Safety Analysis for LNG Terminal Focused on the Consequence Calculation of Accidental and Intentional Spills

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ABSTRACT

This paper is intended to simulate the consequence effect when LNG is released to the surrounding area and develop an emergency plan based on the results of consequence analysis of Liquefied Natural Gas (LNG) facilities. The primary focus of the paper is the effect calculation of accidental and intentional release of LNG. In accordance with increasing demand for LNG which approximates to 20.5 trillion cubic feet by 2010, the need and importance of safety analysis for LNG terminal to the surrounding area are realized. LNG facilities, worldwide, including terminals are in need of off-site risk analysis as well as on-site risk analysis. In this paper, we simulate the heat radiation and behavior of vapor cloud flow resulting from LNG leak or spill using consequence estimation simulators CARM (Consequence Assessment and Risk Management) and PHAST using unified dispersion model by DNV. This would result the estimation of the effect zone based on which are effective strategy to prevent and mitigation the accident is proposed. From the results of the simulation, we seek to propose a strategy to reduce the risk level, which also developing adequate prevention/mitigation procedure that would raise the level of safety in LNG terminals.