

July 3, 2013

Dear *Guide* Purchaser,

Enclosed is ANSI/GPTC Z380, *Guide for Gas Transmission and Distribution Piping Systems*, 2012 Edition, including Addenda 1-3.

Your purchase entitles you to receive future notification of the issuance of addenda. Addenda are formatted to enable the replacement of pages in your *Guide* with updated pages. Addenda will be available for free downloading from the GPTC webpage at www.aga.org/gptc or paper copies may be purchased at www.aga.org/pubs for a nominal fee.

On behalf of the Gas Piping Technology Committee and the American Gas Association, thank you for your purchase and interest in the *Guide*.

Sincerely,



Secretary
GPTC Z380

Currently in preview, click buy full version

BLANK

GPTC GUIDE FOR GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS

2012 EDITON

January 2012

The changes in this new edition are marked by wide vertical lines inserted to the left of modified text, overwriting the left border of most tables, or a block symbol (■) where needed. The Federal Regulations were not changed; however, 3 PHMSA forms and related instructions have been updated. Seventeen (17) GPTC transactions affected 42 sections of the Guide.

Editorial updates include application of the Editorial Guidelines, updating reference titles, adjustments to page numbering, and adjustment of text on pages. A major review of the document provided numerous publication and editorial refinements for improved format, consistency, and clarity. Additionally, the index was enhanced to include coverage for Subpart P. Since the Guide is being republished, editorial updates and refinements are too numerous to universally mark.

The following table shows the affected sections.

Amdt. or Docket Number: FS Amendment
 TR Number: New or Updated GM
 GMUR: GM Under Review
 EU: Editorial Update
 ER: Editorial Refinement

Guide Section	Reason For Change	Affected Pages
Part 191 191.1	TR11-06	2
191.3	TR11-06	3
191.5	TR11-06	4
191.15	TR11-06	7
191.17	TR11-06	8
191.22	TR11-06	10
Subpart A 192.3	TR04-45	20, 25, 26
Subpart C 192.107	TR07-22	54
192.111	TR08-44	56
192.123	TR09-30	71
Subpart D 192.145	TR10-36	76
192.150	TR06-42	91
192.163	TR11-02	94
Subpart F 192.281	TR06-25	129, 130
192.283	TR06-25	132
Subpart G 192.321	TR06-25, TR09-30	144, 146, 149
Subpart H 192.367	TR09-30	166
192.375	TR09-30	168
192.381	TR08-14	170 thru 173
192.383	TR08-14	174 thru 176
Subpart I 192.465	TR06-42	185, 188
192.476	TR06-42	202
Subpart L 192.600	TR06-42	241
192.610	TR11-18	252
192.615	TR08-14, TR10-44	263, 266
192.629	TR08-14	290
Subpart O 192.911	TR06-42, TR07-19	359, 364 thru 368
192.915	TR06-42	370
192.919	TR04-42	376
192.921	TR04-42, TR06-42, TR11-42	378 thru 380
192.927	TR04-45	407 thru 420
192.931	TR04-45	422, 423
192.939	TR04-45	440
192.945	TR11-07	445

Guide Section	Reason For Change	Affected Pages
192.947	TR07-19	446
192.951	TR11-06	449
GMA G-191-1	TR11-06	477
GMA G-191-2	Updated PHMSA Form & Instructions	46 PHMSA numbered pages following 480
GMA G-191-5 (Prev. 4)	Updated PHMSA Form & Instructions	54 PHMSA numbered pages following 486
GMA G-191-6 (Prev. 5)	Updated PHMSA Form & Instructions	36 PHMSA numbered pages following 488
GMA G-192-1	TR04-45, TR06-42, TR07-22, TR08-14, TR10-44, TR11-02, TR11-07	497, 499, 500, 502, 503, 507, 508, 517
GMA G-192-1A	ER	522, 523
GMA G-192-8	TR11-13	563 thru 567, 575 thru 579, 581
GMA G-192-13	TR11-18	637
GMA G-192-14	TR06-42	633 thru 644
INDEX	TR08-44	688, 690

Currently in preview, click buy full version

Blank Page

GPTC GUIDE FOR GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS

2012 EDITON

ADDENDUM 1, July 2012

The changes in this addendum are marked by wide vertical lines inserted to the left of modified text, overwriting the left border of most tables, or a block symbol (■) where needed. No Federal Regulations were amended. Ten GPTC transactions affected 12 sections of the Guide.

Editorial updates include application of the Editorial Guidelines, updating reference titles, adjustments to page numbering, and adjustment of text on pages. Editorial updates as indicated "EU" only affected those areas listed.

The following table shows the affected sections, the pages to be removed, and their replacement pages.

