covered tasks in Appendix 5A.

Table 5C-1

	Reviewers/Participants	Action/Focus	Results
1	Subject Matter Experts representing hazardous liquids, gas transmission and gas distribution pipelines. Expertise represented: corrosion, mechanical, electrical, operations and construction/maintenance	Develop fault trees. Identify covered tasks from the fault trees, and perform initial quality control review.	Fault trees and initial covered task list developed
2	B31Q Team 3	QA/QC review	Updated covered task list
3	A larger SME team with same experience as above (a few members overlap). Pipeline contractors and diving/underwater experience also represented	Review covered task list and initial development of task steps.	Updated covered task list and initial identification of task steps
4	B31Q Team 6	Develop task steps	Final task steps identified and questions raised about possible combination, elimination or revision of some covered tasks
5	Teams of SMEs for subject areas facilitated by B31Q teams 4 and 6.	Revised covered task list; perform DI analysis for subsequent qualification intervals and determine appropriate, minimum evaluation methods for each task.	Updated covered task list. Subsequent qualification intervals developed. Methods identified for initial qualification and subsequent qualification. Spans of control developed.
6	B31Q Review	QA/QC-including soliciting SME input when needed.	Finalized Task List

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NONMANDATORY APPENDIX 5D
EXAMPLE OF EVALUATION CRITERIA

The following 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 them 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 4 requires the individual to "Perform routine maintenance." Rather than performing the maintenance, 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.

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Table 5D-1

Task 0001 Measure Structure-to-Electrolyte Potential	
Step	**Evaluation Criteria**
1. Identify structure-to-electrolyte potential measurement requirements	Identify specifications or procedures that contain measurement requirements, and Explain the specification or procedure requirements including safety and environmental items
2. Perform test equipment check	Identify equipment to be used, Verify equipment functions within specified parameters and tolerances, Initiate corrective action when equipment is outside allowable tolerances and/or requires repair, and Perform routine maintenance
3. Identify and locate correct test point	Describe correct placement of test equipment, i.e., location over structure, etc., or Place test equipment -half cells and test leads - in accordance with requirements
4. Measure and ensure accuracy of structure-to-electrolyte potential	Obtain and record measurements, Describe items that may affect measurement accuracy, i.e.: Polarity of structure-to-electrolyte measurements, IR considerations when taking measurements, Methods for minimizing contact resistance, Procedures related to measuring pipe-to-water potentials, where applicable, Defective test leads or station, At least four conditions that may result in questionable measurements, Current drain, such as rebar/concrete and station grounding systems, on structure-to-electrolyte potential, Pipe coating condition
5. Recognize and react to Abnormal Operating Conditions	Describe Abnormal Operating Condition(s) that may be encountered while performing the task Describe the reaction to Abnormal Operating Condition(s): Initiating remedial action, or Reporting for analysis of remedial actions required
6. If required, complete documentation	Identify or describe documentation requirements, Complete or describe the completion and submittal of documentation

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NONMANDATORY APPENDIX 6A
ABNORMAL OPERATING CONDITIONS (AOCS)

The following is a list of AOCs that may occur on a pipeline:

(a) unplanned escape of product from a pipeline;

(b) fire or explosion;

(c) unplanned pressure deviation (e.g., increase, decrease, high, low, absent);

(d) unplanned flow rate deviation (e.g., high flow, low flow, no flow);

(e) pipeline damage (e.g., excavation damage, lightning strikes, tornado, flood earthquake, etc.);

(f) activation of a safety device(s) other than during planned testing (e.g., pressure relief, emergency shut down, high pressure shut downs, case pressure shutdowns, high temperature shutdowns, etc.);

(g) unplanned status change (e.g., unit start-up, unit shut-down, valve open, valve close, etc., without being directed to do so);

(h) interruption or failure of communications, control system or power; or

(i) inadequate odorization or reports of gas odor.

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NONMANDATORY APPENDIX 8A
EVALUATION METHOD SELECTION

The tasks included in Appendix 5A were reviewed by SMEs to determine the minimum appropriate evaluation method(s) for each task. The following is a description of the process used in order to help explain the result or provide guidance in the event this process is used by others.

