Public Quarterly Report

Date of Report: 1st Quarterly Report – December 30, 2024

Contract Number: 693JK32410007POTA

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Project Title: P3LD: Practical Protocols for Pipeline Leak Detection

Prepared by: Colorado State University

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For quarterly period ending: December 31, 2024

1: Items Completed During this Quarterly Period:

Item #	***Task #***	***Activity/Deliverable***	***Title***	***Federal Cost***	***Cost Share***
1	1	Literature review			
2	2	Form Technical Advisory Panel			
3	7.1	1st Quarterly Status Report		**$ 1,733**	***$ 0***
		Deliverable: Complete DMP	***Data Management Plan***		
		First Payable Milestone		***$ 1,733***	***$ 0***

2: Items Not-Completed During this Quarterly Period:

Items 1 Literature Review (Task 1) is ongoing and Item 2 Form Technical Advisory Board (Task 2) is complete, and per the Milestone schedule, will be invoiced in the next quarterly report.

3: Project Financial Tracking During this Quarterly Period:

4: Project Technical Status –

Data Management Plan
An updated data management plan is included here as Attachment 1.

Item 1. Task 1 Literature Review – ongoing, expected to be completed in Q2.

For the P3LD project, account set up for both CSU and partner SMU has been delayed due to a delay in receiving the project cost share from the ECMC and Colorado PUC. Both are processing their contributions now and CSU has a final presentation before the ECMC scheduled on January 8, 2025.

Item 2. Task 2 – Form Technical Advisory Panel

Relevant to Task 2, the Technical Advisory Panel has been assembled and finalized. A project kickoff was held on October 28th, 2024, which was comprised of the majority of anticipated TAP members. The first official TAP meeting has been scheduled for January 28, 2025, and will be used to introduce the new pipeline testbed, evaluate preliminary survey methods applicable to the testbed, and to discuss TAP meeting scheduling. We are routing an NDA to our academic TAP members and those are processing.

METEC Underground Testbed – Preliminary Pipeline Progress

While reporting on developments on the buildout of the METEC unground pipeline testbed for which testing will be performed are not task driven and are not billable to this project, they are relevant and will motivate all future project progress. Furthermore, preliminary research of survey methods, fixed sensor designs, and pipeline standards necessary for the buildout are directly relevant to the literature review, pipeline reviews, and next generation survey methods of Task (1), (3), and (4) respectively.

Shown in Figure 1 is the anticipated design and location of the upcoming next generation METEC underground pipeline testbed. While details are still evolving as we move through the approval processes, the testbed is currently designed to eventually be capable of up to 6 underground pipes, spanning a total of up to 600 meters of/in varying depths, diameters, pipe composition, soil, emission types, and under various surface interference (roads/etc.). Currently, we are only going to be capable of building out up to 400 meters of pipe; however, this is subject (and likely) to change as the project/budget evolves and the buildout commences.

While premature to discuss the pipeline/emissions specifics and reference sensor integrations, these will be discussed during the January 28th TAP meeting and reviewed during the Q2 report.

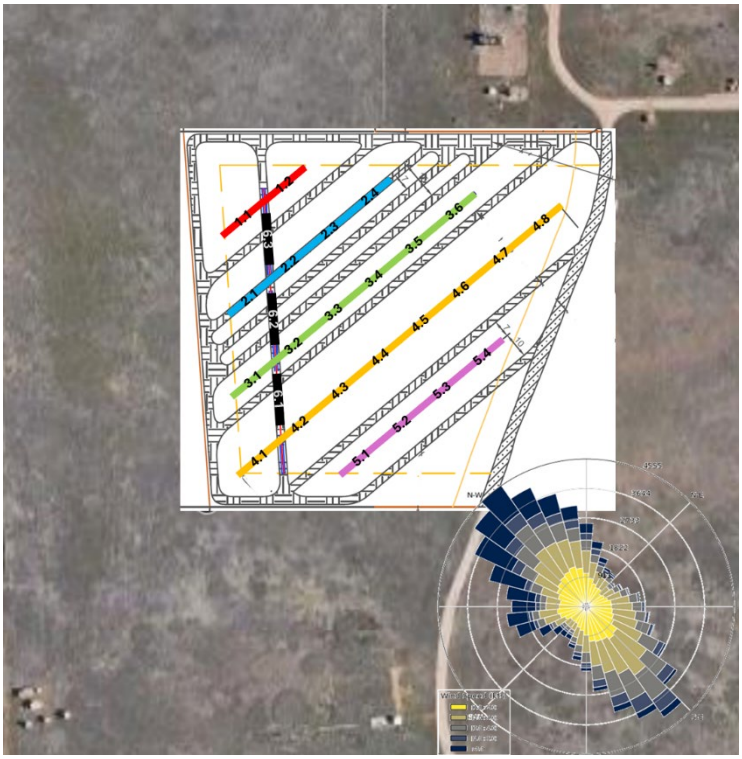

Figure 1: Preliminary next generation METEC underground pipeline testbed. Testbed map overlay is in relation to the existing METEC site to the northeast partially displayed in the upper right corner. Included overlay of a wind rose in the lower right corner.

5: Project Schedule –

No known major technical or programmatic issues. Minor programmatic issues include delays in issuance of billing accounts for which time can be spent on the project. Future reports will evaluate effect on project timeline.

Our intentions for Q2 will be to complete and report on Task (2) and to complete a draft of the literature review in accordance with Task (1). Pipeline plans for the next reporting period that are separate, but relevant, include completion of the physical initial buildout of the pipeline according to the work progress discussed above. Sensor and gas control integration will be discussed in the next report and completion of integration will be completed through Q2 and Q3.

6. Attachments

1. *Data Management Plan*

Attachment 1

Data Management Plan for Participation with the Department of Transportation's Pipeline Safety Research and Development Program

Version 1.0
December 2024

Prepared for:
U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

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Purpose

This Data Management Plan (DMP) provides for compliance with the White House Office of Science and Technology Policy memorandum dated February 22, 2013, entitled "Increasing Access to the Results of Federally Funded Scientific Research" and the US Department of Transportation Public Access Plan.

Data Description

Data types and sources include all data generated or used through the course of the research conducted and supported by Colorado State University (CSU) that is considered necessary to test, support and validate the research. This data includes collated and synthesized data sets from literature search and surveys, field monitoring/measurements, laboratory experiments, and data generated through models, simulations, or algorithms. To ensure quality and integrity, data collection will be performed according to domain best practices.

CSU will require each researcher to submit the following data descriptions for their individual research projects in accordance with this plan, as outlined in the guidance.

1. Name of data, data collection project, or data producing program.
2. Description of the research purpose.
3. Description of the data generated in terms of nature and scale (e.g. measurement data, numerical data, image data, text sequences, video, audio, database, modeling data, source code, etc.).
4. Description data:
    i. Data collection method simulated, observed or experimental.
    ii. Name of data collection platforms used:
        Software
        Physical collections
        Sensors
        Satellite
        Abstracted from pre-existing data set
    iii. Description of data outputs
        Researcher-generated databases
        Tables
        Spreadsheets
        Digital data output, such as images and video.
    iv. Period of time data were collected and frequency of update.
6. Describe the relationship between data collected and existing data, if any.
7. List anticipated data users, if any.
8. Description of long-term value of data for home research institute and other stakeholders.
9. Rationale for lack of public access, if permission is requested.
10. Name of the party responsible for managing the data.
11. Description of compliance with this data management plan.

Standards Used

CSU will follow the best practices for data collection and storage in relation to the appropriate subject matter domain to ensure accuracy and data quality. Data will be stored and managed digitally on a secure server or platform. Hand-written notes, drawings or other non-digital data will be scanned or converted to a digital format and similarly stored. Each project will provide metadata and/or documentation to make the data understandable by other outside parties, including listing the tools used to generate the data, where applicable. Researchers will indicate any special tools or software that may be required to view the data.

Access Policies

Researchers will be required to address any access restrictions at the project level. Researchers will identify appropriate steps needed to make the data publicly available, including providing informed consent to participants, protecting privacy/confidentiality where needed, and establishing security measures for the data. If the data cannot be abstracted to a public domain or is sensitive in nature, researchers will describe the necessary restrictions of access and use.

All project results will be published through conference materials, journals or made available through a publicly accessible website. Project deliverables will be published via https://primis.phmsa.dot.gov/matrix. Any exceptions to these policies will be documented and reported appropriately.

Re-Use, Redistribution, and Derivative Products Policies

CSU staff will be responsible for managing and storing research data unless otherwise determined on individual projects. CSU holds the IP for data created by DOT-funded projects unless otherwise noted. Researchers will denote copyrights, licensing, IP rights, and ownership of all data generated from the project. Requests to access data, code, or other project-derivative materials will be determined on a project-level basis.

Archiving and Preservation of Plans

Final deliverables as defined in the project will be archived within CSU's data repository using a combination of internal or cloud-based infrastructure with appropriate levels of data security and integrity. Other means of data archiving and preservation may be needed on a project-level basis, which may include providing additional data redundancy or additional security measures. The archive will be maintained for a minimum of ten years.

The final deliverables, datasets, and any accompanying materials will be made public as required on DOT's PRIMIS website, or otherwise as described.