Amdt. or Docket Number: FS Amendment
 TR Number: New or Updated GM
 GMUR: GM Under Review
 EU: Editorial Update
 ER: Editorial Refinement

Guide Section	Reason For Change	Pages to be Removed	Replacement Pages
Title Page	EU	i/ii	i/ii
Table of Contents	EU	ix/x	ix/x
Membership List	EU	lix/lx thru lxxvii/lxxviii	lix/lx thru lxxvii/lxxviii
191.1	TR12-10	1/2	1/2
Subpart A 192.1	TR11-20, TR12-10	15/16	15/16
192.3	TR10-32, TR12-10	23/24, 25/26	23/24, 25/26
Subpart F 192.281	TR12-08	127/128	127/128
Subpart H 192.383	TR11-31	175/176	175/176
Subpart I 192.476	TR08-13	197/198	197/198
Subpart L 192.614	TR10-32, TR12-15	253/254, 255/256	253/254, 255/256
192.616	TR11-10	271/272	271/272
Subpart O 192.907	TR11-28	355/356	355/356
192.921	TR04-50	379/380	379/380
192.937	TR04-50	435/436, 437/438	435/436, 436(a)/436(b), 437/438
GMA G-192-1	TR11-10, TR11-28, TR12-08, TR12-10	501/502, 503/504, 507/508, 509/510, 517/518	501/502, 503/504, 507/508, 508(a)/508(b), 509/510, 517/518

GPTC GUIDE FOR GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS

2012 EDITON

ADDENDUM 2, December 2012

The changes in this addendum are marked by wide vertical lines inserted to the left of modified text, overwriting the left border of most tables, or a block symbol (■) where needed. No Federal Regulations were updated by amendment. Six GPTC transactions affected 7 sections of the Guide.

Editorial updates include application of the Editorial Guidelines, updating reference titles, adjustments to page numbering, and adjustment of text on pages. While only significant editorial updates are marked, all affected pages carry the current addendum footnote. Editorial updates to text as indicated "FU" affected 14 sections of the Guide.

The following table shows the affected sections, the pages to be removed, and their replacement pages.

Amdt. or Docket Number: FS Amendment
 TR Number: New or Updated GM
 GMUR: GM Under Review
 EU: Editorial Update
 ER: Editorial Refinement

Guide Section	Reason For Change	Pages to be Removed	Replacement Pages
Title Page	EU	i/ii	i/ii
Table of Contents	EU	v/vi	v/vi
Membership List	EU	lix/lx thru lxvii/lxviii	lix/lx thru lxvii/lxviii
Subpart A 192.3	EU	25/26	25/26
Subpart D 192.145	TR11-27	75/76	75/76
Subpart F 192.271		123/124 thru 133/134	123/124 thru 134(a) 134(b)
192.273	EU, TR08-18, TR11-01		
192.275			
192.277			
192.279			
192.281			
192.283	EU		
192.285			
192.287			
Subpart H 192.363	TR10-04	165/166	165/166
192.381	TR10-04	169/170 thru 175/176	169/170 thru 175/176
192.383	TR10-04		
Subpart L 192.619	TR11-12	275/276	275/276
Subpart O 192.907	EU	355/356	355/356
192.921	TR11-41	377/378, 379/380	377/378, 379/380
192.925	EU	389/390, 399/400 thru 403/404	389/390, 399/400 thru 403/404
192.927	EU	413/414	413/414
192.935	EU	431/432	431/432
192.939	EU	441/442	441/442
GMA G-191-3	EU	13 pages of superceded forms and 21 pages of superceded instrurctions	13 pages of revised forms and 19 pages of revised instructions
GMA G-192-1	EU	515/516 thru 519/520	515/516 thru 519/520
GMA G-192-1A	EU	521/522	521/522

GPTC GUIDE FOR GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS

2012 EDITON

ADDENDUM 3, March 2013

The changes in this addendum are marked by wide vertical lines inserted to the left of modified text, overwriting the left border of most tables, or a block symbol (■) where needed. No Federal Regulations were updated by amendment. Eight GPTC transactions affected 11 sections of the Guide.

Editorial updates include application of the Editorial Guidelines, updating reference titles, adjustments to page numbering, and adjustment of text on pages. While only significant editorial updates are marked, all affected pages carry the current addendum footnote. Editorial updates to text as indicated "EU" affected 19 sections of the Guide.

The following table shows the affected sections, the pages to be removed, and their replacement pages.

