

Mr. Don T. Caffery
Columbia Gas Service Company
Franklin, Louisiana 70538

Dear Mr. Caffery:

This is in response to your letter of October 31, 1972, in which you ask what is meant by 40 percent of SMYS.

The term SMYS is defined in §192.3 of 49 CFR Part 192 to mean specified minimum yield strength. As an example, Trade B pipe made to API 5L specification has a specified minimum yield strength (SMYS) of 35,000 pounds per square inch (psi) 40 percent of SMYS (35,000 x 0.40) is 14,000 psi.

The meaning of the term "40 percent of SMYS" may be shown by an example of its application in the regulation. Thus, §192.607 requires an operator to determine the class location of each segment of pipeline with a maximum allowable operating pressure that will produce a hoop stress of more than 40 percent of SMYS.

Hoop stress is commonly determined by the basic formula

$S = \frac{PD}{\pi t}$ where S is hoop stress in psi, P is internal

pressure in psig (pounds per square inch gage), D is outside diameter in inches, and t is wall thickness in inches. (This basic formula, in transposed form and with additional factors for safety purposes, is used in §192.105 to determine the design pressure for steel pipe.)

Where B pipe referred to above, made of Grade B steel, is in a segment of pipeline operating at a pressure of 200 psig, and has an outside diameter of 8.625 inches with a wall thickness of 0.250 inches, the hoop stress determined by the basic formula is 3450 psi. Since in this example the hoop stress (3450 psi) is less than 40 percent of SMYS (14,000 psi), the provisions of §192.607 would not apply for the particular segment of pipeline.

I trust this answers your question. Please advise if we may be further assistance on this matter.

Sincerely,

/signed/

Joseph C. Caldwell
Director

Office of Pipeline Safety