The process to determine evaluation methods was performed with the same group of SMEs that analyzed the Difficulty and Importance of the tasks. A description of SME selection and representation can be found in Para. 5.3.1 and in Appendix 9A.

The process included the following steps:

(a) Introduction of the reason for the discussion - identify appropriate evaluation methods for each task;

(b) Review of definition and examples of KSAs;

(c) Review of the appropriate methods for KSAs;

(d) Consensus on appropriate method - one task at a time; and

(e) Review of final product.

8A-1 Introduction -- The Reason for Setting an Appropriate Evaluation Method

Careful selection of evaluation methods makes the evaluation best reflect the individual's KSAs to perform the task. While each evaluation method may measure a variety of KSAs, each method tends to measure one type or another better. The intent of this exercise is to determine the minimum method(s) that would best evaluate the KSAs required for task performance.

8A-2 Definition And Examples of KSAs

Table 8A-1 was reviewed with the SMEs to help them understand KSAs. Because ability is evaluated while knowledge and skills are evaluated, the definition and examples of ability were reviewed, but the focus was on the definitions of knowledge and skills.

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Table 8A-1

Knowledge, Skills, and Abilities (KSAs)

1. **Knowledge:** A body of information applied directly to the performance of a task.

EXAMPLES OF KNOWLEDGE
Knowledge of compressor components and their functions
Knowledge of valve disassembly/assembly procedures
Knowledge of pneumatic control systems
Knowledge of engine gas compression cycles

2. **Skill** - The ability to perform learned mental and physical activities to accomplish a task.

EXAMPLES OF SKILLS
Skill in overhead crane operation
Skill in use of a micrometer
Skill in welding

3. **Ability** - The mental and physical capacity to perform a task.

EXAMPLES OF ABILITIES
Ability to locate information in manuals
Ability to use precision measurement tools
Ability to lift materials and equipment
Ability to analyze and solve complex problems
Ability to detect slight differences in engine performance

General Note: Knowledge, skills and abilities (KSAs) are areas of competence that a worker must possess in order to perform their jobs. KSAs are associated with specific tasks. Most tasks will have more than one KSA. Also, many KSAs may apply to more than one task.

8A-3 Appropriate Methods for KSAs

Table 8A-2 was reviewed with SMEs to help them see the relationship between the KSAs required by a task and the appropriate evaluation method. The information specified in paras. 8A-3.1 through 8A-3.2 was discussed to explain the table.

8A-3.1 Written evaluations

Written evaluations mainly measure knowledge, as indicated by the capital X under knowledge in Table 8A-2. They also measure reading ability, some writing ability, some reasoning ability (narrowing down to the right answer), test-taking skills, and many other factors.

8A-3.2 Oral Interview evaluations

Oral evaluations mainly measure knowledge, as indicated by the capital X under knowledge in Table 8A-2. They also measure communication skills.

8A-3.3 Performance evaluations

Performance evaluations mainly measure skill, as indicated by the capital X under skill in Table 8A-2. Knowledge is also measured, particularly the application of knowledge, but the extent knowledge

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is measured depends on the extent to which the context affects performance, as indicated by the lower-case x for performance under knowledge in Table 8A-2. Tasks that require the use of different equipment, application of different steps, or where different conditions are created or encountered based on the situation may require that additional knowledge be evaluated by another evaluation method.

Table 8A- 2

Appropriate Evaluation Methods

	Knowledge	Skill	Ability
Written	X		X
Oral Interview	X		X
Performance	X	X	X

8A-4 Consensus on Minimum Appropriate Evaluation Method

Each task was discussed in turn and the results were documented for each task. "P" was used to indicate performance, "O" was used to indicate oral, "W" was used to indicate written, "/" was used to indicate an or, and "&" was used to indicate an and. Where the result is W/O, either a written or oral method should be used to qualify individuals for the task. Where the result is W/O & P, a performance evaluation should be used and accompanied by either a written or an oral evaluation.

