

October 9, 2009

Dear *Guide* Purchaser,

Enclosed is Addendum 1 to ANSI GPTC Z380, *Guide for Gas Transmission and Distribution Piping Systems*, 2009 Edition. Addenda are formatted to enable the replacement of pages in your *Guide* with the updated enclosed pages. Please follow the table on page 2.

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

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GPTC GUIDE FOR GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEMS

2009 EDITON

ADDENDUM 1, May 2009

The primary changes in this addendum are marked by wide vertical lines inserted to the left of modified text, overwriting the left border of most tables, and use of a block symbol (¶) where needed. The Federal Regulations were changed by one amendment action that affected one section of the Guide, being §192.7. Seven GPTC transactions affected 13 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 affected 12 sections of the guide.

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

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Full document details: AGA Z380.1 ADD 1 2009

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 thru xi/xii	vii/viii thru xi/xii
Historical Reconstruction of Part 192	RIN 2137-AE42	xxv/xxvi	xxv/xxvi
Historical Record of Amendments to Part 192	RIN 2137-AE42	lv/lvi thru lxx/lxvi	lv/lvi thru lxx/lxvi
Membership List	EU		
Subpart A 192.3	TR03-19, TR03-45, TR04-61	17/18, 21/22 thru 27/28	17/18, 21/22 thru 27/28
192.7	RIN 2137-AE42		
Subpart C 192.121	EU	59/60	59/60
Subpart F 192.279	TR08-07	119/120, 121/122	119/120, 121/122
192.281	TR07-01		
192.283	TR07-01	125/126	125/126
Subpart G 192.319	TR00-11	137/138	137/138
Subpart H 192.361	TR00-11	155/156	155/156
192.367	EU	159/160	159/160
Subpart I 192.489	EU	195/196	195/196
Subpart K 192.557	EU, TR06-14	213/214, 215/216	213/214, 215/216
Subpart L 192.612	TR04-61	229/230 thru 237/238	229/229(a) thru 237/238
192.613	TR03-45		
192.614	TR06-14, TR07-01		
Subpart M 192.749	EU	297/298	297/298
192.755	TR06-14	303/304	303/304
GMA G-192-1	EU, TR00-11, TR03-45, TR06-14, TR08-07	417/418 thru 437/438	417/418 thru 437/438
GMA-G-192-3	EU	447/448	447/448
GMA G-192-8	EU	477/478	477/478
GMA G-192-15A	TR00-11	561/562, 563/564	561/562, 563/564
GMA G-192-15B (New)	TR00-11	(None)	564(a)/564(b), 564(c)/564(d)
GMA-G-192-17	EU	569/570 thru 573/574	569/570 thru 573/574
GMA G-192-18	TR06-14	575/576	575/576

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2009 Edition

Addendum 1, May 2009

an American National Standard

Author:
Gas Piping Technology Committee (GPTC) Z380
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Approved by
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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.

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	192.3		192-13, 192-27, 192-58, 192-67, 192-72 + Ext., 192-78, 192-81, 192-85, 192-89, RIN 2137-AD43, 192-93, 192-94, 192-98, RIN 2137-AD77
	192.5		192-27, 192-56, 192-78, 192-85
	192.7		192-37, 192-51, 192-68, 192-78, 192-94, RIN 2137-AD77, 192-99, 192-102, 192-103, RIN 2137-AE29, RIN 2137-AE25, RIN 2137-AE29 (#2), RIN 2137-AE42
	192.8	04/14/06	192-102
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	192.10	03/19/98	192-81, RIN 2137-AD77
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	[192.12]		192-10, 192-36 (removed)
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	[192.17]	01/01/71	192-1, 192-27A Ext., 192-38 (removed)
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	192.65		192-12, 192-17, 192-68

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Part 192 Subpart	Part 192 Section	Effective Date of Original Version if other than 11/12/70	Amendments (if any)
SUBPART C – PIPE DESIGN	192.101	12/22/08	192-47, 192-85 192-78, 192-84, 192-85 192-85 192-27 RIN 2137-AE25 192-37, 192-51, 192-62, 192-68, 192-85, 192-94 192-85 192-37, 192-62 (removed and reserved) 192-62 (removed and reserved) 192-31, 192-78, 192-85, 192-94, 192-103, RIN 2137-AE26 192-31, 192-78, 192-85, 192-93, 192-94, 192-103, RIN 2137-AE26 192-62, 192-85
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Amdt 192-	Subject	Vol FR Pg#	Published Date	Docket or RIN No.	Effective Date	Affected Sections 192.
[No Amdt No.]	Standards for Increasing the Maximum Allowable Operating Pressure for Gas Transmission Pipelines	73 FR 72737	12/01/08	RIN 2137- AE25 [Ref. as "Eff. date stayed"]	12/22/08	112, 328, 611, 619, 620
[No Amdt No.]	Polyamide-11 (PA-11) Plastic Pipe Design Pressures	73 FR 79002	12/24/08	RIN 2137- AE26	01/23/09	121, 123
[No Amdt No.]	Administrative Procedures, Address Updates, and Technical Amendments [Adopts interim final rule with modifications.]	74 FR 2889	01/16/09	RIN 2137- AE29 [Ref. as (#2)]	02/17/09	7, 727, 949, 951
[No Amdt No.]	Incorporated by Reference Update: American Petroleum Institute (API) Standards 5L and 1104*	74 FR 17099	04/14/09	RIN 2137- AE42	04/14/09	7
* Issued as a Direct Final Rule (DFR) or Interim Final Rule.						