Amdt. or Docket Number: FS Amendment
 TR Number: New or Updated GM
 GMUR: GM Under Review
 EU: Editorial Update
 ER: Editorial Refinement

Guide Section	Reason For Change	Pages to be Removed	Replacement Pages
Title Page	EU	i/ii	i/ii
Table of Contents	EU	vii/viii	vii/viii
Foreward	EU	xiii/xiv	xiii/xiv
Membership List	EU	lix/lx thru lxvii/lxviii	lix/lx thru lxvii/lxviii
Subpart D 192.147	EU	77/78	77/78
192.199	EU	111/112	111/112
Subpart F 192.273	EU	123/124	123/124
Subpart I 192.476	EU	199/200	199/200
Subpart L 192.605	TR10-08	235/236	235/236
192.613	TR08-43	249/250 thru 261/262	249/250 thru 261/262
192.614	TR08-01		
192.615	TR08-01		
192.616	TR12-20	271/272	271/272
192.620	EU	277/278 thru 283/284	277/278 thru 283/284
Subpart M 192.703	TR08-01	297/298, 299/300	297/298, 299/300
Subpart N 192.803	EU, TR10-08	333/334 thru 341/342	333/334 thru 341/342
192.805	EU, TR10-08		
Subpart O 192.909	EU	357/358	357/358
192.911	EU	359/360, 365/366, 367/368	359/360, 365/366, 367/368
192.927	EU	415/416	415/416
192.937	EU (Correcting Addendum number and date)	436(a)/436(b)	436(a)/436(b)
GMA G-191-5	Updated PHMSA Form and Instructions	54 PHMSA numbered pages following page 486	49 PHMSA numbered pages following page 486
GMA G-192-1	EU, TR07-27, TR08-43, TR12-20	503/504 thru 517/518	503/504 thru 517/518
GMA G-192-8	EU, TR10-10, TR11-21, TR11-22	555/556 thru 559/560, 567/568 thru 571/572	555/556 thru 559/560, 567/568 thru 571/572
GMA G-192-11	EU	589/590	589/590
GMA G-192-11A	EU	611/612	611/612

Guide Section	Reason For Change	Pages to be Removed	Replacement Pages
GMA G-192-13	TR07-27	635/636, 637/638	635/636, 637/638
GMA G-192-18	EU	669/670	669/670

Blank Page

Guide for Gas Transmission and Distribution Piping Systems

2012 Edition

January 2012

An American National Standard

Author:
Gas Piping Technology Committee (GPTC) Z380
Accredited by ANSI

Approved by
American National Standards Institute (ANSI)
April 16, 2012

Secretariat:
American Gas Association

ANSI/GPTC Z380.1-2012
Catalog Number: Z380112

PLEASE NOTE

Addenda to this Guide will also be issued periodically to enable users to keep the Guide up-to-date by replacing the pages that have been revised with the new pages. It is advisable, however, that pages which have been revised be retained so that the chronological development of the Federal Regulations and the Guide is maintained.

CAUTION

As part of document purchase, GPTC (using AGA as Secretariat) will try to keep purchasers informed on the current Federal Regulations as released by the Department of Transportation (DOT). This is done by periodically issuing addenda to update both the Federal Regulations and the guide material. It is the responsibility of the purchaser to obtain a copy of any addenda. Addenda are posted on the Committee's webpage at www.aga.org/gptc. The GPTC assumes no responsibility in the event the purchaser does not obtain addenda. The purchaser is reminded that the changes to the Regulations can be timely noted on the Federal Register's web site.

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the American Gas Association.

Participation by state and federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of the guide material in this Guide.

Conversions of figures to electronic format courtesy of ViaData Incorporated.

Copyright 2012
THE AMERICAN GAS ASSOCIATION
400 N. Capitol St., NW
Washington, DC 20001
All Rights Reserved
Printed in U.S.A.

Guide for Gas Transmission and Distribution Piping Systems

2012 Edition

Addendum 1, July 2012

An American National Standard

Author:
Gas Piping Technology Committee (GPTC) Z380
Accredited by ANSI

Secretariat:
American Gas Association

Approved by
American National Standards Institute (ANSI)
August 15, 2012

ANSI/GPTC Z380.1-2012, Addendum No. 1-2012
Catalog Number: Z3801121

PLEASE NOTE

Addenda to this Guide will also be issued periodically to enable users to keep the Guide up-to-date by replacing the pages that have been revised with the new pages. It is advisable, however, that pages which have been revised be retained so that the chronological development of the Federal Regulations and the Guide is maintained.

CAUTION

As part of document purchase, GPTC (using AGA as Secretariat) will try to keep purchasers informed on the current Federal Regulations as released by the Department of Transportation (DOT). This is done by periodically issuing addenda to update both the Federal Regulations and the guide material. It is the responsibility of the purchaser to obtain a copy of any addenda. Addenda are posted on the Committee's webpage at www.aga.org/gptc. The GPTC assumes no responsibility in the event the purchaser does not obtain addenda. The purchaser is reminded that the changes to the Regulations can be timely noted on the Federal Register's web site.

