



U.S. Department  
of Transportation

1200 New Jersey Avenue, SE  
Washington, DC 20590

**Pipeline and Hazardous  
Materials Safety Administration**

**June 24, 2020**

Mr. Marc S. Young  
AC Engineering LLC  
PO Box 1693  
Sealy, TX 77474

Dear Mr. Young:

In a letter to the Pipeline and Hazardous Materials Safety Administration (PHMSA), dated February 10, 2020, you requested an interpretation of 49 Code of Federal Regulations (CFR) Part 192. Specifically, you requested an interpretation of §§ 192.195 and 192.197 as they relate to overpressure protection of a specific natural gas pipeline system.

In your capacity as a licensed professional engineer who has dealings with regulated municipalities and local distribution companies, you requested an interpretation of these regulations as they apply to a specific system where the normal operating pressure from a delivering pipeline is in the range of 250 pounds per square inch gauge (psig) (1,724 kPa gage) to a city gate inlet. You provided a drawing of the system to supplement your request for interpretation. You stated you are concerned because it appears some designers are selecting to eliminate relief valves or shutoff valves by assuming two regulators are sufficient overpressure protection devices without complying with all of the Part 192 overpressure protection requirements. You provided five statements and questions and asked PHMSA to respond to each one. PHMSA's responses follow your statements, which have been reproduced below:

**Question 1:** Confirm that if there is no high pressure distribution system (i.e. the custody transfer from the shipping pipeline at the inlet of a municipal gas utility or local distribution company's city gate) then the piping from the custody transfer receipt point and any manifold which handles one or more service lines to the city gate regulator, or regulators and a manual bypass line, if so piped, to the downstream flange of the first regulator or isolation valve is considered a high pressure distribution system for the purposes of the 49 CFR 192.197.

**Answer:** Section 192.3 defines a high-pressure distribution system as a distribution system in which the gas pressure in the main is higher than the pressure provided to the customer. Therefore, what you described meets the definition of a high pressure distribution system if the delivery pipeline is in the range of 250 psig as you indicated.

**Question 2:** If the normal operating pressure at the inlet to the 1<sup>st</sup> regulator is above 60 psig (414 kPa gage), then subpart (a) and (b) of 49 CFR 192.197 are not applicable and subpart (c) of 49 CFR 192.197 is applicable.

The Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety provides written clarifications of the Regulations (49 CFR Parts 190-199) in the form of interpretation letters. These letters reflect the agency's current application of the regulations to the specific facts presented by the person requesting the clarification. Interpretations are not generally applicable, do not create legally-enforceable rights or obligations, and are provided to help the specific requestor understand how to comply with the regulations.

**Answer:** Section 192.197(c) is applicable for a distribution system that exceeds a maximum actual operating pressure of 60 psig.

**Question 3:** If the normal operating pressure at the inlet to the first regulator is above 125 psig (828 kPa gage), then 49 CFR 192.197(c)(1) or (2) must be used.

**Answer:** Section 192.197(c)(3) may not be used where the inlet pressure on the service regulator exceeds 125 psig (862 kPa gage). For higher inlet pressures, the methods in § 192.197(c)(1) or (2) must be used. Also, a service regulator and an automatic shutoff device that closes upon a rise in pressure downstream from the regulator and remains closed until it is manually reset can be used per § 192.197(c)(4).

**Question 4:** Confirm if either: a) the prescribed method in 49 CFR 192.197(c)(1) - an upstream regulating valve with a downstream regulating service valve that either operate a relief valve or a shutoff valve to prevent overpressure, or b) 49 CFR 192.197(c)(2) - a series of a primary regulator and a monitoring regulators, either alone or in parallel, and the piping contains a manual bypass line around the regulated service lines, even if locked closed and only utilized for limited periods during repair and maintenance, that a relief valve or quick acting shutoff is not mandatory to prevent overpressure of the downstream low pressure distribution system as required to satisfy 49 CFR 192.195. While it is not included in this regulation by reference, I would suggest that the caveats given in API Standard 521/ISO 23251 run counter to the suggestion of just applying a locking mechanism and to use administrative controls, e.g. to just instruct personnel to keep the bypass locked during normal operations. Does the Office of Pipeline Safety's Interpretation of 49 CFR 192.199 remain the same as it was almost 21 years ago?

**Answer:** With regard to overpressure protection for a manual bypass pipeline, there is a requirement for safety lock under § 192.199(h) that applies to gas pipeline valves installed between the system to be protected and relieving or limiting device. However, per §§ 192.619(b) and 192.621(b), no person may operate a segment of pipeline unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with § 192.195. As for API Standard 521, PHMSA does not interpret this standard because it is not incorporated into the Federal pipeline safety regulations.