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GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST

Abbreviations: Chairperson: Chair First Vice Chairperson: 1 st V Chair Second Vice Chairperson: 2 nd V Chair Secretary: Sec Damage Prevention - Emergency Response: DP/ER Operation and Maintenance: O&M	Main Body	DIVISIONS			TASK GROUPS					SECTIONS			
		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Abraham, Richard A. Marathon Pipe Line LLC, Findlay, OH	X	X				X				X			
Affonso, Joaquin J. Consumers Energy, Jackson, MI	X			X		X	X						X
Alexander, Thomas D. Willbros Engineers, Inc., Tulsa, OK				X	X								
Amick, Patrick M. Marathon Oil Co., Houston, TX				X				X					
Armstrong, Glen F. EN Engineering, Woodridge, IL	X	Chair				X	X		X		X		
Ashcraft, Nicholas D. Mears Group, Columbus, OH		X					X						
Barkei, David E. We Energies, Milwaukee, WI		X			X		X						
Bateman, Stephen C. City of Long Beach – Gas & Oil Dept., Long Beach, CA		X											
Beaver, Brett Advantica, Mechanicsburg, PA		X			X		X						
Becken, Robert C. Energy Experts International, Pleasant Hill, CA	X			X	X			X					

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Benedict, Andrew G. Opvantek, Inc., Newtown, PA		X						X					
Bennett, Frank M. PPL Interstate Energy Company, Pottstown, PA		X				X	Sec						
Bevers, Bruce S. Williams Gas Pipeline, Houston, TX				X		X		X					
Blaney, Steven D. NY State Dept. of Public Service, Albany, NY	X	X				X	X			X			
Booth, Lloyd E. Telemark Solutions, Coppell, TX			X		X			X					
Boros, Stephen Plastics Pipe Institute, Irving, TX			X						X				
Breaux, David A. BROEN, Inc., Birmingham, AL			X		X			X					
Brown, Charles E. NTH Consultants, Ltd., Lansing, MI		X				X		X					
Bryce, Wayne CINA Corporation, Mahwah, NJ		X					X		X				
Bull, David E. ViaData LP, Tobyhanna, PA	X	X				Sec		X					X
Butler, John Equitable Resources, Charleston, WV					X		X						

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		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Cabot, Paul W. American Gas Association, Washington, DC	Sec										Sec		
Cadorin, Robert J. TransCanada Corp., Troy, MI	X			Sec				X					
Cardin, Jeanne L. Southwest Gas Corp., Las Vegas, NV				X			X						
Carpenter, Robert Southern California Gas Co., San Diego, CA		X				X	X						
Chin, John S. TransCanada Corp., Troy, MI	X			X	X	X	Chair				X		
Clarke, Allan M. Spectra Energy Corp., Houston, TX				X	X	X	X						
Cody, Leo T. National Grid, Waltham, MA		X				X		X					
Craig, Jim M. McElroy Manufacturing, Inc., Tulsa, OK			X					X	X				
Del Buono, Amerigo J. Steel Forgings, Inc., League City, TX	X		X										
DeVore, James C. Consultant, Green Valley, AZ			X		X		X		X				

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Dolezal, Denise L. Metropolitan Utilities District, Omaha, NE		X			X		X						
Duncombe, Lauri Williams Gas Pipeline, Salt Lake City, UT				X	X		X						
Erickson, John P. American Public Gas Association, Washington, DC		X						X					
Faulkenberry, Michael J. Avista Corp., Spokane, WA		X			X			X					
Fleet, F. Roy F. Roy Fleet, Inc., Westmont, IL	X			X		X				X			
Frantz, John H. Consultant, Philadelphia, PA	X	X						X	X		X	Chair	
Frederick, Victor M., III Omega Tools, Allentown, PA			X					X	X				
Friend, Mary S. Columbia Gas Trmn. Corp., Charleston, WV	X			X		X		X					
Fuller, William R., Jr. Xcel Energy Inc., Denver, CO		X			X		X		X				
Galante, Julie CYCLA Corp., Oakton, VA		X					X						

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		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Gilchrist, Hart Intermountain Gas Co., Boise, ID		X						X					
Goble, Gregory H. R. W. Lyall & Co., Corona, CA	X		X		X				X				
Groeber, Steven A. Philadelphia Gas Works, Philadelphia, PA		X				X		X	X	X			
Gunther, Karl M. NTSB, Washington, DC	X	X							X				
Hansen, James P. Elster Perfection Corp., Madison, OH			X				X						
Hart, Thomas L. NSTAR Electric & Gas Corp., Westwood, MA		X				X		X					
Hazelden, Glyn Hazelden Group, Oak Park, IL		X				X		X					
Heintz, James R. UGI Utilities, Inc., Reading, PA	1 st V Chair										Chair		
Henry, Jill A. Ohio PUC, Columbus, OH	X	X				X			X				
Hotinger, James M. VA State Corp. Comm., Richmond, VA		X				X	X						

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		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Humes, Dennis W. Mueller Co.- Gas Products Div., Decatur, IL	X		X										
Hurbanek, Stephen F. NC Utilities Commission, New Bern, NC		X				X							
Huriaux, Richard D. Consulting Engineer, Baltimore, MD	X			X			X						
Kottwitz, John D. MO Public Service Comm., Jefferson City, MO	X	X				Chair		X		X	X		
Koym, Brent L. CenterPoint Energy, Pearl, MS		X			X		X						
Krummert, Lawrence M. Columbia Gas of PA, Inc., New Castle, PA		X						X					
Lewis, Raymond D. Rosen USA, Houston, TX				X			X						X
Loker, Jon O. Pipeline Safety Consultant, Saint Albans, WV	X			X						Chair	X		
Lomax, George S. Heath Consultants Inc., Houston, TX	X		X			X		X					
Lopez, Paul A. El Paso Corp., Colorado Springs, CO				X				X					

GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST

(Continued)

Abbreviations: Chairperson: Chair First Vice Chairperson: 1 st V Chair Second Vice Chairperson: 2 nd V Chair Secretary: Sec Damage Prevention - Emergency Response: DP/ER Operation and Maintenance: O&M	Main Body	DIVISIONS			TASK GROUPS					SECTIONS			
		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Lueders, John D. DTE Energy - MichCon, Grand Rapids, MI		X				X		X					
Mackay-Smith, Seth UMAC Inc., Malvern, PA	X		X		X	X							
Marek, Marti Southwest Gas Corp., Las Vegas, NV	Chair										X		
McKenzie, James E. Atmos Energy Corp., Jackson, MS		X			X		X						
Miller, D. Lane PHMSA-OPS, Oklahoma City, OK	X	X					X		X	Sec			
Modha, Kirit S. Iroquois Gas Transmission System, Shelton, CT				X			X						
Myers, Clyde A. DOT-PHMSA, Washington, DC				X			X						
Naper, Robert C. Energy Experts International, Waltham, MA	X	X				X							
Nichols, Danny Energy Transfer Company, Houston, TX				X		X	X						
Oleksa, Paul E. Oleksa & Assoc., Akron, OH	X	X			X		X			X			X

GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST

(Continued)

Abbreviations: Chairperson: Chair First Vice Chairperson: 1 st V Chair Second Vice Chairperson: 2 nd V Chair Secretary: Sec Damage Prevention - Emergency Response: DP/ER Operation and Maintenance: O&M	Main Body	DIVISIONS			TASK GROUPS					SECTIONS			
		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Palermo, Eugene F. Palermo Plastics Pipe Consulting, Friendsville, TN	X		X		X				X				
Peters, Kenneth C. El Paso Corporation, Birmingham, AL	X			Chair		X		Sec			X		
Peterson, Barry A. Performance Pipe, Concord, CA			X						X				
Pioli, Christopher A. Jacobs Consultancy, Pasadena, CA		X			X	X	X						
Quezada, Leticia Nicor Gas, Naperville, IL	X	X				X			X		X		Chair
Reynolds, Donald Lee NiSource Corporate Services, Columbus, OH	X	X			Chair		X				X		
Schmidt, Robert A. Hackney Ladish Inc., Russellville, AR	X		Chair		X						X		
Schow, Boyd L. Williams Gas Pipeline, Salt Lake City, UT				X			X						
Schrunk, Rex Wilbros Engineers, Inc., Kansas City, MO				X			X						
Scott, Edward W. Ameren Services Company, St. Louis, MO		X					X		X				

GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST

(Continued)

Abbreviations: Chairperson: Chair First Vice Chairperson: 1 st V Chair Second Vice Chairperson: 2 nd V Chair Secretary: Sec Damage Prevention - Emergency Response: DP/ER Operation and Maintenance: O&M	Main Body	DIVISIONS			TASK GROUPS					SECTIONS			
		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Seamands, Patrick A. Laclede Gas Co., Saint Louis, MO		X				X			X	X			
Sher, Philip CT Dept. Public Utility Control, New Britain, CT	2 nd V Chair										X		
Siedlecki, Walter V. AEGIS Insurance Services, Inc., East Rutherford, NJ	X	X						X					
Slagle, Richard L. Vectren Energy Delivery, Evansville, IN	X	Sec				X			Chair		X		
Smallwood, Larry Southern Cross Corp., Norcross, GA		X						X					
Themig, Jerome S. Ameren Illinois Utilities, Pawnee, IL		X				X		X					
Torbin, Robert N. Cutting Edge Solutions LLC, Framingham, MA		X					X						
Troch, Steven J. Baltimore Gas & Electric Co., Baltimore, MD		X					X					X	X
Ulanday, Alfredo S. Michigan Gas Utilities, Chicago, IL		X				X		X					
Veerapaneni, Ram DTE Energy – MichCon, Detroit, MI	X			X		X	X			X			X

GAS PIPING TECHNOLOGY COMMITTEE MEMBERSHIP LIST

(Continued)

<div>Abbreviations: Chairperson: Chair First Vice Chairperson: 1st V Chair Second Vice Chairperson: 2nd V Chair Secretary: Sec Damage Prevention - Emergency Response: DP/ER Operation and Maintenance: O&M</div>	Main Body	DIVISIONS			TASK GROUPS					SECTIONS			
		Distribution	Manufacturers	Transmission	Design	DP/ER	IMP/Corrosion	O&M/OQ	Plastic Pipe	Editorial	Executive	Liaison	Regulations
Volgstadt, Frank R. Volgstadt & Associates, Madison, OH	X		Sec						Sec				
Weber, David E. Consultant Engineer, Barnstable, MA	X	X							X	X			X
Wells, William M. New Jersey Natural Gas, Wall, NJ		X				X		X					
White, Gary R. PI Confluence, Inc., Houston, TX		X					X						
Wilkes, Alfred L. Performance Pipe, Plano, TX			X		X				X				
Yehle, Steve Excel Energy, St. Paul, MN		X							X				

GUIDE MATERIAL

Glossary of Commonly Used Terms

(For Glossary of Commonly Used Abbreviations, see Table 192.3i below.)