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the American Gas Association.

Participation by state and federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of the guide material in this Guide.

Conversions of figures to electronic format courtesy of ViaData Incorporated.

Copyright 2012
THE AMERICAN GAS ASSOCIATION
400 N. Capitol St., NW
Washington, DC 20001
All Rights Reserved
Printed in U.S.A.

Guide for Gas Transmission and Distribution Piping Systems

2012 Edition

Addendum 2, December 2012

An American National Standard

Author:
Gas Piping Technology Committee (GPTC) Z380
Accredited by ANSI

Secretariat:
American Gas Association

Approved by
American National Standards Institute (ANSI)
January 24, 2013

ANSI/GPTC Z380.1-2012, Addendum No. 2-2013
Catalog Number: Z3801122

PLEASE NOTE

Addenda to this Guide will also be issued periodically to enable users to keep the Guide up-to-date by replacing the pages that have been revised with the new pages. It is advisable, however, that pages which have been revised be retained so that the chronological development of the Federal Regulations and the Guide is maintained.

CAUTION

As part of document purchase, GPTC (using AGA as Secretariat) will try to keep purchasers informed on the current Federal Regulations as released by the Department of Transportation (DOT). This is done by periodically issuing addenda to update both the Federal Regulations and the guide material. It is the responsibility of the purchaser to obtain a copy of any addenda. Addenda are posted on the Committee's webpage at www.aga.org/gptc. The GPTC assumes no responsibility in the event the purchaser does not obtain addenda. The purchaser is reminded that the changes to the Regulations can be timely noted on the Federal Register's web site.

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the American Gas Association.

Participation by state and federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of the guide material in this Guide.

Conversions of figures to electronic format courtesy of ViaData Incorporated.

Copyright 2013
THE AMERICAN GAS ASSOCIATION
400 N. Capitol St., NW
Washington, DC 20001
All Rights Reserved
Printed in U.S.A

Guide for Gas Transmission and Distribution Piping Systems

2012 Edition

Addendum 3, March 2013

An American National Standard

Author:
Gas Piping Technology Committee (GPTC) Z380
Accredited by ANSI

Secretariat:
American Gas Association

Approved by
American National Standards Institute (ANSI)
March 20, 2013

ANSI/GPTC Z380.1-2012, Addendum No. 3-2013
Catalog Number: Z3801123

PLEASE NOTE

Addenda to this Guide will also be issued periodically to enable users to keep the Guide up-to-date by replacing the pages that have been revised with the new pages. It is advisable, however, that pages which have been revised be retained so that the chronological development of the Federal Regulations and the Guide is maintained.

CAUTION

As part of document purchase, GPTC (using AGA as Secretariat) will try to keep purchasers informed on the current Federal Regulations as released by the Department of Transportation (DOT). This is done by periodically issuing addenda to update both the Federal Regulations and the guide material. It is the responsibility of the purchaser to obtain a copy of any addenda. Addenda are posted on the Committee's webpage at www.aga.org/gptc. The GPTC assumes no responsibility in the event the purchaser does not obtain addenda. The purchaser is reminded that the changes to the Regulations can be timely noted on the Federal Register's web site.

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the American Gas Association.

Participation by state and federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of the guide material in this Guide.

Conversions of figures to electronic format courtesy of ViaData Incorporated.

Copyright 2013
THE AMERICAN GAS ASSOCIATION
400 N. Capitol St., NW
Washington, DC 20001
All Rights Reserved
Printed in U.S.A.

CONTENTS

	Page
PREFACE	xiii
HISTORY	xiii
FOREWORD	xiv
LETTER TO GAS PIPING TECHNOLOGY COMMITTEE FROM THE U.S. DEPARTMENT OF TRANSPORTATION	xv
AMERICAN GAS ASSOCIATION (AGA) NOTICE AND DISCLAIMER	xvi
EDITORIAL CONVENTIONS OF THE GUIDE	xvii
EDITORIAL NOTES FOR THE HISTORICAL RECONSTRUCTION OF PARTS 191 AND 192	xix
HISTORICAL RECONSTRUCTION OF PART 191	xix
HISTORICAL RECORD OF AMENDMENTS TO PART 191	xxi
HISTORICAL RECONSTRUCTION OF PART 192	xxv
HISTORICAL RECORD OF AMENDMENTS TO PART 192	xxxv
GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST	lix
PART 191 -- ANNUAL REPORTS, INCIDENT REPORTS, AND SAFETY-RELATED CONDITION REPORTS	1
191.1 Scope	1
191.3 Definitions	2
191.5 Immediate notice of certain incidents	3
191.7 Report submission requirements	4
191.9 Distribution system: Incident report	5
191.11 Distribution system: Annual report.....	6
191.12 Distribution systems: Mechanical fitting failure reports	6
191.13 Distribution systems reporting transmission pipelines; transmission or gathering systems reporting distribution pipelines	7
191.15 Transmission systems; gathering systems; and liquefied natural gas facilities: Incident report.....	7
191.17 Transmission systems; gathering systems; and liquefied natural gas facilities: Annual report	8
191.19 (Removed)	8
191.21 OMB control number assigned to information collection	8

191.22	National Registry of Pipeline and LNG Operators.....	9
191.23	Reporting safety-related conditions	10
191.25	Filing safety-related condition reports.....	11
191.27	Filing offshore pipeline condition reports.....	12
PART 192 -- MINIMUM FEDERAL SAFETY STANDARDS		15
SUBPART A -- GENERAL		15
192.1	What is the scope of this part?	15
192.3	Definitions	17
192.5	Class locations.....	27
192.7	What documents are incorporated by reference partly or wholly in this part?	28
192.8	How are onshore gathering lines and regulated onshore gathering lines determined?	33
192.9	What requirements apply to gathering lines?.....	35
192.10	Outer continental shelf pipelines.....	36
192.11	Petroleum gas systems	37
192.12	(Removed)	39
192.13	What general requirements apply to pipelines regulated under this part?	40
192.14	Conversion to service subject to this part.....	41
192.15	Rules of regulatory construction	42
192.16	Customer notification	42
192.17	(Removed)	43
SUBPART B -- MATERIALS.....		45
192.51	Scope	45
192.53	General	45
192.55	Steel pipe	46
192.57	(Removed and reserved).....	47
192.59	Plastic pipe.....	47
192.61	(Removed and reserved).....	48
192.63	Marking of materials	48
192.65	Transportation of pipe.....	49
SUBPART C -- PIPE DESIGN.....		51
192.101	Scope	51
192.103	General	51
192.105	Design formula for steel pipe.....	52
192.107	Yield strength (S) for steel pipe	53
192.109	Nominal wall thickness (t) for steel pipe.....	54
192.111	Design factor (F) for steel pipe	55
192.112	Additional design requirements for steel pipe using alternative maximum allowable operating pressure	57
192.113	Longitudinal joint factor (E) for steel pipe	62
192.115	Temperature derating factor (T) for steel pipe	63
192.117	(Removed and reserved).....	63
192.119	(Removed and reserved).....	63
192.121	Design of plastic pipe.....	63
192.123	Design limitations for plastic pipe	67
192.125	Design of copper pipe.....	71

SUBPART D -- DESIGN OF PIPELINE COMPONENTS	73
192.141 Scope	73
192.143 General requirements	73
192.144 Qualifying metallic components	74
192.145 Valves.....	75
192.147 Flanges and flange accessories.....	76
192.149 Standard fittings	80
192.150 Passage of internal inspection devices	80
192.151 Tapping	81
192.153 Components fabricated by welding	83
192.155 Welded branch connections	84
192.157 Extruded outlets	87
192.159 Flexibility.....	89
192.161 Supports and anchors.....	91
192.163 Compressor stations: Design and construction	93
192.165 Compressor stations: Liquid removal.....	94
192.167 Compressor stations: Emergency shutdown	95
192.169 Compressor stations: Pressure limiting devices	96
192.171 Compressor stations: Additional safety equipment.....	96
192.173 Compressor stations: Ventilation.....	97
192.175 Pipe-type and bottle-type holders	98
192.177 Additional provisions for bottle-type holders.....	99
192.179 Transmission line valves	100
192.181 Distribution line valves	102
192.183 Vaults: Structural design requirements	103
192.185 Vaults: Accessibility.....	103
192.187 Vaults: Sealing, venting, and ventilation.....	104
192.189 Vaults: Drainage and waterproofing	105
192.191 Design pressure of plastic fittings.....	105
192.193 Valve installation in plastic pipe	105
192.195 Protection against accidental overpressuring	106
192.197 Control of the pressure of gas delivered from high-pressure distribution systems	108
192.199 Requirements for design of pressure relief and limiting devices	109
192.201 Required capacity of pressure relieving and limiting stations	111
192.203 Instrument, control, and sampling pipe and components	113
 SUBPART E -- WELDING OF STEEL IN PIPELINES	 115
192.221 Scope	115
192.223 (Removed)	115
192.225 Welding procedures.....	115
192.227 Qualification of welders.....	116
192.229 Limitations on welders	116
192.231 Protection from weather	117
192.233 Miter joints.....	118
192.235 Preparation for welding.....	118
192.237 (Removed)	119
192.239 (Removed)	119
192.241 Inspection and test of welds	119
192.243 Nondestructive testing	121
192.245 Repair or removal of defects	122

