Radiative Heat Transfer to Liquefied Natural Gas (LNG) Pool Fires

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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 on LNG pool fires. The experiments were designed to study how the heat feedback to the pool surface from the fire 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 used in evaporation, we will take into account the gas layer and the heat loss to the surroundings.

Further validation will be made through a series of experiments, under controlled conditions, 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.