

LB3-2022: TR 19-31 – References

PRIMARY: 192.7
SECONDARY: Various
PURPOSE: Review existing gm and revise as appropriate GM under 192.7 and other sections to evaluate GM references to national standards, or sections thereof, which are not incorporated by reference in § 192.7.
ORIGIN/RATIONALE: 2019 - July 9 – Design Task Group minutes. Also note John Kottwitz Approved with Comment ballot for TR 15-02:

For the GM sections shown in this TR, most of the parenthetical cross-references to §192.7 are being deleted, but not all of them. These TR actions also don't address the fact that many such references exist in other GM under other code sections that are not addressed by this TR. These references were reviewed and addressed several years ago during a global review by Editorial Section in preparation for a Guide republication - an attempt was made to make these references more consistent. I don't agree with changing some of these Guide references in this TR, but not addressing the others in the Guide. If changes to the references need to be made, it should be done as part of a global review using a consistent method. Editorial Section took this position and was going to restore the deleted references with an Editorial Note to explain, but it was deemed to be a substantive change to actions approved by Division and Main Body. Editorial Section agreed with my position about needing to do this through a global review and would be willing to work on such a global review. GM under §192.7 should also be considered to explain the situation and how GM references to IBR documents are provided. To keep this TR moving, the global review and any GM proposals could be done in a separate TR.

RESPONSIBLE GROUP: Editorial Section

Note: Revisions are shown in **yellow highlight** and **red font**.

Section 192.7

[Editorial note: Revised existing GM to reflect Addendum 2.]

1 GENERAL

1.1 Incorporated by reference (IBR) documents.

(a) When an IBR document is approved for a code section, the content of the document is required to be followed to comply with the code section as applicable. The edition of the IBR document specified in §192.7 is the edition that must be followed, even if the standards-developing organization has issued a more recent edition (§192.7(a)).

(b) When a document is included in §192.7 as an IBR document, it does not necessarily mean that the entire document is IBR. The code section that for which it is approved for will identify the extent of what is applicable in the IBR.

Example:

§192.225 Welding Procedures

(a) Welding must be performed by a qualified welder or welding operator in accordance with welding procedures qualified under section 5, section 12, Appendix A or Appendix B of API Std 1104 (incorporated by reference, see §192.7), or ...

1.2 Reference to incorporated by reference (IBR) documents in the Guide.

(a) Reference to an IBR document in guide material under a code section for which the IBR is approved will normally refer to “(see §192.7 for IBR).”

(b) Reference to an IBR document in guide material under a code section (§192.xxx) for which the IBR is not approved will normally refer to “(see listing in §192.7, not IBR for §192.xxx).” In this case, the IBR document is recommended for additional guidance.

(c) For multiple references to the same IBR document in a section of guide material, the parenthetical expression will normally appear after the first reference.

1.3 Reference to non-IBR documents in the Guide.

(a) 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.

1.4 Previous IBR documents.

See Guide Material Appendix G-192-1A for documents previously incorporated by reference in the Regulations.

2 **API SPEC 5L** *[Publication Note: GM 2 to be deleted by TR 22-73 as approved in LB4-2023.]*

- (b) Operators are cautioned that significant changes have been made between the 43rd and 44th editions of API Spec 5L. Significant changes include pipe dimensions, manufacturing tolerances, chemical composition, welding methods, inspection criteria, and pipe grade naming conventions.

Note: For additional information regarding the changes, see API's comparison document referenced in API's letter dated August 2008, "Re: Comparison of API Spec 5L 43rd edition and ISO 3183 (2nd ed.)/API Spec 5L 44th edition." Revised edition titled "Detailed comparison of API 5L (43rd) & API 5L (44th) Requirements," printed June 9, 2009 and available at:

www.api.org/certification-programs/api-monogram-program-andapiqr/~media/1661470f45384dc5a4a236373cddfea8.ashx

Section 192.53

1 **FRACTURE TOUGHNESS REQUIREMENTS**

- (a) ... Compliance with either the Charpy impact or drop weight test criteria specified in SR5 or SR6 of API Spec 5L (see [listing in §192.7](#), ~~not for~~ [IBR for §192.53](#)) is sufficient evidence of such ductility when impact tests are made at or below the design pipe temperature.
- (b) For special installations (e.g., compressor station piping, small replacement sections), the notch ductility should be determined by appropriate criteria, which may include those specified in SR5 or SR6 of API Spec 5L.

