ASME B31.8S-2012
(Revision of ASME B31.8S-2010)

Managing System Integrity of Gas Pipelines

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

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers
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The next edition of this Code is scheduled for publication in 2014.

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

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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 2 yr of intensive work by a number of technical experts in their fields, 20 reports were issued that provided the responses required to complete the 2002 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, which 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 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. It was approved as an American National Standard on March 17, 2004.

The 2010 Supplement was approved by the B31 Standards Committee and by the ASME Board on Pressure Technology Codes and Standards. It was approved as an American National Standard on April 20, 2010.

The 2012 Edition of the Supplement is a compilation of the 2010 Edition and the revisions that occurred since the issuance of the 2010 Edition. This Edition was approved by ANSI on September 14, 2012.

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Code for Pressure Piping

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ASME B31.8S-2012
SUMMARY OF CHANGES

Following approval by the ASME B31 Standards Committee, the ASME Board on Pressure Technology Codes and Standards, and ASME, and after public review, ASME B31.8S-2012 was approved by the American National Standards Institute on September 14, 2012.

ASME B31.8S-2012 consists of B31.8S-2010; editorial changes, revisions, and corrections; as well as the following changes identified by a margin note, **(12)**.

Page	*Location*	*Change*
14	Table 5.6.1-1	(1) All entries for Direct assessment revised (2) Note (4) revised
20	6.4.1	First and last paragraph revised
23, 24	Table 7.1-1	General Note, definition for *ECA* revised
28	9.1	First paragraph revised
31–33	9.4(b)(1)	Revised
	9.4(b)(2)	Revised
	9.4(b)(3)	Revised
	9.4(c)	Revised
	Table 9.4(b)-1	Revised
	Table 9.4(c)-1	Revised
	9.4(e)(8)	Revised
	9.4(e)(9)	Revised
35–43	12.2(b)	Revised
	12.2(b)(1)	Revised
	12.2(b)(6)	Revised
	13	(1) Definitions of *butt joint*, *butt weld*, *discontinuity*, *engineering assessment*, and *in-line inspection tools* added (2) Definitions of *engineering critical assessment* and *smart pig* revised
	14	Revised
50	A-3.1	Revised
	A-3.2	First paragraph revised
	A-3.3	Title revised
	A-3.3.1	First paragraph revised
	A-3.3.2	(1) First paragraph revised (2) Fourth paragraph of A-3.3.2 redesignated as A-3.3.3 and revised (3) Last paragraph revised

Page	*Location*	*Change*
	A-3.4	(1) Second and third paragraphs revised (2) Fourth paragraph added
51	Fig. A-3	Deleted
	A-3.4.1	(1) Second and third paragraphs deleted (2) Last paragraph revised
	A-3.4.2(d)(1)(b)	Revised
	A-3.4.2(d)(3)	Deleted
	A-3.4.3	Revised
	A-3.4.4	Added
52	Table A-3.4.1-1	Title revised
	A-3.5	Revised
	A-3.6(b)	Revised
54	A-4.3	(1) First paragraph revised (2) Third paragraph added
65	B-1	Revised in its entirety
	Table B-1	Deleted
	B-2	Revised

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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 within this Code are applicable to the entire pipeline system.

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- 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- 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.