ASME B31.8S-2025
(Revision of ASME B31.8S-2022)

Managing System Integrity of Gas Pipelines

ASME Code for Pressure Piping, B31
Supplement to ASME B31.8

AN INTERNATIONAL PIPING CODE®



The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers

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FOREWORD

Pipeline system operators continuously work to improve the safety of their systems and operations. In the United States, both liquid and gas pipeline operators have been working with their regulators for several years to develop a more systematic approach to pipeline safety integrity management.

The gas pipeline industry needed to address many technical concerns before an integrity management standard could be written. A number of initiatives were undertaken by the industry to answer these questions; as a result of two years of intensive work by a number of technical experts in their fields, 21 reports were issued that provided the responses required to complete the 2001 edition of this Code. (The list of these reports is included in the reference section of this Code.)

This Code is nonmandatory and is designed to supplement ASME B31.8, Gas Transmission and Distribution Piping Systems. Not all operators or countries will decide to implement this Code. This Code becomes mandatory if and when pipeline regulators include it as a requirement in their regulations.

This Code is a process code that describes the process an operator may use to develop an integrity management program. It also provides two approaches for developing an integrity management program: a prescriptive approach and a performance- or risk-based approach. Pipeline operators in a number of countries are currently using risk-based or risk-management principles to improve the safety of their systems. Some of the international standards issued on this subject were used as resources for writing this Code. Particular recognition is given to API and their liquids integrity management standard, API RP 1160, which was used as a model for the format of this Code.

The intent of this Code is to provide a systematic, comprehensive, and integrated approach to managing the safety and integrity of pipeline systems. The task force that developed this Code hopes that it has achieved that intent.

The 2022 edition of the Supplement was a compilation of the 2020 edition and the revisions that occurred since the issuance of the 2020 edition. ASME B31.8S-2022 was approved by the American National Standards Institute on October 14, 2022.

The 2025 edition of the Code is a compilation of the 2022 edition and revisions that occurred since the issuance of the 2022 edition. ASME B31.8S-2025 was approved by the American National Stands Institute on February 27, 2025.

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(a) The most common applications for cases are

(1) to permit early implementation of a revision based on an urgent need

(2) to provide alternative requirements

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(4) the editions of the Code to which the proposed case applies

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ASME B31.8S-2025
SUMMARY OF CHANGES

Following approval by the ASME B31 Standards Committee and ASME, and after public review, ASME B31.8S-2025 was approved by the American National Standards Institute on February 27, 2025.

ASME B31.8S-2025 includes the following changes identified by a margin note, **(25)**.

Page	*Location*	*Change*
1	1.2	(1) In first paragraph, second sentence revised
		(2) In fifth paragraph, last sentence revised
1	1.3	In fourth paragraph, first sentence revised
2	2.1	(1) Gender neutral language added
		(2) Fifth paragraph revised
5	2.2	Revised and last paragraph added
7	3.1	Last paragraph revised
8	3.2.1	Last three paragraphs deleted
8	3.2.2	Revised and subparagraphs (a) through (e) added
9	Figure 3.2.5-1	Former Figure 3.2.4-1 redesignated
9	3.2.3	Added and subsequent subparagraphs redesignated
9	3.3	Subparagraph (f) revised, subpara. (k) added, and last paragraph deleted
10	4.2	Second sentence revised
10	Table 4.2.1-1	Under “Construction” category, “GIS data” added
13	5.5	Revised in its entirety
16	5.10	Penultimate paragraph revised
18	6.2	In first paragraph, penultimate sentence revised
19	Table 6.2-1	Legend revised
20	6.2.2	Penultimate sentence in last paragraph revised
20	6.3.2	Second paragraph revised
20	6.3.4	Last sentence revised
23	Table 7.1-1	Legend revised
27	7.4.2	Revised
27	7.4.3	First sentence revised
30	Table 8.3.4-1	Revised
31	Table 8.3.4-3	“Description” under “Data Integration” revised
35	11	Revised
37	13	(1) Definitions for *carbon dioxide (CO_2)*, *diameter*, *gas*, *specified minimum yield strength (SMYS)*, and *submerged-arc welded (SAW) pipe* revised
		(2) Definitions for *dense phase carbon dioxide*, *diamètre nominal (DN)*, *fuel gas*, and *nominal pipe size (NPS)* added
44	14	Revised

