

New unloading procedure for a mixed operation of above-ground and in-ground LNG storage tank using dynamic simulation

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The LNG unloading process from LNG carrier ship to LNG storage tank is composed of three steps in detail: recirculation, depressurization and unloading. Because the typical LNG exists at low temperature around -160°C , the recirculation process keep the LNG unloading line cool preventing from vaporization of LNG. Then, the unloading line is depressurized similar to the pressure of the ship and finally the LNG in the carrier ship is transferred to the LNG storage tank. As a rule, there are two different types of LNG storage tank: above-ground and in-ground tank. When a single type of tank is used for the LNG storage, there is no critical problem from recirculation to unloading. For a mixed operation of above-ground and in-ground LNG storage tank, however, the depressurization of unloading line can make vapor near the region of above-ground tank due to the pressure head. Produced vapor near an above-ground tank can make depressurization congested, which can cause excessive LNG inflow. In this paper, we suggest a new unloading procedure and control strategy for a mixed operation of above-ground and in-ground LNG storage tank using dynamic simulation.