DRISI
Caltrans Division of Research,
Innovation and System Information

Research Notes

Maintenance

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Project Title:
Avalanche Research Pooled Fund
TPF-5(337)

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Avalanche Research Pooled Fund TPF-5(337)

A collaborative research effort in the field of avalanche hazard assessment and mitigation, with the goal of improving safety.

WHAT IS THE NEED?

Reducing the avalanche hazard to transportation corridors is crucial to winter operations of Department of Transportation (DOTs) in many western states, and as such, are large budgetary items to these DOTs. Much of the research done by each DOT is relevant and useful to the efforts in other states, but there is not any official, long-term collaboration effort currently in place. Because of this, money can often be spent on the same research efforts in multiple different states.

DOTs associated with the Avalanche Artillery Users of North America Committee (AAUNAC) currently have an annual meeting in Seattle and have been meeting since 2012 to discuss avalanche mitigation efforts, but this covers only a small portion of total avalanche-related control and research activity. It's clear that a national effort to collaborate on avalanche-related issues is needed.

This pooled fund satisfies the need by gathering DOTs from across the country to pool knowledge and resources for maximum benefit. A coalition of transportation related groups with interest in avalanche control research will provide a single source of funding for unified research efforts that will benefit all contributing parties. This will allow for larger and more significant research projects to be undertaken and will lead to an overall cost savings by consolidating many different DOTs' research efforts in the same field.

WHAT ARE WE DOING?

The study's mission is to support collaborative research efforts in the field of avalanche hazard assessment and mitigation, with the goal of improving 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 safety, efficiency, and quality of the work done in this field for all relevant agencies.

Scope of Work:
The group will fund research and development efforts to achieve the program goals, with initial proposed research focusing on:

- Infrasonic sensing and mapping/ Light Detection and Ranging (LiDAR)
- Avalanche Safety/ Risk Management
- Avalanche Information Exchange Platform for information sharing
- Mobile Blast Shield – further development
- Explosives techniques, including an extension to an existing Case Charging contract
- Avalanche Asset Management
- Other New Technology

WHAT IS OUR GOAL?

The goal of this research is to partner with other DOTs to investigate new technologies and equipment that can help improve California Department of Transportation (Caltrans) avalanche hazard assessment and mitigation efforts.

WHAT IS THE BENEFIT?

Caltrans benefits from this research by receiving the most up-to-date avalanche mitigation strategies for use in avalanche control operations. As a result, the study will improve motorist and worker safety, decrease avalanche control costs, and minimize delays to the travelling public.

WHAT IS THE PROGRESS TO DATE?

As of December 2020, here is the current progress of this pooled fund research:

- LIDAR final report has been written and approved.
- Testing has stalled on the Obellx Avalanche Control System, which uses a remote system that is based on exploding a hydrogen/oxygen gas mixture inside an open cone. The task force is looking to discontinue this research.
- Infrasound project is developing onboard processing and communications to send avalanche detection results.

For more information, please contact the Task Manager.