

Pooled Fund Study Project TPF-5(054)
SDDOT Project SD2002 – 18
Development of Maintenance Decision Support System
Phase V
First Quarter Progress Report
January - March, 2009

Overview

The two foci of the Phase V first quarter (Q1) 2009 were (1) continued operations for the fourteen member states and (2) continued research and development efforts. Operation efforts included refresher training in several of the project states, forecasting support in all MDSS route locations, and continued customer support. Work also continued on the cost/benefit study and the Winter Maintenance Severity Index (WMSI).

Additional efforts were made to develop a MDSS PFS deployment guide. During the February technical panel meeting a decision was made to create an overview document for deployment of the PFS MDSS. A questionnaire document was sent to the 14 states to get responses on specific questions regarding deployment issues.

Research and development of the MDSS system also continued during the quarter, including enhancements to both behind-the-scenes processing and to user display capabilities. At the end of the quarter version 5.35 was available to all users.

Progress by Task

Specific accomplishments on the explicit tasks of the Phase V work plan during the first quarter of 2009 follow.

TASK 13: Provide weather forecast support, MDSS configuration support, live MDSS operations, and necessary training for continuing deployment field trials in the participating highway agencies throughout the 2007-2008 and 2008-2009 winter seasons.

MDSS operations continued in all 14 states as winter operations were experienced across all MDSS routes. The increase in winter weather across states also provided the states an opportunity to evaluate the ramp-up of routes. There were several locations that needed to re-evaluate current route information, including practices and material selections, and this took considerable efforts from both Meridian and states. These efforts stemmed from the work done during Q4 2008 in which much time was spent working with the states to update metadata on the routes.

Numerous requests to save storms were received from the PFS member states during the quarter. Steps were taken to ensure all storms that needed to be saved were captured. With the increased demand of saving storms some events had to be moved to an offline location until additional resources are available to host these storms for all to view. Discussions between Meridian and the states were conducted to ensure critical storms for training or other immediate uses were not moved offline.

Training has clearly been an important part of the deployment of MDSS within the PFS states. Most of the training during the winter was conducted during Q4 2008. There were some locations that did have additional training for users that had already participated in the introductory training. The purpose of the training sessions during Q1 2009 was to focus on the how to use MDSS during winter operations. Saved storms were used as examples of how recommendations were generated and how to apply them during maintenance operations. Table 1 shows the list of training locations, dates, and trainers present.

Table 1: Training conducted during the first quarter of 2009.

Date	Location	Trainer
Colorado		
February 12 th	Evans	Gordon Bell
Indiana		
January 21 st -22 nd	Laporte & Fort Wayne Districts (4 sessions)	Steve Gaddy & Cory Block
January 27 th	Greenfield District (2 sessions)	Steve Gaddy
January 29 th	Crawfordsville District (2 sessions)	Steve Gaddy
South Dakota		
March 17 th -19 th	Pierre, Rapid City, Mitchell	Ben Hershey

TASK 14: Refine and evaluate techniques for acquiring, managing, using, and reporting information from mobile data collection equipment mounted in winter maintenance vehicles and for providing information to maintenance operators via the same equipment.

Enhanced in-vehicle MDSS software developed during previous quarters (associated with subtask 14.2) is still in the process of being implemented as of the end of Q1 2009. In addition, Meridian has continued to work with a number of PFS member agencies to incorporate new data feeds and to resolve issues reported from the field relating to the provision of MDSS information back into maintenance vehicles. Several significant flaws in MDSS' MDC/AVL data processing software were identified and rectified during the quarter.

TASK 15.: Refine and evaluate the capability and performance of MDSS software components, including surface condition prediction models and graphical user interface.

Efforts to improve the capability and performance of MDSS are ongoing. Subtasks 15.1, 15.2, 15.4, 15.5, 15.7, and 15.8 were all completed in previous quarters. Numerous enhancements and adjustments to other MDSS' modules, falling under Subtask 15.10, have also been completed during Q1. These include the development of more sophisticated processing techniques for utilizing blowing snow reports, the implementation of a two-tiered level-of-service goal system within MDSS (permitting temperature-dependent road condition goals), file format changes to reduce disk space utilization, eradication of several software bugs that occasionally caused road condition observations to be dropped by the system, and modifications to the logic to choose between similarly performing maintenance options. Additionally, GUI modifications were also continued during Q1 2009, to include significantly improved printing functions and quality (among many other minor enhancements).

TASK 16: Recommend, develop, and evaluate methods for enhancing highway agencies' management through interfaces between MDSS and other management systems, analysis of winter maintenance practices, and extension of MDSS techniques to non-winter applications.

Support of the MDSS cost/benefit study was completed during Q4 of 2008. However, research into the potential for application of MDSS as a tool for generating a Winter Maintenance Response Index continued during Q1 of 2009. Efforts during the quarter focused on building access to near-real-time simulations of required winter maintenance activities into the operational MDSS system, so as to provide an ongoing objective assessment of the maintenance requirements imposed by the season-to-date weather conditions to which each MDSS route has been exposed.

TASK 17: Develop a model MDSS procurement specification suitable for use by public highway agencies.

Three draft MDSS procurement specification documents that had been in circulation in previous quarters were discussed during the February Technical Panel meeting. It was decided that if no comments or questions were presented in the following two weeks the documents were to be considered finished. These specification documents include a document designed for a procurement situation in which an agency desired weather and maintenance decision support services be provided as a package by a single organization, as well as two additional documents tailored toward a situation where weather services are procured independently from MDSS operation services. These additional documents are also considered final, as no comments or questions were received from the Technical Panel members

During the February meeting it was decided that a PFS MDSS Deployment Guide document was needed to help upper management understand the concept of MDSS and also provide documentation of experiences and lessons learned from testing and deployment across the project states. Following the meeting a questionnaire was distributed to the members of the Technical Panel to solicit their personal insight on deployment issues, including route selection and distribution, training, AVL/MDC, human factors, and other deployment issues. Responses from this questionnaire were due at the end of Q1. Additional work will be exercised in Q2 to compile the information and provide a PFS MDSS Deployment Guide.

TASK 18: Prepare a final report summarizing methodology, findings in performance, conclusions and recommendations.

No activities have been performed for this task during Q1. A Major Report on the study to date was created during the Q1 2008 and will eventually serve as the basis for the Final Report as the project winds down.

TASK 19: Make an executive presentation to the project's technical panel and provide electronic copies of the presentation material to participating states.

No activities have been performed for this task during Q1.