ASME B31Q-2016
(Revision of ASME B31Q-2014)

Pipeline Personnel Qualification

ASME Code for Pressure Piping, B31

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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FOREWORD

Using pipelines for the transmission and distribution of gas and hazardous liquids 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 time frames 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 of the OQ rule. Both groups committed to the development of a national consensus code on personnel qualification, where the outstanding issues could be resolved.

The pipeline industry approached ASME to sponsor the development of a consensus code on pipeline personnel qualification. The ASME Standard 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 consensus code for the qualification of pipeline personnel to resolve the outstanding issues and maintain as much of the current regulatory requirements as possible.

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 20 months to reach consensus on the content of the code. Additional resources, including Subject Matter Experts (SMEs), industry associations, and service providers were utilized regularly. In all, over 100 people worked diligently within the ASME process, utilizing technically based data where possible, in an attempt to meet the diverse needs of the industry and regulators. Unlike most ASME standards, however, this Standard is focused on the human aspects of operating and maintaining pipeline equipment instead of on the instructions for designing or operating this equipment. Therefore, technical-based data were not always available. For those areas where technically based data did not exist, the project team utilized accepted industry practices or reached consensus within the Project Team. Nonmandatory Appendices, which include a covered task list, were 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 the impact on safety and integrity of the pipeline due to human error that may result from an individual's lack of knowledge, skills, or abilities during the performance of certain activities. 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 performed during operation, maintenance, or construction, properly 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 Standard (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.

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.

The 2010 Edition of the Standard was a compilation of the 2006 Edition, addition of four new tasks in the task list, editorial refinement, and clarification on handling the following issues: new technology, long-term degradation of physical abilities, qualification exemptions, and new construction.

The 2014 Edition of the Standard was a compilation of the 2010 Edition and enhancement of the qualification standards to provide more in-depth evaluation criteria for 145 of 165 tasks in the task list.

The 2016 Edition of the Standard is a compilation of the 2014 Edition and enhancement of the qualification standards to provide more in-depth evaluation criteria for the balance of the task list; addition of seven new tasks to the task list; removal of nine tasks specific to diving that are covered sufficiently by NDT, welding, and other land-based tasks; removal of one task that is being combined with a similar task; addition of a Nonmandatory Appendix that provides guidance for implementing ASME B31Q and the nonmandatory task list; and clarification on the following issues: construction documentation clarified in the definition of *documentation* in the nonmandatory task list, and redesignating section and appendices to follow ASME guidelines.

This Standard was approved as an American National Standard on May 18, 2016.

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

This Foreword is provided as an aid to the user and is not part of the requirements of this Standard. This Foreword should not be interpreted as containing any requirements or limits enforceable or auditable by any entity. Where, in the judgment of the Committee, any of the topics covered by this Foreword ought to be addressed in the requirements of this Standard, appropriate requirements have been formulated and included in the body of this Standard.

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Standard for Pressure Piping

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PIPELINE PERSONNEL QUALIFICATION

1 INTRODUCTION

1.1 Scope

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

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

(a) design or engineering tasks

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

1.2 Purpose and Objectives

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

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

2 DEFINITIONS

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

abnormal operating condition (AOC): a condition that may indicate a malfunction of a component or deviation from normal operations that may

(a) indicate a condition exceeding design limits or

(b) result in a hazard(s) to persons, property, or the environment

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

covered task: a task that can affect the safety or integrity of the pipeline.

DI analysis: an analysis that explores the difficulty (D) 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 nonqualified individual(s) and is able to take immediate corrective action when necessary.

distinctive physical ability: clearly defined perceptual or physical functioning required to perform a task (e.g., color vision, visual acuity, hearing, smell).

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

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

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

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

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

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