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Section 192.63

- (a) The manufacturer marks the pipe and fittings with the maximum temperature at which the pipe and fittings have been qualified for use. For example: PE 2406/PE 2708 CDC - The first letter following the 4-digit number designates the maximum temperature at which the piping material's hydrostatic design basis (HDB) has been established and, thus, the maximum temperature at which the pipe can be used. The second letter indicates the HDB for the piping material at that maximum temperature and the third letter is the categorized melt index (actual values are ~~listed~~ [prescribed](#) in ASTM D2513 - see §192.7 for IBR [as a listed specification](#)). The first letter designations from ASTM D2513 are as follows.

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Section 192.103

3 **REFERENCES**

Numerous references are available for the calculation of external forces on pipelines. Methods include reliance on experience, empirical formula, and finite element analysis. A partial listing of references follows.

- (a) API RP 5L1, "Recommended Practice for Railroad Transportation of Line Pipe" (see [listing in §192.7](#), ~~not for~~ [IBR for §192.103](#)).
- (b) API RP 5LW, "Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels" (see [listing in §192.7](#), ~~not for~~ [IBR for §192.103](#)).

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Section 192.112

3.3 Methodologies to assess fracture control.

For evaluating the ability of a particular PSL 2 steel to resist crack initiation and propagation, see the following methodologies in ASME B31.8 (~~see §192.7 for IBR~~) and API Spec 5L – Annex G (see §192.7 for IBR for both). Through the use ...

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4.3 Manufacturing procedure specifications.

Manufacturing procedure specifications should be reviewed for deviations during the production and rolling of steel plate or coil to ensure adherence to the requirements of API Spec 5L– PSL 2 (see §192.7 for IBR). Small deviations in the steel rolling schedule parameters can affect the final mechanical properties of the steel. A review should include the following.

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Section 192.121

1 NATURAL GAS

- (a) ...
- (b) ASTM D2513 (see §192.7 for IBR as listed specification) requires elevated temperature HDB listings for plastic piping materials used at temperatures above 73 °F. PPI publishes elevated temperature HDB values for PE and PA materials in TR-4.
- (c) Long-term hydrostatic strength (LTHS) for reinforced thermosetting plastic covered by ASTM D2517 (see §192.7 for IBR as listed specification) is 11,000 psi.

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2 PETROLEUM GASES

PE and PA materials listed in ASTM D2513 may be used for liquid petroleum gas (LPG) piping applications. NFPA 58 (see §192.7 for IBR for §192.11) prescribes the following:

- (a) PA may be used in liquid or vapor LPG systems up to the design pressure of the piping material. PPI recommends a chemical derating factor of 1.0 (no derating) for PA 11 piping.
- (b) PE, when recommended by the manufacturer, may be used in vapor-only LPG systems up to 30 psig pressure. PPI recommends a 0.5 chemical derating factor for the use of PE piping.
- (c) PVC is not permitted.

Section 192.145

[Editorial note: Revised existing GM to reflect Addendum 1.]

5 PLASTIC VALVES

ASTM D2513 (see listing in §192.7, not for IBR for §192.145) requires that **all** plastic valves meet the requirements of ASME B16.40, "Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems." The manufacturing test requirements outlined in §192.145(b) for plastic valves are part of the testing requirements outlined in ASME B16.40.

Section 192.147

1 FLANGES

1.1 Flange types.

- (a) The dimensions and drilling for all line or end flanges should conform to one of the following standards.
ASME B16.1, ASME B16.5, ASME B16.36, ASME B16.47, ASME B16.48, AWWA C207, or MSS SP-44 as listed referenced in either §192.7 or Guide Material Appendix G-192-1.

Flanges cast or forged integral with pipe, fittings or valves in sizes and for the maximum service rating covered by the standards listed above may be used subject to the facing, bolting and gasketing requirements of this paragraph and 1.2, 2.1 and 2.2 below.