Abandoned pipeline is a pipeline that is physically separated from its source of gas and is no longer maintained under Part 192.

Abandonment is the process of abandoning a pipeline.

Adhesive joint is a joint made in thermosetting plastic piping by the use of an adhesive substance that forms a bond between the mating surfaces without dissolving either one of them.

Ambient temperature is the temperature of the surrounding medium, usually used to refer to the temperature of the air in which a structure is situated or a device operates. See also *Ground Temperature and Temperature*.

Bell-welded pipe is furnace-welded pipe that has a longitudinal butt joint that is forge-welded by the mechanical pressure developed in drawing the furnace-heated skelp through a cone-shaped die. The die, commonly known as a "welding bell," serves as a combined forming and welding die. This type of pipe is produced in individual lengths from cut-length skelp. Typical specifications: ASTM A53, API Spec 5L. See also *Furnace-butt-welded pipe and Pipe manufacturing processes*.

Bottle is a gastight structure which is (1) completely fabricated by the manufacturer from pipe with integral drawn, forged, or spun end closures; and (2) tested in the manufacturer's plant. See also *Bottle-type holder*.

Bottle-type holder is any bottle or group of interconnected bottles installed in one location, and used for the sole purpose of storing gas. See also *Bottle*.

Carbon steel. By common custom, steel is considered to be carbon steel where (i) no minimum content is specified or required for aluminum, boron, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium, or any other element added to obtain a desired alloying effect; (ii) the specified minimum content for copper does not exceed 0.40 percent; or (iii) the specified maximum content does not exceed 1.65 percent for manganese, 0.60 percent for silicon or 0.60 percent for copper.

All carbon steels may contain small quantities of unspecified residual elements unavoidably retained from raw materials. These elements (copper, nickel, molybdenum, chromium, etc.) are considered incidental and are not normally determined or reported.

Cast iron. The unqualified term cast iron applies to gray-cast iron that is a cast ferrous material in which a major part of the carbon content occurs as free carbon in the form of flakes interspersed through the metal.

Cold-expanded pipe is seamless or welded pipe which is formed and then, expanded in the pipe mill while cold, so that the circumference is permanently increased by at least 0.50 percent.

Continuous-welded pipe is furnace-welded pipe which has a longitudinal butt joint that is forge-welded by the mechanical pressure developed in rolling the hot-formed skelp through a set of round pass welding rolls. It is produced in continuous lengths from coiled skelp and subsequently cut into individual lengths. Typical specifications: ASTM A53, API Spec 5L. See also *Furnace-butt-welded pipe and Pipe manufacturing processes*.

Control piping is pipe, valves, and fittings used to interconnect air, gas, or hydraulically operated control apparatus.

Curb valve is a type of service-line valve installed for the purpose of shutting off gas supply. It is typically installed below grade at or near the property line.

Deactivation (Inactivation) is the process of making the pipeline inactive.

District regulator station or district pressure regulating station is a pressure regulating station that controls pressure to a high- or low-pressure distribution main. It does not include pressure regulation whose sole function is to control pressure to a manifold serving multiple customers.

Double submerged-arc-welded pipe is a pipe having longitudinal or spiral butt joints. The joints are produced by at least two passes, including at least one each on the inside and on the outside of the pipe. Coalescence is produced by heating with an electric arc or arcs between the bare metal electrode or electrodes and the work. The welding is shielded by a blanket or granular, fusible material on the work. Pressure is not used and filler metal for the inside and outside welds is obtained from the electrode or electrodes. Typical specifications: ASTM A381, API Spec 5L. See also *Pipe manufacturing processes*.

Ductile iron (sometimes called nodular iron) is a cast ferrous material in which the free graphite present is in a spheroidal form rather than a flake form. The desirable properties of ductile iron are achieved by means of chemistry and a ferritizing heat treatment of the castings.

Electric-flash-welded pipe is pipe having a longitudinal butt joint wherein coalescence is produced, simultaneously over the entire area of abutting surfaces, by the heat obtained from resistance to the flow of electric current between the two surfaces, and by the application of pressure after heating is substantially completed. Flashing and upsetting are accompanied by the expulsion of metal from the joint. Typical specification: API Spec 5L. See also *Pipe manufacturing processes*.

Electric-fusion-welded pipe is pipe having a longitudinal butt joint wherein coalescence is produced in the preformed tube by manual or automatic electric-arc welding. The weld may be single or double and may be made with or without the use of filler metal. Typical specifications: ASTM A134, ASTM A139: Single or double weld is permitted with or without the use of filler metal. ASTM A671, ASTM A672, ASTM A691, and API Spec 5L: Requires both inside and outside welds and use of filler metal.

Spiral-welded pipe is also made by the electric-fusion-welded process with either a butt joint, a lap joint or a lock-seam joint. Typical specifications: ASTM A134, ASTM A139, and API Spec 5L: Butt joint. ASTM A211: Butt joint, lap joint, or lock-seam joint. See also *Pipe manufacturing processes*.

Electric-resistance-welded pipe is pipe, which has a longitudinal butt joint wherein coalescence, is produced by the application of pressure and by the heat obtained from the resistance of the pipe to the flow of an electric current in a circuit of which the pipe is a part. It is produced in individual lengths or in continuous lengths from coiled skelp and subsequently cut into individual lengths. Typical specifications: ASTM A53, ASTM A135, and API Spec 5L. See also *Pipe manufacturing processes*.

