ASME B31.8S-2016
(Revision of ASME B31.8S-2014)

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

Two Park Avenue • New York, NY • 10016 USA

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The next edition of this Code is scheduled for publication in 2018.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Code. Interpretations are published under http://go.asme.org/Interpretations. Periodically certain actions of the B31 Committees may be published as Cases. Cases are published on the ASME Web site under the Committee Pages at http://go.asme.org/B31committee as they are issued.

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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, 20 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 B31.8, ASME Code for Pressure Piping, 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 utilizing risk-based or risk-management principles to improve the safety of their systems. Some of the international standards issued on this subject were utilized as resources for writing this Code. Particular recognition is given to API and their liquids integrity management standard, API Std 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 2004 Supplement was approved by the B31 Standards Committee and by the ASME Board on Pressure Technology Codes and Standards.

The 2010 Supplement was approved by the B31 Standards Committee and by the ASME Board on Pressure Technology Codes and Standards.

The 2012 Edition of the Supplement was a compilation of the 2010 Edition and the revisions that occurred following the issuance of the 2010 Edition.

The 2014 Edition of the Supplement was a compilation of the 2012 Edition and the revisions that occurred since the issuance of the 2012 Edition.

The 2016 Edition of the Supplement is a compilation of the 2014 Edition and the revisions that have occurred since the issuance of the 2014 Edition. This Edition was approved by ANSI on August 26, 2016.

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Code for Pressure Piping

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ASME B31.8S-2016
SUMMARY OF CHANGES

Following approval by the ASME B31 Committee and ASME, and after public review, ASME B31.8S-2016 was approved by the American National Standards Institute on August 26, 2016.

ASME B31.8S-2016 includes the following changes identified by a margin note, **(16)**.

Page	*Location*	*Change*
3	2.2	Subparagraph (b) revised
7	3.2.1	Revised
8	Figure 3.2.4-1	Revised
10	4.4	Third paragraph revised
17	6.1	Second paragraph revised
19	6.3	Second paragraph revised
27	7.7	Revised
36	13	Definition of *resident threat* added
36	Figure 13-1	Revised
42	14	Updated
45	A-1	Designator added, and subsequent paragraphs redesignated
46	Figure A-2.1-1	Designator editorially revised
48	Figure A-3.1-1	Designator editorially revised
50	Table A-4.4-1	Designator editorially revised
51	Table A-4.4.1-1	Designator editorially revised
52	Figure A-5.1-1	Designator editorially revised
54	Figure A-6.1-1	Designator editorially revised
55	A-6.6	Revised
56	Figure A-7.1-1	Designator editorially revised
57	Figure A-8.1-1	Designator editorially revised
59	Figure A-9.1-1	Designator editorially revised
60	A-10.3	Subparagraph (i) added
61	Figure A-10.1-1	Designator editorially revised
63	B-1	Designator added, and subsequent paragraphs redesignated

MANAGING SYSTEM INTEGRITY OF GAS PIPELINES

1 INTRODUCTION

1.1 Scope

This Code applies to onshore pipeline systems constructed with ferrous materials and that 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 utilizing proven industry practices and processes. The processes and approaches described within this Code are applicable to the entire pipeline.

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 natural 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 the ASME B31.8 Code 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 in order to reduce both the likelihood and 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 utilizes more data and more extensive risk analyses, which enables the operator to achieve a greater degree of flexibility in order to meet or exceed the requirements of this Code specifically in the areas of inspection intervals, tools used, and mitigation techniques employed. 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 must 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 in order 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

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 in order 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. In order to have an effective integrity management program, the program shall address the operator's organization, processes, and the physical system.

An integrity management program is continuously evolving and must be flexible. An integrity management program should be customized to meet each operator's unique conditions. The program shall be periodically