- (b) Threaded companion flanges that comply with either ASME B16.1 or ASME B16.5 (see §192.7 for IBR for both), in sizes and for maximum service ratings covered by these standards, may be used.
- (c) Lapped flanges in sizes and pressure standards established by ASME B16.5 may be used.
- (d) Slip-on welding flanges in sizes and pressure standards established in ASME B16.5 may be used. Slip-on flanges or rectangular section may be substituted for hubbed slip-on flanges provided the thickness is increased as required to produce equivalent strength as determined by calculations made in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII (see [listing in §192.7, not IBR for §192.147](#)).
- (e) Welding neck flanges in sizes and pressure standards established in ASME B16.5, ~~ASME B16.47~~, and MSS SP-44 (see §192.7 for IBR ~~for both~~) [and ASME B16.47](#) may be used. The bore of the flanges
- (f) Flanges made of ductile iron should conform to ...

1.2 Flange facings.

- (a) – (e) ...
- (f) Forged steel welding neck flanges ~~have with~~ an outside diameter and drilling the same as ASME B16.1 ([see §192.7 for IBR](#)), but with modified flange thicknesses, hub dimensions, and special facing details, may be used to bolt against flat-faced cast iron flanges, and may operate at the pressure-temperature ratings given in ASME B16.1 Class 125 Cast Iron Pipe Flanges provided:
 - (1) The minimum flange thickness, T, of the steel flange is not less than that specified for ~~size 6-inch 6-inch diameter~~ and larger.
 - (2) Flanges are used with nonmetallic full-face gaskets extending to the periphery of the flange.
 - (3) The design joint has been proven by test to be suitable for the ratings.

2 FLANGE ACCESSORIES

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Section 192.151

1 DESIGN

1.1 Proprietary fittings.

- (a) General. When using proprietary hot tap fittings, the operator should ensure that ...
- (b) Pressure-temperature ratings. Published catalog or engineering data supplied by a reputable manufacturer or designer is usually sufficient. When the rating cannot be so established, it should be established by test in accordance with paragraph UG-101 of the ASME Boiler and Pressure Vessel Code, Section VIII (see [listing in §192.7, not IBR for §192.151](#))

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Section 192.195

2 OVERPRESSURE PROTECTION

2.1 Facilities that might at times be bottle-tight.

- Suitable protective devices to prevent overpressuring of facilities that might at times be bottle-tight include the following.
- (a) Spring-loaded relief valves meeting the provisions of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 (see [listing in §192.7, not IBR for §192.195](#)).
 - (b) ...

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Section 192.199

1 RUPTURE DISKS

Rupture disks should meet the requirements for design as described in the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 (see [listing in §192.7, not IBR for §192.199](#)).

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Section 192.201

2 DETERMINATION OF RELIEF DEVICE CAPACITY

- (a) When installed in accordance with the provisions of §192.199(f):
- (1) Relief devices stamped by the manufacturer with a capacity certified under the rules of the ASME Boiler and Pressure Vessel Code, Section **VII-VIII** (see [listing in §192.7, not IBR for §192.201](#)) including recertification stampings, may be considered capable of relieving the capacity stamped. An adjustment should be made to determine the capacity at actual operating conditions.
 - (2) and (3) ...
- (b) Relief device capacities as set out above are normally based on the pressure
- (c) References include the following.
- (1) For the calculations in 2(a)(3) above, UG-131 of the ASME Boiler and Pressure Vessel Code, Section VIII. It is not the intent herein that the capacity be limited to 90% of the actual capacity as set out in Section VIII rules, but only that this information is useful in calculating the actual capacity of a relief device.
 - (2) and (3) ...

Section 192.245

References for repair include the following sections of API Std 1104, "Welding of Pipelines and Related Facilities" (see [listing in §192.7, not IBR for §192.245](#)).

- (a) Section 10, "Repair and Removal of Defects."
- (b) Section B.7, "Repair and Removal of Defects" in Appendix B, "In-Service Welding."

Section 192.281

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3.3 *Heat fusion by electrofusion. (Plastic-to-plastic)*

- (a) ...
- (b) ASTM F1055 (see §192.7 [for IBR as listed specification](#)) and ASTM F1290, "Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings" are references for joining plastic pipe by electrofusion.

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3.5 *Mechanical joints for all plastic piping. (Plastic-to-plastic and plastic-to-metal)*

- (c) The pull-out resistance of compression-type fittings varies with the type and size of the fitting and the wall thickness of the pipe being joined. ASTM D2513 (see §192.7 [for IBR as listed specification](#)) describes requirements for three categories of mechanical fittings.