Excess Flow Valve (EFV) is a device installed in a gas pipeline to automatically restrict or shut off the gas flow through the line when the flow exceeds a predetermined limit.

Excess Flow Valve-Bypass (EFVB) is an EFV that is designed to limit the flow of gas upon closure to a small, predetermined level. EFVBs reset automatically once the line downstream is made gastight and pressure is equalized across the valve.

Excess Flow Valve-Non-Bypass (EFVNB) is an EFV that is designed to stop the flow of gas upon closure. EFVNBs must be manually reset.

Furnace-butt-welded pipe. There are two such types of pipe defined in this glossary: *Bell-welded pipe* and *Continuous-welded pipe*. See also *Pipe manufacturing processes*.

Furnace-lap-welded pipe is pipe that has a longitudinal lap joint that is produced by the forge welding process. In this process, coalescence is produced by heating a preformed tube to welding temperature and then passing it over a mandrel. The mandrel is located between the two welding rolls that compress and weld the overlapping edges. Typical specification: API Spec 5L. The manufacture of this type of pipe was discontinued, and the process was deleted from API Spec 5L in 1962. See also *Pipe manufacturing processes*.

Gas control is a person or persons who acquire and maintain data to remotely monitor and direct the flow of gas to meet design and contractual obligations, and to assist in detecting pipeline emergencies and initiating response.

Ground temperature is the temperature of the earth at pipe depth. See also *Ambient temperature and Temperature*.

Heat-fusion joint is a joint made in thermoplastic piping by heating the parts sufficiently to permit fusion of the materials when the parts are pressed together.

Holiday is a coating imperfection that exposes the pipe surface to the environment.

Pressure regulating station consists of apparatus installed for the purpose of automatically reducing and regulating the gas pressure in the downstream transmission line, main, holder, pressure vessel or compressor station piping to which it is connected. Included in the station are any enclosures and ventilating equipment, and any piping and auxiliary equipment, such as valves, control instruments, or control lines.

Pressure relief station consists of apparatus installed to vent gas from a transmission line, main, holder, pressure vessel, or compressor station piping in order to prevent the gas pressure from exceeding a predetermined limit. The gas may be vented into the atmosphere or into a lower pressure gas system capable of safely receiving the gas being discharged. Included in the station are any enclosures and ventilating equipment, and any piping and auxiliary equipment, such as valves, control instruments, or control lines.

Private rights-of-way are those that are not located on roads, streets or highways used by the public, or on railroad rights-of-way.

Proprietary items are items made by a company having the exclusive right of manufacture.

Public place is a place that is generally open to all persons in a community as opposed to being restricted to specific persons. A public place includes churches, schools, and commercial property, as well as any publicly owned right-of-way or property that is frequented by people.

Regulators. See *Pressure limiting station*, *Pressure regulating station*, *Pressure relief station*, and *Service regulator*.

Sample piping is pipe, valves, and fittings used for the collection of samples of gas or other fluids.

SCADA is supervisory control and data acquisition. SCADA is a remote control system that allows the transmission of data from a remote site (e.g., a delivery point) to a central control location. SCADA systems are used to monitor and control flow, pressure, and other parameters of the pipeline system. SCADA systems may generate an alarm when an event has occurred or an unusual situation is developing.

Seamless pipe is a wrought tubular product made without a welded seam. It is manufactured by hot working steel or, if necessary, by subsequently cold finishing the hot-worked tubular product to produce the desired shape, dimensions, and properties. See also *Pipe manufacturing processes*.

Secondary stress is stress created in the pipe wall by loads other than internal fluid pressure. Examples are backfill loads, traffic loads, beam action in a span and loads at supports and at connections to the pipe.

Service-line valve is a valve located in a service line and meets the requirements of §192.363. A service-line valve may be a curb valve, or other valve, located upstream of the:

- (a) service regulator,
- (b) meter and any meter bypass, where there is no service regulator, or
- (c) connection to customer piping if there is no meter.

Slack loop is extra pipe length installed to counter the effects of pipe expansion and contraction.

Solvent cement joint is a joint made in PVC piping by using solvent cement to join the piping components.

Standup pressure test is a test to demonstrate that a pipe or piping system does not leak as evidenced by the lack of a drop in pressure over a specified period of time after the source of pressure has been isolated.

Steel is an iron-base alloy, malleable in some temperature range as initially cast, containing manganese, carbon, and often other alloying elements. See also *Carbon steel*.

Stress is the resultant internal force that resists change in the size or shape of a body acted on by external forces. See also *Hoop stress*, *Maximum allowable hoop stress*, *Operating stress*, *Secondary stress*, *Tensile strength*, and *Yield strength*.

Stress corrosion cracking of metallic pipe is the formation of cracks, typically in a colony or cluster, as a result of the interaction of tensile stress, a corrosive environment, and a susceptible material.

Temperature (expressed in degrees Fahrenheit (°F) unless otherwise stated). See also *Ambient temperature* and *Ground temperature*.

Tensile strength is the highest unit tensile stress (referred to the original cross section) that a material can sustain before failure (psi)

Thermoplastic is a plastic that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature. Examples of thermoplastic materials include polyethylene (PE), polyamide (PA or nylon), and polyvinyl chloride (PVC).

Thermosetting plastic is a plastic that is capable of being changed into a substantially infusible or insoluble product when cured under the application of heat or by chemical means. Examples of thermosetting plastic materials include:

- (a) Epoxy as used in epoxy fiberglass pipe, "Red Thread®" pipe, and fiber-reinforced pipe (FRP); and

(b) Unsaturated polyester as used in fiberglass composites for steel pipe repair sleeves, and cured-in-place (CIP).

