TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Colorado Department of Transportation

INSTRUCTIONS:
Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *(i.e, SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX)* TPF-5(337)		**Transportation Pooled Fund Program - Report Period:** ☑ Quarter 1 (January 1 – March 31) ☐ Quarter 2 (April 1 – June 30) ☐ Quarter 3 (July 1 – September 30) ☐ Quarter 4 (October 1 – December 31)
Project Title: Transportation Avalanche Research Pool (TARP)		
Name of Project Manager(s): David Reeves	**Phone Number:** 303-757-9518	**E-Mail** david.reeves@state.co.us
Lead Agency Project ID: WBS 21308.06.01	**Other Project ID (i.e., contract #):**	**Project Start Date:** 01/08/2016
Original Project End Date: 06/30/2019	**Current Project End Date:** 12/31/2024	**Number of Extensions:** 1

Project schedule status:

☑ On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
$1,017,289	$821,872	81%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
n/a	n/a	n/a

Project Description:

The Transportation Avalanche research Pooled fund (TARP) was set up to support collaborative research efforts in the field of avalanche hazard assessment and mitigation, with the goal of improving the safety, efficiency, and quality of control efforts, along with providing better information gathering and analysis techniques and seamless integration of new technologies to further these goals. The participation of many transportation related agencies in this study will also further cooperation in this industry, leading to improved future development of beneficial technologies and improved sharing of information and avalanche data, greatly furthering the safety, efficiency, and quality of the work done in this field for all relevant agencies.

Currently there are several projects:

5337.01 - Assessing Gazex Avalanche Control Effectiveness with Terrestrial Laser Scanning, University of Colorado (CU), Jeff Deems (PI), $41,331 - Completed CDOT-2019-04

5337.02 & 05 - Infrasound Avalanche Detection, Boise State University, Hans-Peter (HP) Marshall & Jeff Johnson (PI's), Jacob Anderson (Co-PI), Phase 1 $99,080 (Completed - Final Report: CDOT-2021-10), Phase 2 $99,509

5337.03 - O'BellX Analysis, Colorado School of Mines, Vilem Petr (PI), $102,402 - Completed - Data and presentation delivered but no final report but there is a Phase III tech report but never published.

5337.04 - Detecting Avalanches and Differentiating Type and Size of Avalanches Using Radar, Niivatech, Jordan Hill (PI), $70,681 original but invoiced $7,916 and then project canceled as turned out unfeasible and returned funds.

5337.06 - Avalanche Forecasting Using Frequency Modulated Continuous Wave Lidar During Winter Precipitation Events, Montana State University, $99,774 (phase 1), $95,048 (phase 2) (phase 1 & 2 completed - Phase 3 (final) added $109,354), Kevin Hammonds (PI)

5337.07 - Measuring Explosive Airblast of Remote Avalanche Control Systems (RACS), Montana State University, Robb Larson (PI), Dan Miller (Co-PI), $ 163,930

5337.08 - Snowshed Synthesis, Montana State University, Jordy Hendrikx (PI), $39,563 - Complete - CDOT-2020-13

5337.09 - DEID Snow Storm Instabilities, University of Utah, Eric Pardyjak (PI), $ 55,459 - Project underway and final

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

- 12/09/2021 - TARP Monthly Meeting
- 02/02/2022 - TARP Monthly Meeting
- 05/17/2022 - TARP Annual Meeting (scheduled)

Quarterly progress reports for each project are delivered as separate documents and available on our website there: https://sites.google.com/view/tarp or on the shared Google Drive folder that TAC members have access to.

New project - 5337.06 phase 3 - Using Infrasound for Avalanche Detection Phase 2 is now under contract with Montana State University and Dr. Kevin Hammonds as the PI. This will be the final phase for this project.

Anticipated work next quarter:

Will continue to work on each project that is currently active. For detailed information please go to https://sites.google.com/view/tarp

This pooled fund also has regular meetings (monthly or quarterly) where TARP members get a chance to be updated on each individual project and exchange ideas. Will also be having the annual meeting in Washington DC on May 17, 2022

TARP 2.0 solicitation minimum contributions was met and a TPF # has been assigned.
- Transportation Avalanche Research Pool (TARP 2.0) - TPF 5(497)

Significant Results:

n/a

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

None

Potential Implementation: