Calculation of Liquefied Natural Gas (LNG) Burning Rates

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Abstract

A set of small-sized experiments were carried out at Texas A&M University's Brayton Fire Training Field (BFTF) to determine the radiative heat transfer of LNG pool fires. This set of experiments was designed to study how the heat feedback from the fire to the pool surface is subsequently distributed through the liquid volume. Burning rates of LNG pool fires are driven mainly by radiative heat transfer from the fire for diameters larger than 1m. However, it is known that factors such as the gas layer on the liquid surface, liquid refractivity, and other factors affect the amount of heat that, in reality, is used for evaporation. Therefore, to determine the real amount of heat that is being absorbed by the liquid undergoing evaporation, we will take into account the gas layer and the heat loss to the surroundings in our analysis. Further validation will be made through a series of experiments in a laboratory setting. Quantitative data will be collected in these experiments to further understand the absorption characteristics of LNG as a function of wavelength of thermal radiation.