Thickness. See *Nominal wall thickness*.

Valve. See *Curb valve* and *Service-line valve*.

Vault is an underground structure which may be entered, and which is designed to contain piping and piping components, such as valves or pressure regulators.

Yield strength is the strength at which a material exhibits a specified limiting permanent set, or produces a specified total elongation under load. The specified limiting set or elongation is usually expressed as a percentage of gage length, and its values are specified in the various material specifications acceptable under this Guide.

GLOSSARY OF COMMONLY USED ABBREVIATIONS	
<i>Note:</i> For added organizational abbreviations, see Guide Material Appendix G-192-1, Sections 4 and 5.	
Abbreviation	Meaning
ABS	acrylonitrile-butadiene-styrene
ACVG	alternating current voltage gradient
ASV	automatic shutoff valve
BAP	baseline assessment plan
CAB	cellulose acetate butyrate
CDA	confirmatory direct assessment
CGI	combustible gas indicator
CIS	close-interval survey
CP	cathodic protection
DA	direct assessment
DCVG	direct current voltage gradient
ECDA	external corrosion direct assessment
EFV	excess flow valve
EFVB	excess flow valve – bypass (automatic reset)
EFVNB	excess flow valve – non-bypass (manual reset)
ERW	electric resistance welded
ESD	emergency shutdown
FAQ	frequently asked question
GIS	geographic information system
GPS	global positioning system
HCA	high consequence area
HDB	hydrostatic design basis
HFI	hydrogen flame ionization
IC	internal corrosion
ICDA	internal corrosion direct assessment
ICS	Incident Command System
ILI	In-line inspection
IMP	integrity management program
IR drop	voltage drop
LEL	lower explosive limit
LNG	liquefied natural gas
LPG	liquid petroleum gas
LTHS	long-term hydrostatic strength

GLOSSARY OF COMMONLY USED ABBREVIATIONS (Continued)	
Abbreviation	Meaning
MAOP	maximum allowable operating pressure
MRS	minimum required strength
NDE	nondestructive evaluation
NPS	nominal pipe size
O&M	operations and maintenance
OCS	outer continental shelf
OQ	operator qualification
PA	polyamide
P&M measures	preventive and mitigative measures
PDB	pressure design basis
PE	polyethylene
PIC	potential impact circle
PIR	potential impact radius
PVC	poly (vinyl chloride), also written as polyvinyl chloride
RCV	remote control valve
SCADA	supervisory control and data acquisition
SCC	stress corrosion cracking
SCCDA	stress corrosion cracking direct assessment
SDB	strength design basis
SDR	standard dimension ratio
SMYS	specified minimum yield strength
USGS	United States Geological Survey
USCG	United States Coast Guard

TABLE 192.3i

§192.5 Class locations.

[Effective Date: 07/13/98]

(a) This section classifies pipeline locations for purposes of this part. The following criteria apply to classifications under this section.

(1) A "class location unit" is an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1- mile (1.6 kilometers) length of pipeline.

(2) Each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy.

(b) Except as provided in paragraph (c) of this section, pipeline locations are classified as follows:

(1) A Class 1 location is:

(i) An offshore area; or

(ii) Any class location unit that has 10 or fewer buildings intended for human occupancy.

(2) A Class 2 location is any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.

(3) A Class 3 location is:

(i) Any class location unit that has 46 or more buildings intended for human occupancy; or

(ii) An area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

(4) A Class 4 location is any class location unit where buildings with four or more stories above ground are prevalent.

(c) The length of Class locations 2, 3, and 4 may be adjusted as follows:

(1) A Class 4 location ends 220 yards (200 meters) from the nearest building with four or more stories above ground.

(2) When a cluster of buildings intended for human occupancy requires a Class 2 or 3 location, the class location ends 220 yards (200 meters) from the nearest building in the cluster.

[Amdt. 192-27, 41 FR 34598, Aug. 16, 1976; Amdt. 192-56, 52 FR 32924, Sept. 1, 1987; Amdt. 192-78, 61 FR 28770, June 6, 1996 with Amdt. 192-78 Correction, 61 FR 30824, June 18, 1996 and Amdt. 192-78 Correction, 61 FR 35139, July 5, 1996; Amdt. 192-85, 63 FR 37500, July 13, 1998]

GUIDE MATERIAL

No guide material available at present.

§192.7

What documents are incorporated by reference partly or wholly in this part?

[Effective Date: 04/14/09]

(a) Any documents or portions thereof incorporated by reference in this part are included in this part as though set out in full. When only a portion of a document is referenced, the remainder is not incorporated in this part.

(b) All incorporated materials are available for inspection in the Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, 1200 New Jersey Avenue SE, Washington, DC, 20590-0001 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. These materials have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. In addition, the incorporated materials are available from the respective organizations listed in paragraph (c) (1) of this section.

(c) The full titles of documents incorporated by reference, in whole or in part, are provided herein. The numbers in parentheses indicate applicable editions. For each incorporated document, citations of all affected sections are provided. Earlier editions of currently listed documents or editions of documents listed in previous editions of 49 CFR part 192 may be used for materials and components designed, manufactured, or installed in accordance with these earlier documents at the time they were listed. The user must refer to the appropriate previous edition of 49 CFR part 192 for a listing of the earlier listed editions or documents.

(1) Incorporated by reference (IBR). List of Organizations and Addresses:

A. Pipeline Research Council International, Inc. (PRCI), c/o Technical Toolboxes, 3801 Kirby Drive, Suite 520, Houston, TX 77098.