The following questions were used to help SMEs think about each task and determine whether mainly knowledge or knowledge and skill were involved.

(a) Does the task require physical prowess or dexterity beyond what an average person has? If yes, skill is required.

(b) 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 hasn't 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) 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.

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

(g) 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 is necessary, a performance evaluation (& P) was added. SMEs felt several tasks, including certain troubleshooting tasks, would be difficult to evaluate for knowledge without seeing the knowledge applied through performance. For these tasks, performance evaluation was added as a minimum requirement for both initial and subsequent qualification. For a number of tasks, SMEs determined it was important to be sure that an individual could properly apply their knowledge. For these knowledge-based tasks, performance evaluation was added as a minimum requirement for the initial qualification, but not for subsequent. 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.

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8A-5 Review of Final Product

After each group of SMEs determined methods for their tasks, they were given a chance to review the result to be sure they were comfortable with their decisions. Further discussions were held and changes made at that time.

The B31Q Committee also reviewed the result and suggested additions where they felt performance evaluation was prudent. Nothing was deleted from the SMEs determination of minimum requirements.

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NONMANDATORY APPENDIX 9A
DIF ANALYSIS FOR SUBSEQUENT QUALIFICATION INTERVALS

9A-1 Introduction

This appendix outlines the manner in which subsequent qualification intervals for covered tasks are determined using a DIF Analysis. A DIF Analysis quantifies the difficulty (D), importance (I) and frequency (F) of each task. SMEs review tasks in their area of competence and rate these tasks against each rating scale. A DIF analysis can be completed qualitatively, where a group of SMEs come to consensus on each dimension rating. Or, the analysis can be completed quantitatively using a survey where individual SME ratings are averaged. For the information found in the non-mandatory appendices of this standard, the qualitative method was used. In addition, only ratings for Difficulty and Importance were collected and used for the appendices. This appendix includes a description of both the qualitative and quantitative methods and the three rating scales (D, I, and F) to provide guidance for those who choose to perform this analysis independently.

9A-2 The DIF Analysis Process

SMEs are required to complete a DIF analysis. Whether SMEs are providing ratings on their own or through consensus, it is critical that they understand the meaning and significance of each of the factors and corresponding 5-point rating scales. To ensure results are meaningful and useful, SMEs require a thorough review of the DIF factors, corresponding scales, and intended use of the information before they rate the tasks to ensure they clearly understand what distinguishes one rating value from those higher and lower.

Once the SMEs understand the process and scales, they are to review the qualification criteria for each task and provide a rating for each DIF factor under analysis (Difficulty, Importance and Frequency). If the ratings are made through consensus, then the information is ready to use. If ratings are collected through a survey, the results are calculated by averaging the ratings for each scale for each task and rounding to one decimal point.

9A-3 SME Representation

9A-3.1 Consensus Group Representation

When DIF analysis is performed through the consensus of a group of SMEs, the SMEs participating must represent the characteristics of the population of individuals who perform the task (division, region, company, industry, etc.) they are intended to represent. For the DIF analysis that was performed to provide information to be contained in this standard, SMEs were chosen to represent the industry. For each technical group of SMEs, the following characteristics were considered for representation: liquid pipeline employees, natural gas transmission employees, local distribution company employees, contract employees, off-shore employees or contractors, and geographical location.

9A-3.2 Survey Sample Size

When DIF analysis is performed through the use of a survey, for the results to be considered accurate the sample of SMEs that rate each task must be representative of the individuals who perform the task in the population they are expected to represent (division, region, company, industry, etc.). To ensure the sample is representative, a minimum number of respondents are required to complete the survey. A 90% level of confidence that the sample result will equal the result that would be obtained if the entire population were surveyed is considered sufficient. The following table is used to determine the

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number of participants needed to gain a confidence level of 90%. Based on the estimated population in each technical skill area, it shows the number of people needed to ensure a representative sample responds to the survey.

