Quarterly Report – Public Page

Date of Report: 3rd Quarterly Report - June 30, 2025
Contract Number: 693JK32410009POTA
Prepared for: U.S. DOT Pipeline and Hazardous Materials Safety Administration
Project Title: LNG Knowledge Development – Consequences of Catastrophic Failure of LNG Storage Tanks
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For quarterly period ending: June 30, 2025

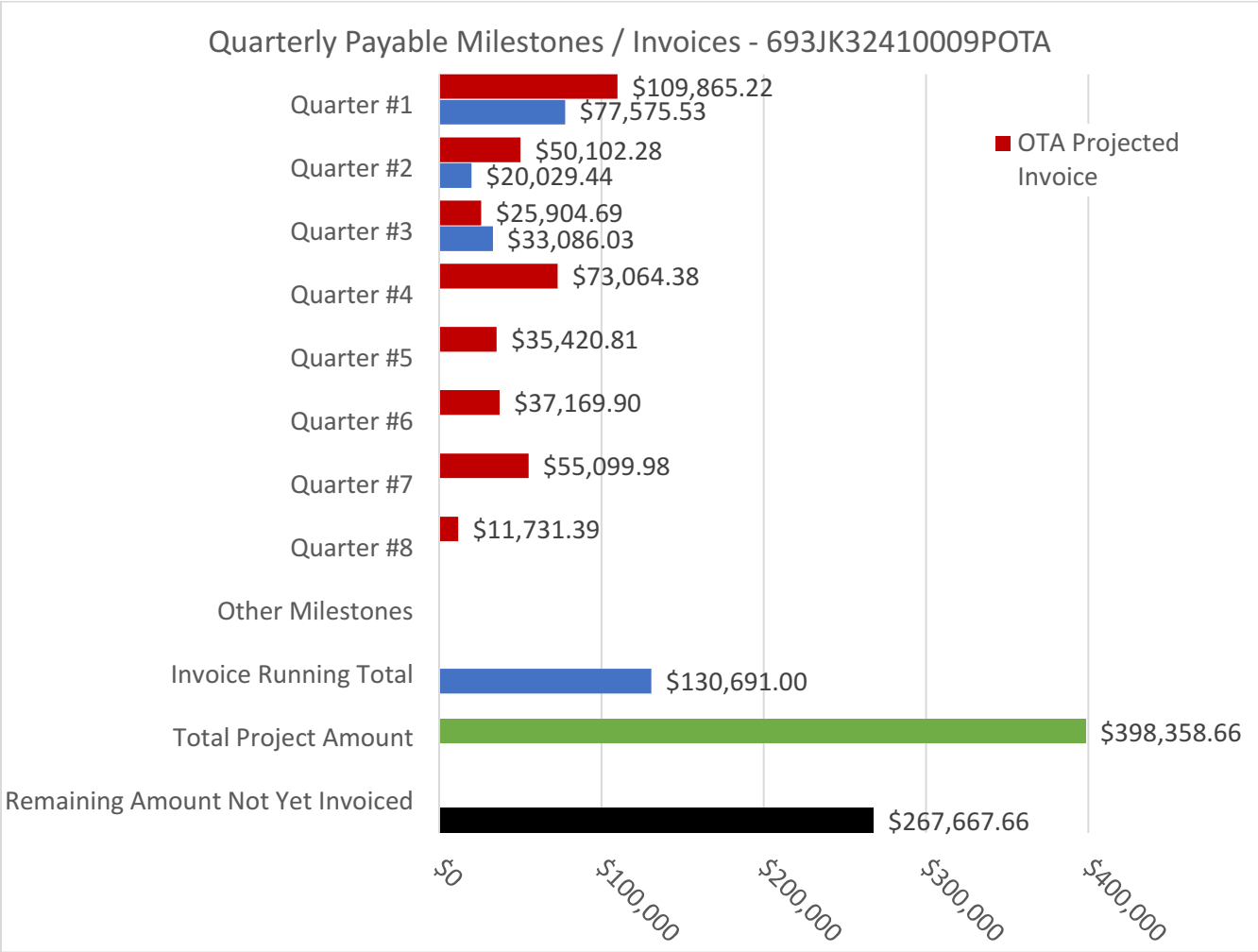
1: Items Completed During this Quarterly Period:

Item #	***Task #***	***Activity/Deliverable***	***Title***
4	1	PHA Support and Coordination	PHA report
11	5	3rd Quarterly Status Report and Progress Presentation Slides	Submit 3rd quarterly report

2: Items Not Completed During this Quarterly Period:
The project is on schedule.

Item #	***Task #***	***Activity/Deliverable***	***Title***
9	2	FE Modeling of Typical LNG Tanks	FE models of LNG tanks shown in slides
12	2	FE Analysis and Post-processing	LNG tank analysis results shown in slides

3: Project Financial Tracking During this Quarterly Period:



4: Project Technical Status –

We continued work in the third quarter by conducting a Hazard Identification and Characterization (HAZ-ID-C) workshop that involved project team members, emergency responders, and technical advisory panel (TAP) members. The results of the HAZ-ID-C were documented in a report that will be distributed to PHMSA and TAP members for review and feedback. The topics discussed in the HAZ-ID-C workshop will motivate future modeling efforts and the format and type of project deliverables. We continued development of finite element (FE) models of selected representative LNG tanks for analyzing their response to selected hazard scenarios.

[Item 4] [Task 1] [PHA Support and Coordination] [PHA report]

We conducted a HAZ-ID-C workshop on 3 April 2025 that was attended by industry experts from our TAP and project team. This workshop was a critical part of our research to get feedback from industry representatives, including emergency responders. We developed a report that summarized the discussions and outcomes of the workshop. We will use these results to formulate specific hazard simulations for structural and process safety modeling.

[Item 11] [Task 5] [3rd Quarterly Status Report] [Submit 3rd quarterly report]

This task includes project management, administration, and progress reporting. We discussed the project objectives, methodology, testing program, and analysis approach with the project team and members of the TAP. Monthly progress reports were shared on PRIMIS, and the third quarterly report was developed.

5: Project Schedule –
The project is on schedule. During the next quarter, we will complete the LNG tank modeling and analysis tasks.

[Item 9] [Task 2] [FE Modeling of Typical LNG Tanks]

We continued efforts to develop FE models of the representative LNG tank configurations that were selected, including small volume and high-pressure LNG tanks (gross capacity up to 1,000 m^3), medium size (50,000 to 100,000 m^3 gross capacity) single containment steel tank (and conceptual full containment steel-steel tank), and large (150,000 to 200,000 m^3 gross capacity) full containment steel-concrete and conceptual steel-steel tank based on the feedback from TAP members. During the last quarter, we updated a midsize single containment tank model (75,000 m^3 gross capacity) to allow for evaluation of lateral and roof loading. We also obtained information that will be used to construct the small volume high-pressure LNG tank design, which is the last modelling item for this task.

[Item 12] [Task 2] [FE Analysis and Post-processing]

We will apply extreme loading scenarios to our representative LNG tank models based on the gaps and high priority catastrophic hazards identified during the HAZ-ID-C workshop. We will post-process these simulations to investigate failure modes and assess likelihood of failure for different tank designs.