B. American Petroleum Institute (API), 1220 L Street, NW, Washington, DC 20005.

C. American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428.

- D. ASME International (ASME), Three Park Avenue, New York, NY 10016–5990.
- E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NE, Vienna, VA 22180.
- F. National Fire Protection Association (NFPA), 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269–9101.
- G. Plastics Pipe Institute, Inc. (PPI), 1825 Connecticut Avenue, NW, Suite 680, Washington, DC 20009.
- H. NACE International (NACE), 1440 South Creek Drive, Houston, TX 77084.
- I. Gas Technology Institute (GTI), 1700 South Mount Prospect Road, Des Plaines, IL 60018.

(2) Documents incorporated by reference (Numbers in Parentheses Indicate Applicable Editions).

Source and name of referenced material	49 CFR reference
A. Pipeline Research Council International, Inc. (PRCI):	
(1) AGA Pipeline Research Committee, Project PR–3–805, “A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe,” (December 22, 1989). The RSTRENG program may be used for calculating remaining strength.	§§192.933(a); 192.485(c).
B. American Petroleum Institute (API):	
(1) ANSI/API Specification 5L/ISO 3183 “Specification for Line Pipe,” (43rd edition and errata, 2004, and 44th edition, 2007).	§§192.55(e); 192.112; 192.113; Item I of Appendix B.
(2) API Recommended Practice 5L1 “Recommended Practice for Railroad Transportation of Line Pipe,” (6th edition, 2002).	§192.65(a).
(3) API Specification 6D “Pipeline Valves,” (22nd edition, January 2002).	§192.145(a).
(4) API Recommended Practice 80, “Guidelines for the Definition of Onshore Gas Gathering Lines,” (1st edition, April 2000).	§§192.8(a); 192.8(a)(1); 192.8(a)(2); 192.8(a)(3); 192.8(a)(4).
(5) API 1104 “Welding of Pipelines and Related Facilities,” (19th edition 1999, including errata October 31, 2001; and 20th edition 2007, including errata 2008).	§§192.227(a); 192.229(c)(1); 192.241(c); Item II, and Appendix B.
(6) API Recommended Practice 1162 “Public Awareness Programs for Pipeline Operators,” (1 st edition December 2003).	§§192.616(a); 192.616(b); 192.616(c).
C. American Society for Testing and Materials (ASTM):	
(1) ASTM A 53/A53M–04a (2004) “Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.”	§§192.113; Item I, Appendix B.
(2) ASTM A106/A106M–04b (2004) “Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service.”	§§192.113; Item I, Appendix B.
(3) ASTM A333/A333M–05 (2005) “Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service.”	§§192.113; Item I, Appendix B.
(4) ASTM A372/A372M–03 (2003) “Standard Specification for Carbon and Alloy Steel Forgings for Thin-Walled Pressure Vessels.”	§192.177(b)(1).

Source and name of referenced material 49 CFR (Continued)	49 CFR reference (Continued)
(5) ASTM A381-96 (Reapproved 2001) "Standard Specification for Metal-Arc-Welded Steel Pipe for Use With High-Pressure Transmission Systems."	§§192.113; Item I, Appendix B.
(6) ASTM Designation: A578/A578M-96 (Re-approved 2001) "Standard Specification for Straight-Beam Ultrasonic Examination of Plain and Clad Steel Plates for Special Applications".	§§192.112(c)(2)(iii).
(7) ASTM A671-04 (2004) "Standard Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures."	§§192.113; Item I, Appendix B.
(8) ASTM A672-96 (Reapproved 2001) "Standard Specification for Electric-Fusion-Welded Steel Pipe for High-Pressure Service at Moderate Temperatures."	§§192.113; Item I, Appendix B.
(9) ASTM A691-98 (Reapproved 2002) "Standard Specification for Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High-Pressure Service at High Temperatures."	§§192.113; Item I, Appendix B.
(10) ASTM D638-03 "Standard Test Method for Tensile Properties of Plastics."	§§192.283(a)(3); 192.283(b)(1).
(11) ASTM D2513-87 "Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings."	§192.63(a)(1).
(12) ASTM D2513-99 "Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings."	§§192.191(b); 192.281(b)(2); 192.283(a)(1)(i); Item I, Appendix B.
(13) ASTM D2517-00 "Standard Specification for Reinforced Epoxy Resin Gas Pressure Pipe and Fittings."	§§192.191(a); 192.281(d)(1); 192.283(a)(1)(ii); Item I, Appendix B.
(14) ASTM F1055-1998 "Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing."	§192.283(a)(1)(iii).
D. ASME International (ASME):	
(1) ASME B16.1-1998 "Cast Iron Pipe Flanges and Flanged Fittings."	§192.147(c).
(2) ASME B16.5-2003 (October 2004) "Pipe Flanges and Flanged Fittings."	§§192.147(a); 192.279.
(3) ASME B31G-1991 (Reaffirmed; 2004) "Manual for Determining the Remaining Strength of Corroded Pipelines."	§§192.485(c); 192.933(a).
(4) ASME B31.8-2003 (February 2004) "Gas Transmission and Distribution Piping Systems."	§192.619(a)(1)(i).