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Table 9A-1

Sample Size needed to respond to DIF Survey	
Population Size in Technical Skill Area	**Sample Size - number of respondents needed to complete DIF Survey**
1-20	Small Sample Size - survey as many of the population as possible
21-29	20
30-39	21
40-49	25
50-59	29
60-69	32
70-79	35
80-89	37
90-99	39
100-199	41
200-299	51
300-399	55
400-499	58
500-999	60
1000-2999	63
3000 and above	66

EXAMPLE: Assume ABC Energy Company has a total employee population of 350 employees. The population sizes for ABC's technical skill areas are shown on the table below. To ensure a representative sample of respondents is selected, the respondent sample size must be based on the population of employees in each technical skill area, NOT the total number of employees.

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Table 9A-2

Example: Population Size and Corresponding Sample Size for responding to DIF Survey for ABC Energy Company		
Technical Skill Area	Number in Population [Note (1)]	Sample Size - number of individuals needed to complete the DIF Survey (see the preceding table)
Administrative and Clerical	50	N/A
I&E and Electronics Technician	35	23
Pipeline Technician	80	37
Compressor/Pump Technician	65	33
Corrosion Technician	100	41
System Control Technician	20	Max. of 20 if possible.
Total Employee Population	350	

(1) estimated population in each technical skill area

Note that the larger the sample size, the more certainty the survey results will reflect the population. However, the relationship is not linear, so doubling the sample size does not double the confidence interval. Also note that small populations can be problematic because one or two atypical ratings can really affect the results. For very small populations (20 individuals or less), the DIF should involve as many responders as possible. Another option to think about for small sample sizes is to use the median (middle rating) or the mode (most common rating), rather than the mean to calculate results.

9A-4 DIF Rating Scales

The five levels on each DIF rating scale are designed to provide a suitable differentiation of responses for each task.

9A-4.1 Difficulty

(a) Difficulty pertains to the complexity of the mental or motor skills entailed in performance of the task Criteria for a difficulty analysis are expressed in the following terms:

Comprehension -An individual is able to translate and explain the requirements for performing a task.

Performance - An individual is able to demonstrate the knowledge and skills required for performing a task.

Application - An individual is able to utilize the requirements and principles for performing a task under a variety of circumstances.

Analysis - An individual is able to divide a task into its parts, and identify and select an appropriate solution.

(b) Difficulty Rating Scale

Rating 1. A task that requires:

(a) Comprehension of basic procedures (e.g., explain the requirements for structure-to-soil readings)

(b) Performance of basic skills (e.g., operate a test instrument)

FOR EXAMPLE - Task 0001 - Measure Structure-to-Electrolyte Potential.

Rating 2. A task that requires:

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(a) Comprehension of basic to intermediate procedures (e.g., explain the requirements for leak surveys)

(b) Performance of basic to intermediate skills (e.g., operate a leak survey device)

(c) Application of basic to intermediate principles and requirements (e.g., grade/classify an outside gas leak)

FOR EXAMPLE - Task 0021-Measure Soil Resistivity

Rating 3. A task that requires:

(a) Comprehension of intermediate procedures (e.g., explain the variables and requirements for repairing a gas leak)

(b) Performance of an intermediate skill(s) (e.g., safely install a leak clamp)

(c) Application of intermediate principles and requirements (e.g., determine the extent of the gas leak and the conditions of the pipe)

(d) Analysis of routine job assignments (e.g., select the appropriate procedures and leak clamp to repair a gas leak)

FOR EXAMPLE - Task 1041 - Install Mechanical Clamps and Sleeves - Bolted

Rating 4. A task that requires:

(a) Comprehension of intermediate to advanced procedures (e.g., explain the variables and requirements for replacing a pipeline segment)

(b) Performance intermediate to advanced skill(s) (e.g., safely purge a pipeline segment)

(c) Application of intermediate to advanced principles and requirements (e.g., identify potential sources of accidental ignition and implement prevention of accidental ignition procedures)

(d) Analysis of routine to complex job assignments (e.g., determine if pipeline segment should be repaired, replaced or referred for analysis)

FOR EXAMPLE -Task 1381 - Operate Gas Pipeline - Local Facility Remote-Control Operations.

