Pooled Fund Study Project TPF-5(054)
SDDOT Project SD2002 – 18
Development of Maintenance Decision Support System
Phase V
Second QUARTERLY PROGRESS REPORT
April - June, 2008

Overview

The primary foci of the Phase V second quarter (Q2) 2008 were the support and assessment of the Field Deployment Transition II (FDT-2) and continued research on the Winter Maintenance Response Index (WMRI) and cost/benefit study support. The former included performing surveys in several of the PFS states to provide the individual states with insight into the project's strengths and weaknesses.

Continued refinement of the newest versions of the GUI continued as new functionality was added to the storm playback mode that was introduced in v4.01.1 and several other new features were developed.

A meeting of the project's Technical Panel was held in Sioux Falls, SD on June 5 and 6, 2008 to discuss the results of the previous winter's activities and to discuss on-going and new development efforts. In addition, two presentations were made on behalf of the PFS MDSS at the Transportation Research Board 7th International Symposium on Snow Removal and Ice Control Technology and the 4th National Conference on Surface Transportation Weather.

Progress by Task

Specific accomplishments on the explicit tasks of the Phase V work plan during the second quarter of 2008 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 were continued through this period as winter continued to impact many of the PFS states well into April and even early May. The development of a new route configuration tool has continued to ensure that MDSS routes are configured correctly.

During Q2 winter season assessment surveys were conducted within several of the PFS states. These surveys were conducted through phone conferences or through a web-based survey mechanism. Several states provided their winter maintenance personal the opportunity to voice their opinions on the MDSS project and MDC/AVL capabilities. Preliminary data was presented to the Technical Panel during the June meeting.

Training has clearly been an important part of deployment of MDSS within the PFS states. As states move to full deployment of MDSS, training new users is a crucial portion of this

deployment. The concept of computer based training (CBT) has been discussed and preliminary steps have been taken to develop these tools.

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.

Work pertaining to the ability of the in-vehicle MDSS to accommodate style differences, route selection menus, alternative recommendations and real-time reprocessing of recommendations (subtask 14.2) is nearly complete as of the end of Q2. The new features will be tested and refined over the last two quarters of 2008.

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

Two subtasks of Task 15 were completed during Q2. These subtasks include the addition of maintenance recommendations to the MDSS GUI 'Alert Panel', and the development of a map-based maintenance and road condition reporting tool (subtasks 15.8 and 15.5, respectively).

In addition, the seasonal simulation efforts being performed in support of the MDSS cost/benefit study and WSI development have yielded new insights into the performance of the MDSS system. As a result, a redesign of portions of MDSS' treatment logic was performed during Q2. It is anticipated that this redesign will be implemented and tested during the third quarter. This effort can be associated with any or all of subtasks 15.9-15.11.

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 and the associated development of tools to support high-level applications of MDSS (subtasks 16.5 and 16.1, respectively) have been a major thrust of Q2 efforts. Simulations for selected routes in the state of Minnesota were completed, one of which will be used in the MDSS cost/benefit analysis. Historical maintenance data were also obtained for two CDOT routes in the Denver metropolitan area. Unfortunately, the data CDOT was able to provide spanned the '04/'05 through '07/'08 winter seasons, while the data used to support the associated MDSS simulations was available only through mid-winter of the '06/'07 season. In order to get an adequately long simulation period to compare against CDOT records it was necessary to find new sources of weather data that were updated through this past winter. New datasets were located and the simulation software was modified to accommodate these new datasets. As a result, CDOT cost/benefit study simulations are expected to be completed early in the third quarter of 2008.

A storm playback capability to support use of the MDSS GUI as an off-season training tool (subtask 16.2) was also developed and refined during the period spanning the first and early

second quarters of 2008. Several late-winter storm events were saved for most PFS MDSS agencies for use in training later this summer and fall.

A summary of these enhancement actions was provided at the PFS MDSS Technical Panel meeting in Sioux Falls, SD on June 5-6, 2008.

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

Two draft MDSS procurement specification documents have been circulated to date. The first specification document, created and circulated in previous quarters, was designed for a procurement situation in which an agency desired weather and maintenance decision support services be provided as a package by a single entity. This document provides specifications for an MDSS and service provision that are similar in nature to what has been provided by Meridian during the MDSS field deployment tests.

Upon review of this first document the MDSS Technical Panel members also expressed a need for two additional specification documents: one for the provision of weather services to support MDSS and another for operation of the MDSS system. A draft MDSS weather services specification was completed and circulated to the Technical Panel members during Q2. Significant progress on a draft MDSS operations specification was also made during the second quarter, although this draft had not yet been circulated as of the end of the quarter.

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

No activities have been performed for this task during Q2. A Major Report on the study to date was created during the previous quarter 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 Q2.