SUBPART I -- REQUIREMENTS FOR CORROSION CONTROL	177
192.451 Scope	177
192.452 How does this subpart apply to converted pipelines and regulated onshore gathering lines?	177
192.453 General	178
192.455 External corrosion control: Buried or submerged pipelines installed after July 31, 1971	178
192.457 External corrosion control: Buried or submerged pipelines installed before August 1, 1971	180
192.459 External corrosion control: Examination of buried pipeline when exposed	181
192.461 External corrosion control: Protective coating	182
192.463 External corrosion control: Cathodic protection	183
192.465 External corrosion control: Monitoring	184
192.467 External corrosion control: Electrical isolation	188
192.469 External corrosion control: Test stations	191
192.471 External corrosion control: Test leads	192
192.473 External corrosion control: Interference currents	193
192.475 Internal corrosion control: General	193
192.476 Internal corrosion control: Design and construction of transmission line	196
192.477 Internal corrosion control: Monitoring	202
192.479 Atmospheric corrosion control: General	202
192.481 Atmospheric corrosion control: Monitoring	204
192.483 Remedial measures: General	205
192.485 Remedial measures: Transmission lines	205
192.487 Remedial measures: Distribution lines other than cast iron or ductile iron lines	207
192.489 Remedial measures: Cast iron and ductile iron pipelines	208
192.490 Direct assessment	208
192.491 Corrosion control records	209
 SUBPART J -- TEST REQUIREMENTS	 211
192.501 Scope	211
192.503 General requirements	211
192.505 Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS	212
192.507 Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i. (689 kPa) gage	215
192.509 Test requirements for pipelines to operate below 100 p.s.i. (689 kPa) gage	215
192.511 Test requirements for service lines	216
192.513 Test requirements for plastic pipelines	216
192.515 Environmental protection and safety requirements	220
192.517 Records	222
 SUBPART K -- UPRATING	 225
192.551 Scope	225
192.553 General requirements	225
192.555 Uprating to a pressure that will produce a hoop stress of 30 percent or more of SMYS in steel pipelines	227
192.557 Uprating: Steel pipelines to a pressure that will produce a hoop stress less than 30 percent of SMYS: plastic, cast iron, and ductile iron pipelines	229

SUBPART L -- OPERATIONS	233
192.601 Scope	233
192.603 General provisions	233
192.605 Procedural manual for operations, maintenance, and emergencies	234
192.607 (Removed and reserved)	242
192.609 Change in class location: Required study	242
192.611 Change in class location: Confirmation or revision of maximum allowable operating pressure	243
192.612 Underwater inspection and re-burial of pipelines in the Gulf of Mexico and its inlets	244
192.613 Continuing surveillance	246
192.614 Damage prevention program	250(b)
192.615 Emergency plans	258
192.616 Public awareness	267
192.617 Investigation of failures	271
192.619 Maximum allowable operating pressure: Steel or plastic pipelines	273
192.620 Alternative maximum allowable operating pressure for certain steel pipelines	275
192.621 Maximum allowable operating pressure: High-pressure distribution systems	284
192.623 Maximum and minimum allowable operating pressure: Low-pressure distribution systems	285
192.625 Odorization of gas	285
192.627 Tapping pipelines under pressure	288
192.629 Purging of pipelines	290
192.631 Control room management	290
 SUBPART M -- MAINTENANCE	 295
192.701 Scope	295
192.703 General	295
192.705 Transmission lines: Patrolling	299
192.706 Transmission lines: Leakage surveys	301
192.707 Line markers for mains and transmission lines	301
192.709 Transmission lines: Record keeping	302
192.711 Transmission lines: General requirements for repair procedures	303
192.713 Transmission lines: Permanent field repair of imperfections and damages	303
192.715 Transmission lines: Permanent field repair of welds	306
192.717 Transmission lines: Permanent field repair of leaks	306
192.719 Transmission lines: Testing of repairs	307
192.721 Distribution systems: Patrolling	307
192.723 Distribution systems: Leakage surveys	309
192.725 Test requirements for reinstating service lines	311
192.727 Abandonment or deactivation of facilities	311
192.729 (Removed)	314
192.731 Compressor stations: Inspection and testing of relief devices	314
192.733 (Removed)	315
192.735 Compressor stations: Storage of combustible materials	315
192.736 Compressor stations: Gas detection	315
192.737 (Removed)	316
192.739 Pressure limiting and regulating stations: Inspection and testing	316
192.741 Pressure limiting and regulating stations: Telemetry or recording gauges	318
192.743 Pressure limiting and regulating stations: Capacity of relief devices	320
192.745 Valve maintenance: Transmission lines	322
192.747 Valve maintenance: Distribution systems	323

192.749	Vault maintenance	324
192.751	Prevention of accidental ignition.....	325
192.753	Caulked bell and spigot joints.....	329
192.755	Protecting cast-iron pipelines.....	329
192.761	(Removed)	330
SUBPART N -- QUALIFICATION OF PIPELINE PERSONNEL		331
192.801	Scope	331
192.803	Definitions	332
192.805	Qualification program.....	335
192.807	Recordkeeping.....	341
192.809	General	342
SUBPART O -- GAS TRANSMISSION PIPELINE INTEGRITY MANAGEMENT.....		345
192.901	What do the regulations in this subpart cover?	345
192.903	What definitions apply to this subpart?.....	346
192.905	How does an operator identify a high consequence area?.....	349
192.907	What must an operator do to implement this subpart?.....	354
192.909	How can an operator change its integrity management program?.....	357
192.911	What are the elements of an integrity management program?	358
192.913	When may an operator deviate its program from certain requirements of this subpart?	368
192.915	What knowledge and training must personnel have to carry out an integrity management program?	369
192.917	How does an operator identify potential threats to pipeline integrity and use the threat identification in its integrity program?	371
192.919	What must be in the baseline assessment plan?	373
192.921	How is the baseline assessment to be conducted?	377
192.923	How is direct assessment used and for what threats?	381
192.925	What are the requirements for using External Corrosion Direct Assessment (ECDA)?	382
192.927	What are the requirements for using Internal Corrosion Direct Assessment (ICDA)?.....	405
192.929	What are the requirements for using Direct Assessment for Stress Corrosion Cracking (SCCDA)?	420
192.931	How may Confirmatory Direct Assessment (CDA) be used?.....	421
192.933	What actions must an operator take to address integrity issues?.....	424
192.935	What additional preventive and mitigative measures must an operator take?.....	429
192.937	What is a continual process of evaluation and assessment to maintain a pipeline's integrity?	435
192.939	What are the required reassessment intervals?	436(b)
192.941	What is a low stress reassessment?.....	441
192.943	When can an operator deviate from these reassessment intervals?.....	443
192.945	What methods must an operator use to measure program effectiveness?.....	445
192.947	What records must an operator keep?	446
192.949	How does an operator notify PHMSA?.....	448
192.951	Where does an operator file a report?	449

SUBPART P – GAS DISTRIBUTION PIPELINE INTEGRITY MANAGEMENT (IM)	451
192.1001 What definitions apply to this subpart?.....	451
192.1003 What do the regulations in this subpart cover?	451
192.1005 What must a gas distribution operator (other than a master meter or small LPG operator) do to implement this subpart?	452
192.1007 What are the required elements of an integrity management (IM) plan?	452
192.1009 What must an operator report when compression couplings fail?	454
192.1011 What records must an operator keep?	454
192.1013 When may an operator deviate from required periodic inspections under this part?	455
192.1015 What must a master meter or small liquefied petroleum gas (LPG) operator do to implement this subpart?	455

APPENDICES TO PART 192

Appendix A (Removed and reserved)	457
Appendix B Qualification of Pipe	459
Appendix C Qualification of Welders for Low Stress Level Pipe	463
Appendix D Criteria for Cathodic Protection and Determination of Measurements	467
Appendix E Guidance on Determining High Consequence Areas and on Carrying out Requirements in the Integrity Management Rule	469

GUIDE MATERIAL APPENDICES

Guide Material Appendix G-191-1	Telephonic notice worksheet	477
Guide Material Appendix G-191-2	Distribution system incident report.....	479
Guide Material Appendix G-191-3	Distribution system annual report	481
Guide Material Appendix G-191-4	Distribution system mechanical fitting failure report.....	483
Guide Material Appendix G-191-5	Transmission and gathering systems incident report.....	485
Guide Material Appendix G-191-6	Transmission and gathering systems annual report	487
Guide Material Appendix G-191-7	Determination of reporting requirements for safety-related conditions	489
Guide Material Appendix G-191-8	Safety-related condition report to United States Department of Transportation.....	491
Guide Material Appendix G-192-1	Summary of references and related sources	493
Guide Material Appendix G-192-1A	Editions of material specifications, codes and standards previously incorporated by reference in the Regulations	521
Guide Material Appendix G-192-2	Specified minimum yield strengths	525
Guide Material Appendix G-192-3	Flexibility factor <i>k</i> and stress intensification factor <i>i</i>	529
Guide Material Appendix G-192-4	Rules for reinforcement of welded branch connections	533
Guide Material Appendix G-192-5	Pipe end preparation.....	543
Guide Material Appendix G-192-6	Substructure damage prevention guidelines for directional drilling and other trenchless technologies	549
Guide Material Appendix G-192-7	Large-scale distribution outage response and recovery.....	551
Guide Material Appendix G-192-8	Distribution Integrity Management Program (DIMP)	555