Rating 5. A task that requires:

(a) Comprehension of advanced knowledge (e.g., explain the variables and requirements for reducing pressure or shutting down a pipeline under emergency conditions)

(b) Performance of advanced skill(s) (e.g., safely reduce pressure or shutdown a pipeline segment under emergency conditions)

(c) Application of advanced knowledge (e.g., identify the precautions to be taken during pressure reduction or pipeline shutdown and implement appropriate procedures)

(d) Analysis of non-routine and complex job assignments (e.g., determine if pressure should be reduced or if the pipeline segment should be shutdown during emergency response)

FOR EXAMPLE - Task 1391 - Operate Liquids Pipeline - System Control Center Operations

9A-4.2 Importance

Importance is judged in terms of the consequences of inadequate performance. The critical or non-critical nature of the task is factored into the process through this rating. The rating scale points and examples are:

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Rating 1. Improper performance of the task may result in an abnormal operating condition that will be discovered by a required periodic inspection (e.g., structure-to-soil readings, pipeline patrols)

Rating 2. Improper performance of the task may result in an abnormal operating condition that will cause a backup system to operate (e.g., relief valve operations due to improperly adjusting a regulating device)

Rating 3. Improper performance of the task may result in an abnormal operating condition that will NOT be discovered during a required periodic inspection (e.g., internal corrosion, pipe settlement that results in a gas leak)

Rating 4. Improper performance of the task may result in an abnormal operating condition while the task is being performed.

Rating 5. Improper performance of the task may result in an abnormal operating condition while the task is being performed that is a hazard to persons, property or the environment or a reportable condition.

9A-4.3 Frequency

Frequency is determined more objectively. A performance may be considered to be frequent if an individual performs it 12 or more times annually. It may be considered infrequent if it is required once every five years.

Rating 1. Task is performed 1 -5 times per year

Rating 2. Task is performed 6 - 11 times per year

Rating 3. Task is performed 12 - 35 times per year

Rating 4. Task is performed 36 - 48 times per year

Rating 5. Task is performed more than 49 times per year

N/A Task is performed as needed [potentially less than 1 time per year]

9A-5 Specific Application of DIF Analysis to Determine Subsequent Qualification Intervals

Specifics for applying a DIF analysis for the purpose of determining subsequent qualification intervals and reporting the results include:

(a) Tasks that have a subsequent qualification interval that is mandated by another code or standard, for example welding and plastic pipe joining, do not need to be included in the evaluation process.

(b) The analysis used to provide results for the appendices in this standard are based only on Difficulty and Importance ratings. Frequency was not analyzed at the industry level because it varies greatly due to the way work is managed from one company or location to the next. Because of this variability, the result would be meaningless at the industry level. It would not represent the industry or any particular faction of the industry, it would likely average to the middle at 2.5. However, companies that plan and schedule work consistently across their system or companies that have work management systems that document when individuals perform tasks may find that frequency information is helpful in determining subsequent qualification intervals.

(c) Initial results from DIF survey data and application of the Decision Tree should receive a review cycle including further analysis and adjustments (if required) by company SMEs and stakeholders.

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(d) One (1) year was determined to be the lowest subsequent qualification interval required to ensure continued qualification and five (5) years to be the longest subsequent qualification interval.

(e) Tasks with one-year subsequent qualification interval can be stated as one year not to exceed 15 months, three-year subsequent qualification interval stated as three years not to exceed 39 months and five-year subsequent qualification intervals stated as five years not to exceed 63 months.