Source and name of referenced material (Continued)	49 CFR reference (Continued)
(5) ASME B31.8S-2004 "Supplement to B31.8 on Managing System Integrity of Gas Pipelines."	§§192.903(c); 192.907(b); 192.911, Introductory text; 192.911(i); 192.911(k); 192.911(l); 192.911(m); 192.913(a) Introductory text; 192.913(b)(1); 192.917(a) Introductory text; 192.917(b); 192.917(c); 192.917(e)(1); 192.917(e)(4); 192.921(a)(1); 192.923(b)(2); 192.923(b)(3); 192.925(b) Introductory text; 192.925(b)(1); 192.925(b)(2); 192.925(b)(3); 192.925(b)(4); 192.927(b); 192.927(c)(1)(i); 192.929(b)(1); 192.929(b)(2); 192.933(a); 192.933(d)(1); 192.933(d)(1)(i); 192.935(a); 192.935(b)(1)(iv); 192.937(c)(1); 192.939(a)(1)(i); 192.939(a)(1)(ii); 192.939(a)(3); 192.945(a).
(6) ASME Boiler and Pressure Vessel Code, Section I, "Rules for Construction of Power Boilers," (2004 edition, including addenda through July 1, 2005).	§192.153(a).
(7) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, "Rules for Construction of Pressure Vessels," (2004 edition, including addenda through July 1, 2005).	§§192.153(a); 192.153(b); 192.153(d); 192.165(b)(3).
(8) ASME Boiler and Pressure Vessel Code, Section VIII, Division 2, "Rules for Construction of Pressure Vessels - Alternative Rules," (2004 edition, including addenda through July 1, 2005).	§§192.153(b); 192.165(b)(3).
(9) ASME Boiler and Pressure Vessel Code, Section IX, "Welding and Brazing Qualifications," (2004 edition, including addenda through July 1, 2005).	§§192.227(a); Item II, Appendix B.
E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):	
(1) MSS SP44-1996 (Reaffirmed; 2001) "Steel Pipe Line Flanges."	§192.147(a).
(2) [Reserved].	
F. National Fire Protection Association (NFPA):	
(1) NFPA 30 (2003) "Flammable and Combustible Liquids Code."	§192.735(b).
(2) NFPA 58 (2004) "Liquefied Petroleum Gas Code (LP-Gas Code)."	§§192.11(a); 192.11(b); 192.11(c).
(3) NFPA 59 (2004) "Utility LP-Gas Plant Code."	§§192.11(a); 192.11(b); 192.11(c).
(4) NFPA 70 (2005) "National Electrical Code."	§§192.163(e); 192.189(c).

Source and name of referenced material (Continued)	49 CFR reference (Continued)
G. Plastics Pipe Institute, Inc. (PPI):	
(1) PPI TR-3/2004 (2004) "Policies and Procedures for Developing Hydrostatic Design Basis (HDB), Pressure Design Basis (PDB), Strength Design Basis (SDB), and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe."	§192.121.
H. NACE International (NACE):	
(1) NACE Standard RP0502-2002 "Pipeline External Corrosion Direct Assessment Methodology."	§§192.923(b)(1); 192.925(b) Introductory text; 192.925(b)(1); 192.925(b)(1)(ii); 192.925(b)(2) Introductory text; 192.925(b)(3) Introductory text; 192.925(b)(3)(ii); 192.925(b)(iv); 192.925(b)(4) Introductory text; 192.925(b)(4)(ii); 192.931(d); 192.935(b)(1)(iv); 192.939(a)(2).
I. Gas Technology Institute (GTI):	
(1) GRI 02/0057 (2002) "Internal Corrosion Direct Assessment of Gas Transmission Pipelines—Methodology."	§192.927(c)(2).

[Amdt. 192-37, 46 FR 10157, Feb. 2, 1981; Amdt. 192-51, 51 FR 15333, Apr. 23, 1986; Amdt. 192-68, 58 FR 14519, Mar. 18, 1993; Amdt. 192-78, 61 FR 28770, June 6, 1996 with Amdt. 192-78 Correction, 61 FR 30824, June 18, 1996; Amdt. 192-94, 69 FR 32886, June 14, 2004 with Amdt. 192-94 Correction, 69 FR 54591, Sept. 9, 2004; RIN 2137-AD77, 70 FR 11135, Mar. 8, 2005; Amdt. 192-99, 70 FR 28833, May 19, 2005 with Amdt. 192-99 Correction, 70 FR 35041, June 16, 2005; Amdt. 192-102, 71 FR 13289, Mar. 15, 2006; Amdt. 192-103, 71 FR 33402, June 9, 2006; Amdt. 192-103, 72 FR 4655, Feb. 1, 2007; RIN 2137-AE29, 73 FR 16562, Mar. 28, 2008; RIN 2137-AE25, 73 FR 62148, Oct. 17, 2008; RIN 2137-AE29 (#2), 74 FR 2889, Jan. 16, 2009; RIN 2137-AE42, 74 FR 17099, April 14, 2009]

GUIDE MATERIAL

Note: A "Stay of Enforcement Memorandum," dated December 23, 2008, was issued from Jeffrey D. Wiese, Associate Administrator for Pipeline Safety, which addressed listed editions of API 5L and API 1104. It provides for use of later editions as follows:

- API Specification 5L, "Specification for Line Pipe" (44th edition, October 2007).
- API 1104, "Welding of Pipelines and Related Facilities" (20th edition, October 2005 including Errata/Addendum July 2007).

The document is available at www.phmsa.dot.gov/pipeline.

Additional standards and specifications recommended for use under this Guide, and the names and addresses of the sponsoring organizations, are shown in Guide Material Appendix G-192-1. See Guide Material Appendix G-192-1A for documents previously incorporated by reference in the Regulations.