The rule in § 192.199(h) protects against unauthorized operation of a valve used for overpressure protection such as a valve in by-pass piping. The operator is required by § 192.605 to have detailed operating and maintenance procedures that are implemented by properly qualified operator personnel when valves in by-pass piping are being used for overpressure protection. By "operator personnel" we mean persons employed by an operator or working for a contractor engaged by an operator, including subcontractors and qualified in accordance with Part 192, Subpart N.

**Question 5:** Does 49 CFR 192.199 or 192.201 mandate a relief to protect a low-pressure distribution system, particularly if the system is to transition to polyethylene pipe, even if 49 CFR 192.197(c)(1) or (2) is employed upstream either with or without a manual bypass.

**Answer:** If piping meets §§ 192.197(a) and (b) or (c)(1) or (2), the maximum relief pressures must not exceed the maximum pressure limits in §§ 192.201 or 192.739, as applicable. Whether there is a steel to plastic pipeline connection or not, under § 192.619(a), no person may operate a segment of steel or plastic pipeline at a pressure that exceeds a maximum allowable operating pressure determined by the weakest element in the segment. Therefore, an operator with steel to plastic connection must design and operate its pipeline in accordance with Part 192 requirements.

If we can be of further assistance, please contact Tewabe Asebe at 202-366-5523.

Sincerely,

John A. Gale  
Director, Office of Standards  
and Rulemaking

February 10, 2020

US DOT Office of Pipeline Safety  
Pipeline and Hazardous Materials Safety Administration (PHMSA)  
U.S. Department of Transportation  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001

Subject: Request for Interpretation of 49 CFR 192.195 and 49 CFR 192.197

Dear Sir or Madam,

As a licensed professional engineer who has dealings with regulated municipalities and Local Distribution Companies from time to time, I am formally requesting an interpretation of 49 CFR 192.195 entitled "Protection against accidental overpressuring" and 49 CFR 192.197 entitled "Control of the pressure of gas delivered from high-pressure distribution systems.", with respect to subpart (c) where the normal operating pressure from a delivering pipeline is in the range of 250 p.s.i. (1,724 kPa) gage to the city gate inlet.

49 CFR 192.195 states:

*(a) **General requirements.** Except as provided in § 192.197, each pipeline that is connected to a gas source so that the maximum allowable operating pressure could be exceeded as the result of pressure control failure or of some other type of failure, must have pressure relieving or pressure limiting devices that meet the requirements of §§ 192.199 and 192.201.*

*(b) **Additional requirements for distribution systems.** Each distribution system that is supplied from a source of gas that is at a higher pressure than the maximum allowable operating pressure for the system must -*

*(1) Have pressure regulation devices capable of meeting the pressure, load, and other service conditions that will be experienced in normal operation of the system, and that could be activated in the event of failure of some portion of the system; and*

*(2) Be designed so as to prevent accidental overpressuring.*

and

49 CFR 192.197 states:

*"(a) If the maximum actual operating pressure of the distribution system is **60 p.s.i. (414 kPa) gage, or less** and a service regulator having the following characteristics is used, no other pressure limiting device is required:*

*(1) A regulator capable of reducing distribution line pressure to pressures recommended for household appliances.*

*(2) A single port valve with proper orifice for the maximum gas pressure at the regulator inlet.*

*(3) A valve seat made of resilient material designed to withstand abrasion of the gas, impurities in gas, cutting by the valve, and to resist permanent deformation when it is pressed against the valve port.*

*(4) Pipe connections to the regulator not exceeding 2 inches (51 millimeters) in diameter.*

*(5) A regulator that, under normal operating conditions, is able to regulate the downstream pressure within the necessary limits of accuracy and to limit the build-up of pressure under no-flow conditions to prevent a pressure that would cause the unsafe operation of any connected and properly adjusted gas utilization equipment.*

*(6) A self-contained service regulator with no external static or control lines.”*

*“(b) If the maximum actual operating pressure of the distribution system **is 60 p.s.i. (414 kPa) gage, or less**, and a service regulator that does not have all of the characteristics listed in paragraph (a) of this section is used, or if the gas contains materials that seriously interfere with the operation of service regulators, there must be suitable protective devices to prevent unsafe overpressuring of the customer's appliances if the service regulator fails.”*

*“(c) If the maximum actual operating pressure of the distribution system **exceeds 60 p.s.i. (414 kPa) gage**, one of the following methods must be used to regulate and limit, to the maximum safe value, the pressure of gas delivered to the customer:*