9A-5.1 Use of the DIF Ratings and Decision Tree to Determine Subsequent Qualification Intervals

The results of a DIF analysis are put through a Decision Tree to determine recommended subsequent qualification intervals for each task (Figure 9A-1). The following parameters are labeled on the Decision Tree:

Step 1 - Importance: Segmented into Important and Not Important

- Important > 2.5
- Less Important < 2.5

Step 2 - Difficulty: Segmented into Very Difficult, Moderately Difficult and Not Difficult

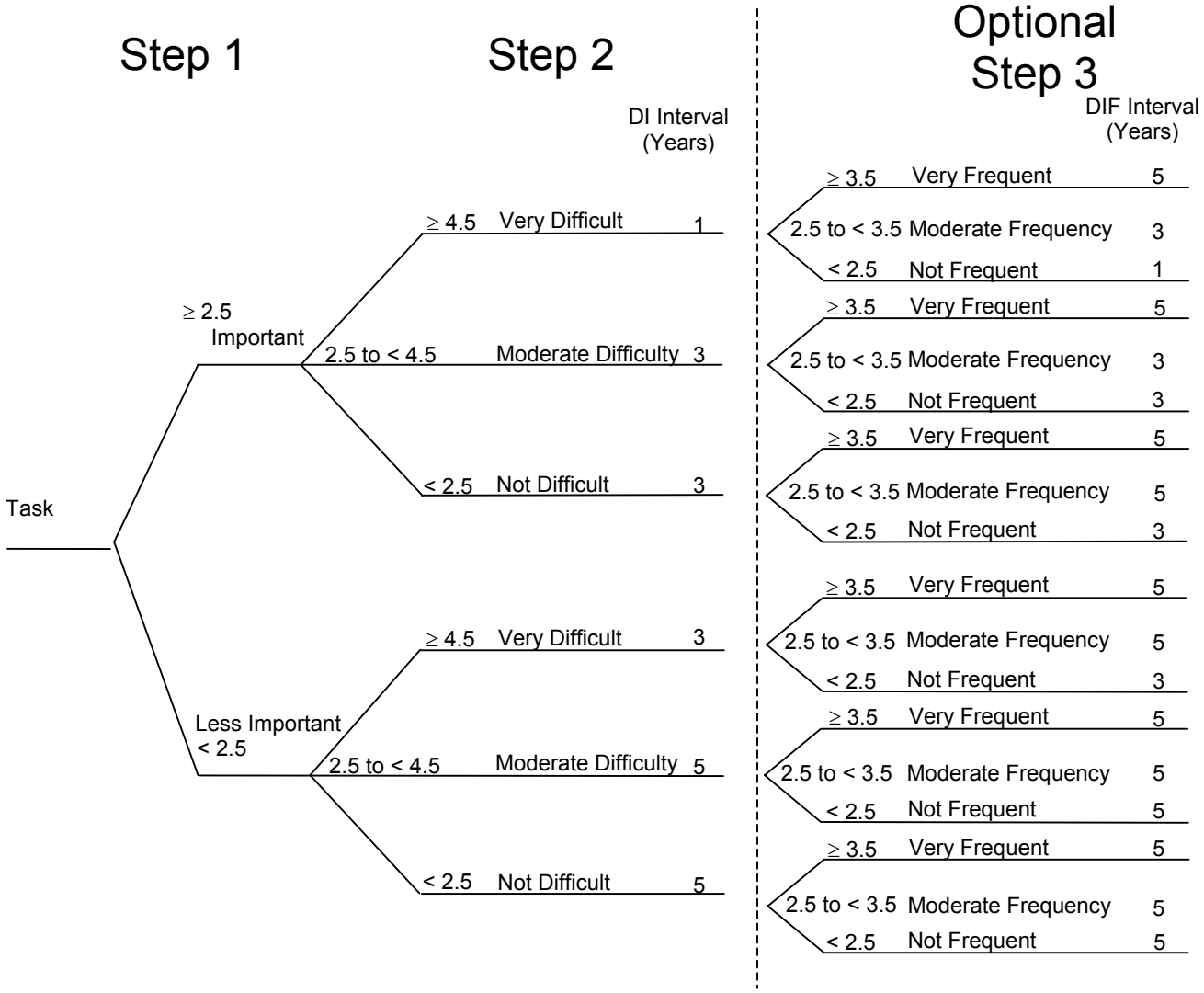
- Very Difficult > 4.5
- Moderately Difficult 2.5 to < 4.5
- Not Difficult < 2.5