Page	*Location*	*Change*
47	A-2.3	In first paragraph, second sentence revised
49	A-2.7	Second paragraph revised
49	A-3.2	Subparagraph (g) revised
49	A-3.3	First paragraph revised
50	A-3.4	In subparagraph (a), first sentence revised
52	A-4.2	Revised
54	A-5.4	Second paragraph revised
55	A-5.5	Second paragraph revised
56	A-6.3	Last sentence in last paragraph revised
61	A-9.5	Second paragraph revised

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MANAGING SYSTEM INTEGRITY OF GAS PIPELINES

1 INTRODUCTION

1.1 Scope

This Code applies to onshore pipeline systems that are constructed with ferrous materials and transport gas. The principles and processes embodied in integrity management are applicable to all pipeline systems.

This Code is specifically designed to provide the operator (as defined in section 13) with the information necessary to develop and implement an effective integrity management program using proven industry practices and processes. The processes and approaches described within this Code are applicable to the entire pipeline.

(25) 1.2 Purpose and Objectives

Managing the integrity of a gas pipeline system is the primary goal of every pipeline system operator. Operators want to continue providing safe and reliable delivery of gas to their customers without adverse effects on employees, the public, customers, or the environment. Incident-free operation has been and continues to be the gas pipeline industry's goal. The use of this Code as a supplement to ASME B31.8 will allow pipeline operators to move closer to that goal.

A comprehensive, systematic, and integrated integrity management program provides the means to improve the safety of pipeline systems. Such an integrity management program provides the information for an operator to effectively allocate resources for appropriate prevention, detection, and mitigation activities that will result in improved safety and a reduction in the number of incidents.

This Code describes a process that an operator of a pipeline system can use to assess and mitigate risks to reduce both the likelihood and the consequences of incidents. It covers both a prescriptive-based and a performance-based integrity management program.

The prescriptive process, when followed explicitly, will provide all the inspection, prevention, detection, and mitigation activities necessary to produce a satisfactory integrity management program. This does not preclude conformance with the requirements of ASME B31.8. The performance-based integrity management program alternative uses more data and more extensive risk analyses, which enable the operator to achieve a greater degree of flexibility to meet or exceed the requirements of this Code, specifically in the areas of inspection intervals and tools and mitigation techniques used. An operator cannot proceed with the performance-based integrity program until adequate inspections are performed that provide the information on the pipeline condition required by the prescriptive-based program. The level of assurance of a performance-based program or an alternative international standard shall meet or exceed that of a prescriptive program.

The requirements for prescriptive-based and performance-based integrity management programs are provided in each of the sections in this Code. In addition, Nonmandatory Appendix A provides specific activities by threat categories that an operator shall follow to produce a satisfactory prescriptive integrity management program.

This Code is intended for use by individuals and teams charged with planning, implementing, and improving a pipeline integrity management program. Typically, a team will include managers, engineers, operating personnel, technicians, and/or specialists with specific expertise in prevention, detection, and mitigation activities.

1.3 Integrity Management Principles (25)

A set of principles is the basis for the intent and specific details of this Code. They are enumerated here so that the user of this Code can understand the breadth and depth to which integrity shall be an integral and continuing part of the safe operation of a pipeline system.

Functional requirements for integrity management shall be engineered into new pipeline systems from initial planning, design, material selection, and construction. Integrity management of a pipeline starts with sound design, material selection, and construction of the pipeline. Guidance for these activities is primarily provided in ASME B31.8. There are also a number of consensus standards that may be used, as well as pipeline jurisdictional safety regulations. If a new line is to become a part of an integrity management program, the functional requirements for the line, including prevention, detection, and mitigation activities, shall be considered to meet this Code. Complete records of material, design, and construction for the pipeline are essential for the initiation of a good integrity management program.

System integrity requires commitment by all operating personnel using comprehensive, systematic, and integrated processes to safely operate and maintain pipeline systems. To have an effective integrity management program, the program shall address the operator's organization and processes and the physical system.