Section 192.283

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2.2 Test requirements. (Plastic-to-plastic and plastic-to-metal)
Test assemblies should successfully meet the following requirements.

- (a) ...
- (b) Short-term burst test. An assembly should meet the minimum burst requirements of ASTM D2513 or ASTM D2517, whichever is applicable (see listing in §192.7, ~~for both~~ not IBR for §192.283), for the specific kind and size of plastic pipe used in the assembly.

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Section 192.311

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1.2 Procedure qualification.

Repairs should be made in accordance with procedures that have been qualified by making sample repairs and destructively testing those samples in accordance with established test methods.

Examples of such test methods are contained in ASTM D2513 (see listing in §192.7, not IBR for §192.311). For thermoplastic piping repairs that involve making a joint, see guide material under §192.283.

Section 192.361

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5.3 Underground clearance and heat sources.

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- (e) Some low-voltage and high-voltage electric lines may increase the average annual ground temperature of the earth near plastic gas service lines. In such cases, the temperature profile should be established based on the construction, material, and operating conditions. For information on the impact of average annual and maximum ground temperatures and how and when to obtain a temperature profile, refer to "Effect of Elevated Ground Temperature (from Electric Cables) on the Pressure Rating of PE Pipe in Gas Piping Applications," AGA Operations Conference, April 2007, available at www.aga/GPTC. The effect of this increased average annual ground temperature is a possible decrease in the pressure rating of plastic pipe. This can be determined by contacting the plastic pipe manufacturer for pressure rating data to determine the LTHS (HDB) at this increased average annual ground temperature using the temperature interpolation method described in PPI TR-3 (see listing in §192.7, not for IBR for §192.361). Also, see 4 of the guide material under §192.121.

Section 192.613

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4.2 References.

- (a) ASME B31.8S, Appendix A3 and Table 4 (see listing in §192.7, not-for IBR for §192.613).

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Section 192.620

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4 ADDITIONAL OPERATION AND MAINTENANCE REQUIREMENTS

(a) ...

- (b) Identifying and evaluating threats. Some provisions of §192.620(d) are more restrictive than Subpart O. The Regulations address many known threats, however, other threats may exist or develop that affect the pipeline integrity. It is up to the operator to identify and evaluate possible pipeline threats in accordance with ASME B31.8S (see listing in §192.7, not-for IBR for §192.620). To address the comparison of conventional MAOP to the risk of an alternative MAOP pipeline, the operator should develop a risk ranking that identifies and compares the increased risk.

Section 192.703

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2.4 *Permanent repairs to thermoplastic piping.*

Repair methods for thermoplastic piping include the following.

(a) ...

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(c) Installing a repair sleeve meeting the requirements of ASTM D2513 (see [listing in §192.7](#), [not IBR for §192.703](#)).

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Section 192.713

[Editorial note: Revised existing GM to reflect Addendum 1.]

3 WELDING

3.1 *Welding.*

(a) ...

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(c) A reference is API Std 1104, "Welding of Pipelines and Related Facilities", Appendix B, "In-Service Welding" (see [listing in §192.7](#), [not IBR for §192.713](#)).

Section 192.743

1 CAPACITY DETERMINATION BY IN-PLACE TESTING

1.1 *Determination of actual flow.*

The capacity of the relief valve system can be determined by direct measurement under full flow conditions or by determining a coefficient through limited flow tests that can be used in calculating the full capacity. References for performing the appropriate tests include the following.

(a) UG-131 of the ASME Boiler and Pressure Vessel Code, Section VIII (see [listing in §192.7](#), [not IBR for §192.743](#)).

(b) ...

1.2 ...

Section 192.917

[Editorial note: Revised existing GM to reflect 2022 Edition of Guide.]

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16 REFERENCES

16.1 *Steel pipe.*

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16.1.4 GRI-02-0057, "Internal Corrosion Direct Assessment of Gas Transmission Pipelines – Methodology" (see [listing in §192.7](#), [not IBR for §192.917](#)).

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16.1.15 Section 841.231 of ASME B31.8, "Gas Transmission and Distribution Piping Systems" (see [listing in §192.7](#), [not IBR for §192.917](#)).

Section 192.919

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3 SELECTING ASSESSMENT METHOD

(a) ...

