$$CH_4 = \frac{3.6\times10^6 \times A}{\rho_{ref}} \sqrt{\frac{K \times MW}{1000 \times Z \times R \times T}} \times \frac{P_a \times M}{\left(1+\frac{K-1}{2}M^2\right)^{\frac{K+1}{2(K-1)}}} \times Cd \times t \times \left[\frac{T_{SC} \times P_{ge}}{T_{ge} \times P_{SC}}\right] \times \rho_{ref} \times 0.001$$

Where:

CH_4 = Annual CH_4 emissions attributable to a third party pipeline hit or to a pipeline puncture incident when the flow is choked, in metric tons;
A = Leak area of the pipe, in square metres;
K = Specific heat ratio of CH_4, namely 1.299;
MW = Molecular weight of CH_4, namely 16.043 kg per mole;
M = Mach number of the flow, calculated using equation 29-17 when M is equal to or greater than 1 or a value of 1 in other cases;
p_{ref} = Density of CH_4 that is 0.668 kg per cubic meter at standard conditions;
T = Temperature inside pipe, in kelvin;
P_a = Absolute pressure inside the pipe, determined in accordance with paragraph 2 of QC.29.4.9, in kilopascals;
R = Universal gas constant, namely 8.3145 kPa m^3 per kilmole per kelvin;
Z = Compressibility factor of the gas, determined by the emitter or a default value of 1;
Cd = Discharge coefficient, determined by the emitter or a default value of 1;
t = Duration of venting following hit, in hours;
T_{SC} = Temperature at standard conditions of 293.15 kelvin;
T_{ge} = Temperature of gas emitted, in kelvin;
P_{ge} = Absolute pressure of gas emitted, in kilopascals;
P_{SC} = Pressure at standard conditions of 101.325 kPa;
0.001 = Conversion factor, kilograms to metric tons;