*(1) A service regulator having the characteristics listed in paragraph (a) of this section, and another regulator located upstream from the service regulator. The upstream regulator may not be set to maintain a pressure higher than 60 p.s.i. (414 kPa) gage. A device must be installed between the upstream regulator and the service regulator to limit the pressure on the inlet of the service regulator to 60 p.s.i. (414 kPa) gage or less in case the upstream regulator fails to function properly. This device may be either a relief valve or an automatic shutoff that shuts, if the pressure on the inlet of the service regulator exceeds the set pressure (60 p.s.i. (414 kPa) gage or less), and remains closed until manually reset.*

*(2) A service regulator and a monitoring regulator set to limit, to a maximum safe value, the pressure of the gas delivered to the customer.*

*(3) A service regulator with a relief valve vented to the outside atmosphere, with the relief valve set to open so that the pressure of gas going to the customer does not exceed a maximum safe value. The relief valve may either be built into the service regulator or it may be a separate unit installed downstream from the service regulator. This combination may be used alone only in those cases where the inlet pressure on the service regulator does not exceed the manufacturer's safe working pressure rating of the service regulator, and may not be used where the inlet pressure on the service regulator exceeds 125 p.s.i. (862 kPa) gage. **For higher inlet pressures, the methods in paragraph (c) (1) or (2) of this section must be used.** (emphasis added)*

*(4) A service regulator and an automatic shutoff device that closes upon a rise in pressure downstream from the regulator and remains closed until manually reset.”*

My specific request is for an interpretation of these regulations with respect to the following questions:

1. Confirm that if there is no H.P. Distribution system (i.e. the custody transfer from the shipping pipeline at the inlet of a Municipal Gas Utility or LDC's City Gate) then the piping from the custody transfer receipt point and any manifold which handles one or more service lines to the city gate regulator, or regulators and a manual bypass line, if so piped, to the downstream flange of the 1<sup>st</sup> regulator or isolation valve is considered a H.P. Distribution system for the purposes of the 49 CFR 192.197.
2. If the normal operating pressure at the inlet to the 1<sup>st</sup> Regulator is above 60 p.s.i. (414 kPa) gage, then subpart (a) and (b) of 49 CFR 192.197 are not applicable and subpart (c) of 49 CFR 192.197 is applicable.
3. If the normal operating pressure at the inlet to the 1<sup>st</sup> Regulator is above 125 p.s.i. (828 kPa) gage, then 49 CFR 192.197 c (1) or (2) must be used.
4. Confirm if either a) the prescribed method in 49 CFR 192.197 c (1) { an upstream regulating valve with a downstream regulating service valve that either operate a relief valve or a shutoff valve to prevent overpressure} or b) 49 CFR 192.197 c (2) {a series of a Primary Regulator and a Monitoring Regulators), either alone or in parallel, and the piping contains a manual bypass line around the regulated service lines, even if locked closed and only utilized for limited periods during repair and maintenance, that a relief valve or quick acting shutoff is NOT mandatory to prevent overpressure of the downstream low pressure distribution system as required to satisfy 49CFR192.195.<sup>1</sup> While it is not included in this regulation by reference, I would suggest that the caveats given in API Standard 521 / ISO 23251<sup>2</sup> run counter to the suggestion of just applying a locking mechanism and to use administrative controls, e.g. to just instruct personnel to keep the