(b) It may be necessary to consider a combination of tools or techniques of integrity assessment to directly address the primary threats. Table 192.919i may be used as a guide to identify appropriate assessment methods for the various primary threats. Additional information can be found in ASME B31.8S–2004, Section 6 (see [listing in §192.7](#), ~~not for~~ [IBR for §192.919](#)).

Section 192.925

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8

REFERENCES

- (a) AGA Pipeline Research Committee Project PRCI PR-3-805, "A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe," (RSTRENG) (see [listing in §192.7, not IBR for §192.925](#)).
- (b) ASME B31G, "Manual for Determining the Remaining Strength of Corroded Pipelines;" (see [listing in §192.7, not IBR for §192.925](#)).
- (c) NACE SP0502-2010, "Pipeline External Corrosion Direct Assessment Methodology;" (see [§192.7 for IBR](#)).
- (d) ...

Section 192.927

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5.6

Direct examination.

The objective of the ICDA direct examination ...

- (a) ...
- (b) Metal loss measurements.
 - (1) ...
 - (5) To determine if corrosion is present, consideration should be given to comparing measurements with the minimum specified tolerance allowed by the applicable pipe specification to which it was manufactured (e.g., API [Spec 5L](#) - see [listing in §192.7, not for IBR for §192.927](#)).

Section 192.935

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2

THIRD-PARTY DAMAGE (§192.935(b)(1))

To comply with §192.935(b)(1) for the specific threat of third-party damage, an operator must do the following.

- (a) ...
- (e) When there is physical evidence of an excavation near a covered segment that the operator did not monitor, either excavate the area or conduct an aboveground survey (e.g., DCVG) as defined in NACE SP0502-2010 (see §192.7 for IBR). Examples of how to identify an encroachment might include the following.

Section 192.945

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EXTERNAL CORROSION DIRECT ASSESSMENT

Operators using ECDA are required to define performance measures. Guidance can be found in Paragraph 6.7 of NACE SP0502-2010 (see [listing in §192.7, not for IBR for §192.945](#)).

APPENDIX C

LB3-2022: TR 19-31 – References

3 ADDITIONAL TESTS FOR WELDERS OF SERVICE-LINE CONNECTIONS TO MAINS

- (a) ...
- (b) Where large-diameter service-line connection fittings or large main branching tees are anticipated to be encountered by the welder, it may be appropriate to give the welder an additional test for such configurations. The test weld branch nipple should be destructively tested following API Std 1104, Section 5.8, Testing of Welded Joints — Fillet Welds, and Section 6.5.6, Sampling of Test — Fillet Welds (see [listing in §192.7](#), [not IBR for Appendix C](#)).

GMA G-192-1

1.11 PLASTIC RELATED

ASTM F1924	Plastic Mechanical Fittings for Use on Outside Diameter Controlled Polyethylene Gas Distribution Pipe and Tubing	§192.123
ASTM F1948	Metallic Mechanical Fittings for Use on Outside Diameter Controlled Thermoplastic Gas Distribution Pipe and Tubing	§192.123
ASTM F1973	Factory Assembled Anodeless Risers and Transition Fittings in Polyethylene (PE) and Polyamide 11 (PA11) and Polyamide 12 (PA12) Fuel Gas Distribution Systems	§192.123

NACE SP0102	In-Line Inspection of Pipelines	§192.476 GMA-G-192-14
PPI TR 4	PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB) and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe	§192.121

GMA G-192-9A

- ...
 - 3.1 *Pressure testing new steel transmission pipelines.*
 - (a) ...
 - (b) When any portion is tested above 100% SMYS, a pressure-volume plot should be used to identify yielding. The test should be stopped if yielding occurs. For additional information on testing to yield, see ASME B31.8, Appendix N (see [listing in §192.7](#), [not IBR for Subpart J](#)).
- ...
 - 3.3 *General pressure testing considerations for steel transmission pipelines.*
 - (a) ...
 - (b) The following factors may be considered when selecting a test pressure for an existing pipeline.
 - (1) Mill test certificates to ascertain the pressure test levels in the manufacturing process and pipe data pertaining to specified minimum yield strength along with seam and joint data. If not available, check the [listed pipe](#) specification (e.g., API [Spec 5L](#) - see [§192.7](#) for IBR [for §192.55 and Appendix B to Part 192](#)) applicable to the pipe's manufacturing date to obtain industry specifications for mill testing and pipe data.