Guide Material Appendix G-192-9	Test conditions for pipelines other than service lines	585
Guide Material Appendix G-192-10	Test conditions for service lines.....	587
Guide Material Appendix G-192-11	Gas leakage control guidelines for natural gas systems	589
Guide Material Appendix G-192-11A	Gas leakage control guidelines for petroleum gas systems.....	611
Guide Material Appendix G-192-12	Planned shutdown.....	631
Guide Material Appendix G-192-13	Considerations to minimize damage by outside forces	635
Guide Material Appendix G-192-14	In-line inspection	639
Guide Material Appendix G-192-15	Design of uncased pipeline crossings of highways and railroads.....	645
Guide Material Appendix G-192-15A	Horizontal directional drilling (HDD) for steel pipelines.....	649
Guide Material Appendix G-192-15B	Horizontal directional drilling (HDD) for plastic pipe	653
Guide Material Appendix G-192-16	Substructure damage prevention guidelines	657
Guide Material Appendix G-192-17	Explicit requirements for reports, inspections, tests, written procedures, records and similar actions.....	661
Guide Material Appendix G-192-18	Cast iron pipe	669
Guide Material Appendix G-192-19	Memorandum of understanding between the Department of Transportation and the Department of the Interior regarding outer continental shelf pipelines	673
Guide Material Appendix G-192-20	Fusion equipment maintenance/repair inspection form.....	677
Guide Material Appendix G-192-21	[Reserved]	679
Guide Material Appendix G-192-M	SI (metric) units	681
INDEX		685

Reserved

PREFACE

The guide material presented in the Gas Piping Technology Committee's (GPTC) Guide for Gas Transmission and Distribution Piping Systems (Guide) contains information and some "how to" methods to assist the operator in complying with the Code of Federal Regulations (CFR), Title 49 as follows:

- Part 191 -- Transportation of Natural and Other Gas by Pipeline: Annual Reports, Incident Reports, and Safety-Related Condition Reports
- Part 192 -- Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards

Parts 191 and 192 are typically referred to hereinafter as the "Regulations."

The recommendations contained in the Guide are based on sound engineering principles developed by a committee balanced in accordance with accepted committee procedures and must be applied by the use of sound and competent judgment. The guide material is advisory in nature and contains guidance and information for consideration in complying with the Regulations. As such, it is not intended for public authorities or others to adopt the Guide in mandatory language, in whole or in part, in laws, regulations, administrative orders, ordinances, or similar instruments as the sole means of compliance.

The operator is cautioned that the guide material may not be adequate under all conditions encountered, and should not restrict the operator from using other methods of complying with the Regulations. Following the Guide does not ensure that an operator is automatically in compliance with the requirements of Parts 191 and 192. Operators of intrastate facilities are also cautioned that some states have additional or more stringent requirements than Parts 191 and 192.

HISTORY

The Natural Gas Pipeline Safety Act became effective on August 12, 1968. It required the Secretary of Transportation to adopt interim rules within three months which were to consist of the existing state standards, where such standards existed, or the standards common to a majority of states where no state standard existed, and to establish minimum federal standards within twenty-four months. The safety standard for gas pipelines and mains, in the majority of the states, was the American National Standard Code for Pressure Piping, Gas Transmission and Distribution Piping Systems, B31.8. Thus, the interim minimum safety standards were essentially B31.8 Code requirements.

Between August 12, 1968 and August 12, 1970, the Office of Pipeline Safety (OPS) of the United States Department of Transportation (DOT) developed safety standards which would be applicable to gas facilities, with the exception of rural gas gathering systems. As a result, Title 49 Part 192 of the Code of Federal Regulations (CFR) "Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards" became effective November 12, 1970.

Since the sponsoring organization of the ANSI B31.8 Committee was The American Society of Mechanical Engineers (ASME), the ASME initiated discussions with the DOT/OPS, in an effort to establish the future role of the B31.8 Code Committee with respect to pipeline safety. As a result of those discussions, the ASME decided to form the ASME Gas Piping Standards Committee. The title of the Committee was changed to the Gas Piping Technology Committee (GPTC) on September 20, 1982.

The first edition of the "Guide for Gas Transmission and Distribution Piping Systems" was published on December 15, 1970. It was essentially a compilation of the Federal Safety Standards and the then current ANSI B31.8 Code material that was relevant to the Part 192 requirements. Subsequent editions and addenda to the "Guide" had "how to" Guide Material directly following each of the standards of 49 CFR Part 192, and numerous guide appendices. Part 191 was subsequently added to the 1995 edition of the Guide.