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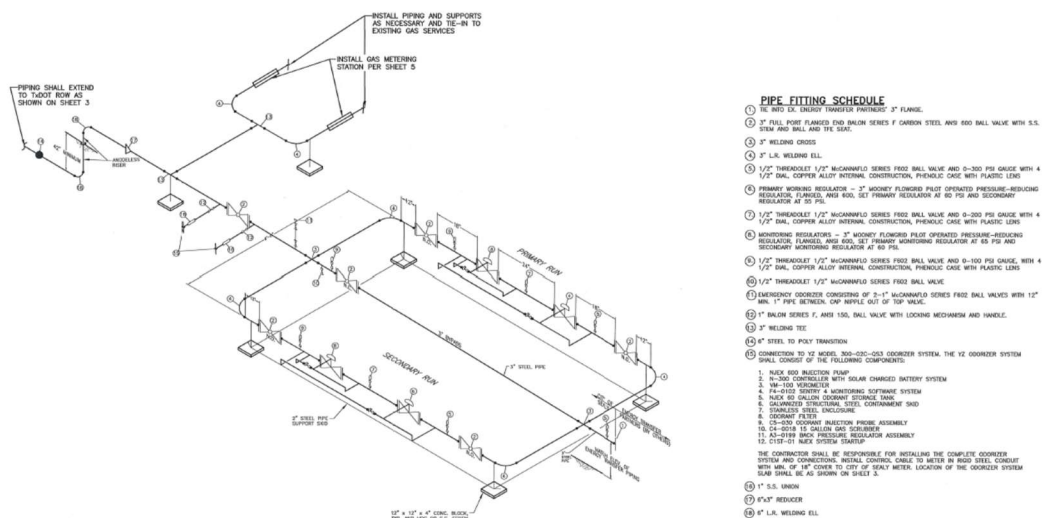
<sup>1</sup> This appears to be the interpretation of 49 CFR 192.199 given by George Tenley, Jr., Director of Office of Pipeline Safety in Interpretation PI-90-007 to Charles Heath of Heath and Associates on 2-22-1999. I would disagree with Mr. Tenley's assessment of the purpose of the regulations being only *to protect against accidental overpressure caused by failure of piping components*. The regulations, incorporate ASME B31.8 by reference. In Section 845 CONTROL AND LIMITING OF GAS PRESSURE; 845.1 Basic Requirement for Protection Against Accidental Overpressuring; "Every pipeline, main, distribution system, customer's meter **and connected facilities**, compressor station, pipetype holder, bottle-type holder, containers fabricated from pipe and fittings, and all special equipment, if connected to a compressor or to a gas source where the failure of pressure control **or other causes** might result in a pressure that would exceed the maximum allowable operating pressure of the facility (refer to para. 805.2.1), shall be equipped with suitable pressure-relieving or pressure-limiting devices. Special provisions for service regulators are set forth in para. 845.2.7." **Comment: It would seem a logical conclusion that the bypass service line does not qualify for the regulator exceptions set forth in 845.2.7, since it only has a single block valve or in the case of a double block and bleed, two block valves and a vent valve, between the high pressure source and the lower pressure rated distribution mains.**

<sup>2</sup> "The potential for the bypass valve to be inadvertently opened while the control valve is operating should also be considered unless administrative controls are in place. If the pressure resulting from the opening of the bypass valve can exceed the corrected hydrotest pressure (see 3.21 and 4.3.2), reliance on administrative controls as the sole means to prevent overpressure might not be appropriate. The user is cautioned that some systems can have unacceptable risk due to failure of administrative controls and resulting consequences due to loss of containment. In these cases, limiting the overpressure to the normally allowable overpressure can be more appropriate. Note that the entire system, including all of the auxiliary devices (e.g. gasketed joints, instrumentation), should be considered for the overpressure during the failure of administrative controls." Excerpt from API Standard 521 / ISO 23251, Section 5.10.3.

bypass locked during normal operations.<sup>3</sup> Does the Office Of Pipeline Safety's Interpretation of 49 CFR 192.199 remain the same as it was almost 21 years ago?

5. Does 49 CFR 192.199 or 192.201 mandate a relief to protect the a low pressure distribution system, particularly if the system is to transition to polyethylene pipe, even if 49 CFR 192.197 c (1) or (2) is employed upstream either with or without a manual bypass.

Included in this request is a isometric drawing that was submitted for a bid and was signed and sealed by a professional engineer that made no representation that it was preliminary. It has only a single isolation valve on the bypass between the upstream source and although there is a second 600# valve, a downstream valve to an odorizer takeoff is rated at only 285 psig (ANSI 150).



It is my judgement as a licensed engineer who has performed many flange and relief studies on gas plants and offshore oil & gas facilities, as well as constructed and operated interstate and intrastate pipes that the design shown is flawed. The reason is simply that an erroneous operation of the valve or a failure to be able to reclose it once open, due to line debris, could result in a loss of containment in the polypipe section. This is proposed to be placed in the right of way of a major interstate highway. Shouldn't the regulations require this design to have a relief valve or a slam shut valve to protect the steel to polypipe transition listed on the right end based on the requirements of the above referenced 49 CFR 192.195, 49 CFR 192.197 and 49 CFR 192.199?

<sup>3</sup> It is also possible to put the gas system at very high risk for loss of containment, if operating company personnel try to operate their City Gate systems by throttling the bypass while repairs are made to a plugged or faulted set of regulators. Particularly if there is not some sort of filtration, upstream of the regulators and the dead space in the bypass line were to filled with a partial blockage. A person simply may not be able to respond quick enough to a change in demand, if the service customers are few with a few high demand intermittent services, the LP distribution system is small and there is a high differential pressure between the supplying pipeline and the LP Distribution Headers or if a valve once set had a partial blockage move. As noted in the reported incident cited in the 1999 interpretation, experience has shown this can lead to loss of containment.

My reason for requesting an interpretation is my concern for the fact that there appear to be some designers selecting to eliminate relief valves or shutoff valves by just assuming two regulators are sufficient overpressure protection without complying with all the stated requirements.

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