

	Develop an Evaluation Protocol for Non-LNG Release Hazards – Modeling	03903-QRP-004
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Develop an Evaluation Protocol for Non-LNG Release Hazards – Modeling

Agreement #693JK31910009POTA

Quarterly Status Report – Q4

Public

September 29, 2020

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1 Items Completed During this Quarterly Period

The performance period for the research project is 27 months, from September 30, 2019 through December 31, 2021. The current quarter closes on September 29, 2020. The PHMSA Agreement Officer's Representative (AOR) for this project is Robert Smith and the Technical Task Inspector (TTI) is Mr. Thach Nguyen.

Table 1-1 shows the items and deliverables completed to date; the items in gray were completed during earlier quarters, while the items in green were completed during this Quarter.

Table 1-1. Items Completed

Item No.	Task No.	Activity	Deliverable	Due Quarter No.	Completion %
1	1	Conduct kick-off Team meeting to review scope, tasks, deliverables and schedule, and to gather initial insights.	Kick-Off meeting minutes	1	100%
2	8	1st Quarterly Status Report	Submit 1st quarterly report	1	100%
3	2	Review literature on model evaluation and validation requirements; develop Model Evaluation methodology	Model Evaluation methodology report	2	100%
4	8	2nd Quarterly Status Report	Submit 2nd quarterly report	2	100%
3a	2a	Review literature on model evaluation and validation requirements; develop Model Evaluation methodology Revised to include Source Term models	Revised Model Evaluation methodology report	3	100%
7	8	3rd Quarterly Status Report	Submit 3rd quarterly report	3	100%
5	3	Define the Uncertainty Quantification Set; Identify and Characterize Sources of Uncertainties; Define the Uncertainty Propagation Method; Publish the UQ Protocol	Report on Uncertainty Quantification Protocol	4	100%
6	4.1	Review literature on experimental series and assemble model validation database for dispersion of non-LNG flammable releases	Model validation database for dispersion of non-LNG flammable releases	4	100%
9	5.1	Publish Model Evaluation Protocol for dispersion of non-LNG flammable releases	Model Evaluation Protocol for dispersion of non-LNG flammable releases	4	100%
10	8	4th Quarterly Status Report	Submit 4th quarterly report	4	100%

2 Items Not Completed During this Quarterly Period

There were no items and deliverables that were scheduled to be completed during this Quarter that were not completed during this Quarter.

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3 Project Financial Tracking During this Quarterly Period

The contract for this research project is fixed-price. The current project financial tracking is shown in Figure 3-1. Work for the project is currently on schedule and projected to remain on schedule.