Optional Step 3 - Frequency: Segmented into Very Frequent, Moderately Frequent and Not Frequent

- Very Frequent > 3.5
- Moderately Frequent 2.4 to < 3.5
- Not Frequent < 2.4

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Figure 9A-1 DIF Analysis Decision Tree



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9A-5.1.1 Importance Rating Decision Tree Parameters

Tasks that have a high Importance rating are those tasks with an Importance rating of greater than or equal to 2.5 average points. The Importance rating reflects the consequences of inadequate performance. Inadequate performance at this level may result in abnormal operating conditions that are hazards to people, property and the environment and create reportable conditions. Inadequate performance is unlikely to be discovered during required periodic inspections.

Tasks that have an Importance rating of less than 2.5 average points also reflect the consequences of inadequate performance. Inadequate performance at this level may result in abnormal operating conditions that should be discovered during required periodic inspections, or activation of a backup safety system that is in place to prevent harm. An example is a relief valve operating to protect the system from an overpressure condition.

9A-5.1.2 Difficulty Rating Decision Tree Parameters

Difficulty relates to the physical and mental complexity of a task. It can be judged by the comprehension necessary to translate and explain requirements, performance that must be demonstrated, application of principles, and analysis, which is the ability to divide a task into its component parts to determine a solution. Resultant ratings fall into three (3) levels, Very Difficult ($\geq$4.5), Moderately Difficult (2.5 to <4.5) and Not Difficult (< 2.5).

Very Difficult ($\geq$4.5)

The advanced knowledge and skills required and the ability to analyze non-routine and complex tasks characterize tasks that have Very Difficult ratings.

Moderately Difficulty (2.5 to <4.5)

The comprehension of intermediate procedures, requirements for knowledge, performance of basic to intermediate skills and the ability to analyze routine tasks characterize tasks that have Moderately Difficult ratings.

Not Difficult (< 2.5)

The comprehension of basic procedures, requirement for knowledge, performance of basic skills and the ability to apply principles characterize tasks that have Not Difficult ratings.

9A-5.1.3 Frequency Rating Decision Tree Parameters

Frequency is based on the number of times a task is performed during a calendar year as defined in 9A4.3. Frequency levels can be considered in monthly performance. For example, Frequency viewed on a monthly basis using the DIF Criteria and Rating Standards would be as follows:

Comparison of Annual Frequency to Monthly Frequency	
Very Frequent $\geq$ 3.5 [36 or more times per year]	Performed more than 3 times monthly
Moderately Frequent 2.5 to <3.5 [12 to 35 times per year]	Performed 1 to 3 times monthly
Not Frequent < 2.5 [1 to 11 times per year]	Performed less than once a month

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9A-5.2 Sample Decision Tree Application

For a task:

Difficulty = 2

Importance = 1.3

Frequency = 1.6

Step 1: The rating for Importance (I) was 2 or "Not Important" (less than 2.5)

Step 2: The rating for Difficulty (D) was 1.3 or "Not Difficult" (less than 2.5).

Result for DI Analysis: For this sample task, the result from the decision tree indicates a recommended subsequent qualification interval of five years, not to exceed 63 months.

Optional Step 3: When it is used, the rating for Frequency (F), "how often is the task performed" places the final emphasis on determining the subsequent qualification interval of the task. In this example of the response was 1.6 or "Not-Frequent" (less than 2.4).

Result for DIF Analysis: For this sample task, the results from the Decision Tree indicate a recommended subsequent qualification interval of 5 years, not to exceed 63 months.

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NONMANDATORY APPENDIX 11A
PROGRAM IMPLEMENTATION AND EFFECTIVENESS APPRAISALS

11A-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 non-qualified 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:

(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:

- Qualification program;
- Evaluation records;
- Evaluator records;
- Training records;
- Quality assurance documents; and

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- Management of change documents.

11A-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 timeframe;

(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 the findings of program implementation appraisals.

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