U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

1200 New Jersey Ave, S.E.
Washington, D.C. 20590

SEP 03 2014

Mr. Lee Strobel
Senior Mechanical Engineer
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GE Oil & Gas
1550 Greenleaf Avenue
Elk Grove Village, IL 60007

Dear Mr. Strobel:

In a letter to the Pipeline and Hazardous Materials Safety Administration (PHMSA) dated November 18, 2013, you requested an interpretation regarding the federal gas pipeline safety regulations in 49 CFR Part 192. Specifically, you asked whether the § 192.145 design standards for pipeline valves apply to control valves. You stated that you are referring to the type of control valves that would be used on large transmission pipelines or city gate stations typically having a size range of 6 inches or higher and can operate at pressures exceeding 1,000 pounds per square inch as opposed to small valves serving individual buildings.

You noted that each valve must meet the minimum requirements of API 6D (incorporated by reference, see § 192.7), or to a national or international standard that provides an equivalent performance level, but your view is that API 6D seems to specifically relate to on-off isolation valves and has no specific provisions for control valves. You stated that it is generally accepted in the valve industry that most control valves do not meet the seat leak tightness requirements of API 6D, instead they must meet the seat leak tightness requirements of IEC-60534-4 or ANSI/FCI 70-2-2013, which are less stringent than API 6D. In addition, you commented that there does not seem to be a definition of the term 'valve' in § 192.3, so it is unclear to you whether the § 192.145 requirement includes both on-off and control valves.

You also suggested that PHMSA may want to consider whether control valves should be classified as regulators because you believe they essentially perform the same function of regulating the flow.

Section 192.145 states in its entirety:

> §192.145 Valves.
>
> (a) Except for cast iron and plastic valves, each valve must meet the minimum requirements of API 6D (incorporated by reference, see §192.7), or to a national

or international standard that provides an equivalent performance level. A valve may not be used under operating conditions that exceed the applicable pressure-temperature ratings contained in those requirements.

(b) Each cast iron and plastic valve must comply with the following:

(1) The valve must have a maximum service pressure rating for temperatures that equal or exceed the maximum service temperature.

(2) The valve must be tested as part of the manufacturing, as follows:

(i) With the valve in the fully open position, the shell must be tested with no leakage to a pressure at least 1.5 times the maximum service rating.

(ii) After the shell test, the seat must be tested to a pressure not less than 1.5 times the maximum service pressure rating. Except for swing check valves, test pressure during the seat test must be applied successively on each side of the closed valve with the opposite side open. No visible leakage is permitted.

(iii) After the last pressure test is completed, the valve must be operated through its full travel to demonstrate freedom from interference.

(c) Each valve must be able to meet the anticipated operating conditions.

(d) No valve having shell (body, bonnet, cover, and/or end flange) components made of ductile iron may be used at pressures exceeding 80 percent of the pressure ratings for comparable steel valves at their listed temperature. However, a valve having shell components made of ductile iron may be used at pressures up to 80 percent of the pressure ratings for comparable steel valves at their listed temperature, if:

(1) The temperature-adjusted service pressure does not exceed 1,000 p.s.i. (7 Mpa) gage; and

(2) Welding is not used on any ductile iron component in the fabrication of the valve shells or their assembly.

(e) No valve having shell (body, bonnet, cover, and/or end flange) components made of cast iron, malleable iron, or ductile iron may be used in the gas pipe components of compressor stations.

Whether a valve used in a gas pipeline system is used to control the pressure and flow of the gas or to completely shut it off, the valve still affects the safety performances of a pipeline system. Section 192.145(c) states "Each valve must be able to meet the anticipated operating conditions" which requires the valve seat tightness or shut-off capabilities to meet operational conditions. Therefore, control valves must meet the minimum requirements of API 6D or to a national or international standard that provides an equivalent performance level in accordance with §192.145.

The seat type and tightness of a valve used to control flow volumes or pressures may be specified by the end-user based upon the type of operational conditions that exist to meet 49 CFR Part 192. For example, a valve that controls maximum allowable operating pressure for overpressure protection (a type of control valve) would require a higher level of seat tightness than a valve used only for flow volume control. In most operational situations, a control valve

used for overpressure protection control would require a second control valve or relief valve for overpressure protection to get the desired level of seat tightness needed for overpressure control.

Your comment concerning grouping control valves and regulators for purposes of design standards requirements is beyond the scope of an interpretation because PHMSA responds to interpretation requests based on the current Federal pipeline safety regulations.

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

Sincerely,

John A. Gale
Director, Office of Standards
and Rulemaking

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Office of Pipeline Safety (PHP-30)
PHMSA, US Department of Transportation
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Washington, DC 20590-0001

18 November, 2013

Dear Sir/Madam,

I am writing to request a formal interpretation of a section of your 49 CFR 192 regulation, relating to transportation of natural and other gas by pipeline.

Section 192.145, giving requirements for valves, states that: 'Except for cast iron and plastic valves, each valve must meet the minimum requirements of API 6D (incorporated by reference ...), or to a national or international standard that provides an equivalent performance level.' However, API 6D seems to specifically relate to on-off isolation valves and has no specific provisions for control valves. For example, it is generally accepted in the Valve Industry that most control valves do not meet the seat leak tightness requirements of API 6D – instead they must meet the seat leak tightness requirements of IEC-60534-4 or ANSI/FCI 70-2-2013, which are less stringent than API 6D. This seems understandable, as the main function of a control valve is to regulate the pressure and flow, rather than to shut off and seal for isolation purposes.

So, our key questions are:

- Under 49 CFR 192, are control valves required to conform to API 6D?
- If not, then what standards are control valves expected to conform to?

There does not seem to be a definition of the term 'valve' in 192.3, so it is unclear whether this is intended to include both on-off and control valves. Another point to consider is that it could be argued that control valves should be classified along with 'regulators', as they essentially perform the same function of regulating the flow. If it is the case that control valves should be categorized as regulators, then what requirements are regulators expected to meet?

To clarify, I am referring to the type of control valves that would be used, for example, on large transmission pipelines or city gate stations, as opposed to more local distribution to individual buildings. Such valves tend to cover a size range of 6" or higher and can operate at pressures exceeding 1000 psi.

We would be most grateful for any guidance you can provide.

Yours sincerely,

Lee Strobel