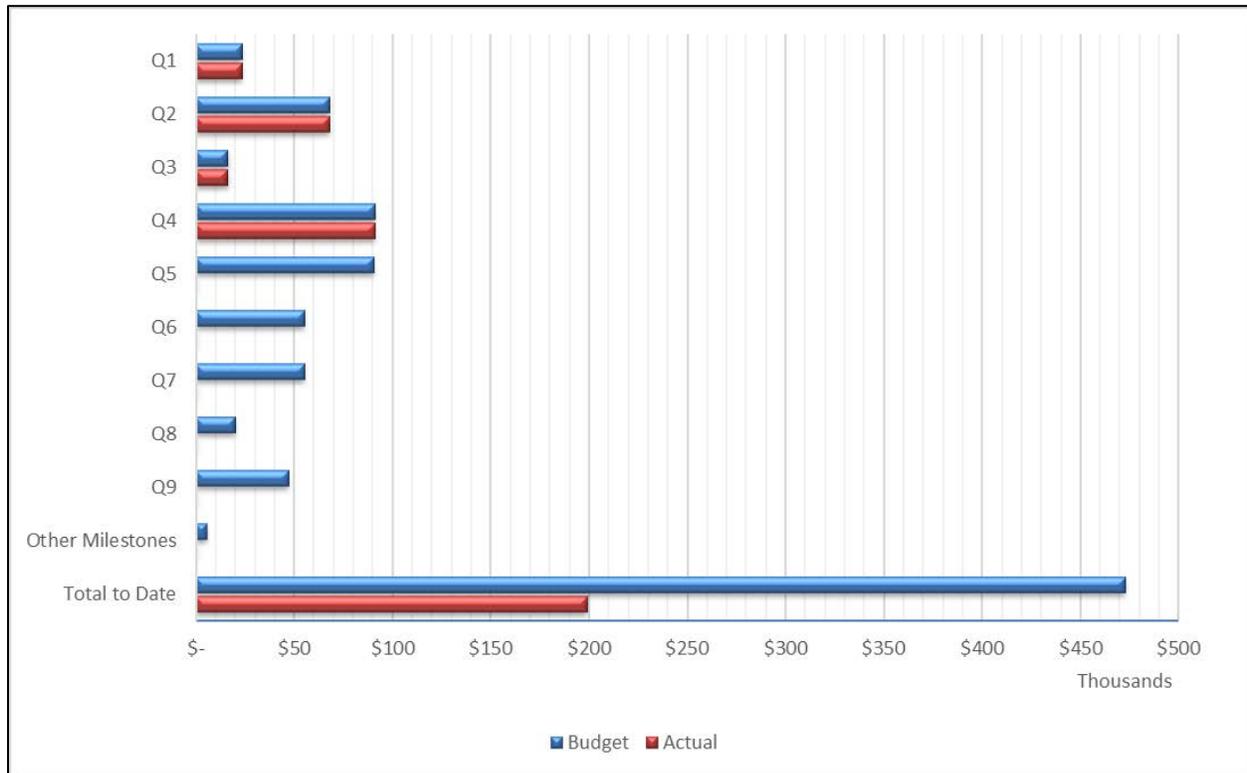


Figure 3-1: Project Financial Tracking

4 Project Technical Status

4.1 Task 3 – Uncertainty Quantification (UQ) Protocol

Work on Task 3 is now complete; the final report for this task was submitted at the end of July, consistent with the project schedule. This task was led by GTI.

4.2 Task 4.1 – MVD for the Dispersion of non-LNG Flammable Releases

Work on Task 4.1 is now complete; the final report for this task was submitted at the end of July 2020, consistent with the project schedule.

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4.3 Task 4.2 – MVD for the Dispersion of Toxic Releases

Work on Task 4.2 is ongoing; the final report for this task is due at the end of October 2020.

4.4 Task 5.1 – MEP for the Dispersion of non-LNG Flammable Releases

Work on Task 5.1 is now complete; the final report for this task will be submitted at the end of September 2020, consistent with the project schedule.

4.5 Task 8 – Project Management

An abstract was submitted for presentation at the 2020 Mary Kay O’Connor Process Safety Symposium, to be held at Texas A&M University in October 2020. The topic of the abstract is “Towards a comprehensive model evaluation protocol for LNG hazard analyses”. The abstract was accepted for podium presentation (which will be virtual due to COVID-19 restrictions). A full manuscript to accompany the presentation was also submitted. The oral presentation is scheduled for October 20, 2020. The presentation will complete the requirement to “Prepare & Present Paper at public event or publish paper in journal/magazine” (item 21 in Table 3-1).

The Q4 report was submitted on September 29, 2020.

5 Project Schedule

The project team’s efforts to advance the project schedule are summarized below:

- The project is on schedule;
- The overall schedule shown in Figure 5-1 remains on track per the schedule revisions in Mod. 002;
- The project team remains highly engaged and stable (with no changes in personnel).

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Task #	Description	Quarter											
		Q4 '19	Q1 '20	Q2 '20	Q3 '20	Q4 '20	Q1 '21	Q2 '21	Q3 '21	Q4 '21			
1	Kick-Off and Technical Advisory Panel Selection	█											
2	MEP Methodology	█	█	█									
3	Uncertainty Quantification Protocol		█	█	█								
4	Model Validation Databases												
4.0	Source Term				█	█	█						
4.1	Non-LNG Flammable Dispersion		█	█	█								
4.2	Toxic Gas and Vapor Dispersion			█	█	█	█						
4.3	Vapor Cloud Explosions						█	█	█	█			
4.4	BLEVEs							█	█	█	█		
5	Model Evaluation Protocols												
5.0	Source Term							█	█				
5.1	Non-LNG Flammable Dispersion				█								
5.2	Toxic Gas and Vapor Dispersion						█	█					
5.3	Vapor Cloud Explosions								█	█	█		
5.4	BLEVEs										█	█	
6	Develop Recommendations for Model Evaluation							█	█	█	█	█	
7	Draft and Final Report											█	█
8	Project Management	█	█	█	█	█	█	█	█	█	█	█	█

Figure 5-1: Project Schedule

5.1 Future Activities

Project team resources in Quarter 5 will be focused on completing Task 4.2 “Model Validation Database for Toxic Gas and Vapor Dispersion”, Task 4.0 “Model Validation Database for Source Term”, and Task 5.2 “Model Evaluation Protocol for Toxic Gas and Vapor Dispersion”.

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Attachment #1 – TAP Meeting Minutes, April 17, 2020