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A CFD simulation study of boiling mechanism and BOG generation in a full-scale LNG storage tank

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Highlights

- A maiden rigorous CFD simulation of a full-scale LNG storage tank considering the effects of static pressure and sensible heat enables insights into the internal flow dynamics and complex boiling phenomena in the tank.
- The static pressure due to the liquid height influences the transient BOG characteristics, but does not impact the steady state BOG generation rate.
- The critical wall superheat that marks the onset of nucleate boiling is about 2.5 to 2.8 K for LNG, which is not attained in a well-insulated full-scale LNG storage tank.

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