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

Overview

The work conducted in the Phase V third quarter (Q3) 2009 included making significant Graphical User Interface changes along with research and development efforts directly relating to the Winter Maintenance Response Index (WMRI). No operations were conducted during Q3 but many of the changes to the GUI during the quarter were a result of comments from users during the previous winter's operations. The end of Q3 was spent working with states to determine levels of operation anticipated for the 2009-2010 winter season, and how operations would be funded as the PFS MDSS transitions into a new phase (Phase VI).

Development activities continued during the quarter including enhancements to user display capabilities. This includes refinements to the panning/zooming functions of the MDSS GUI along with many small changes making the MDSS more user-friendly.. More features of the WMRI were also added to the MDSS. The work conducted on the WMRI was the main focus of the research and development during Q3. All of the work on the WMRI will be presented to the Technical Panel at the beginning of Q4.

The MDSS deployment guide was finalized during Q3 along with the development of an Executive PFS Deployment Guide. This latter document is 2 pages in length and provides an overview of the PFS project, a statement of the benefits of the PFS MDSS, and a brief description on considerations when deploying the PFS MDSS.

Progress by Task

Specific accomplishments on the explicit tasks of the Phase V work plan during the third 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 concluded for the 2008-2009 in Q2. No forecasting, configuration, or live operations were conducted during Q3. Work was done to coordinate with states in anticipation of continuing live operational support for the 2009-2010.

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.

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. From the standpoint of managing and utilizing this information, the development of capabilities for generating reports geared toward management personnel in agencies using MDSS has continued to be a focus during Q3. Many of the envisaged reports focus on facilitating both individual and combined managerial analysis of MDC/AVL and MDSS information. These new tools are expected to be available to a select group of MDSS users during the first half of Q4.

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 continue on an ongoing basis. Subtasks 15.1, 15.2, 15.4, 15.5, 15.7, and 15.8 were all completed in previous quarters, while 15.6 is presently being addressed through the inclusion of capabilities for generating management-oriented reports via the MDSS GUI. Other enhancements and adjustments to MDSS' modules, falling under Subtask 15.10, have also been completed during Q3. These include numerous minor modifications to the MDSS GUI to address common issues noted by users. One of the more notable changes pertains to the differentiation between reported, recommended and assumed maintenance actions in the MDSS Route View tables and graphs. Previously the same icon was used for reported and recommended actions, and the only indication of assumed actions was contained in the associated notes. After the change, each now receives a distinct icon and label. Version 6.0 of the MDSS GUI was temporarily released in mid-September of 2009, but was quickly pulled again due to reports of the GUI locking up. The cause of this lock-up issue has been extremely difficult to diagnose and has not yet been resolved as of the end of Q3.

Aside from GUI improvements, significant hardware upgrades have also been made to the computers supporting MDSS. This includes upgrades of the three primary computing systems associated with MDSS server-side processing as well as an immediate upgrade of the newly instituted MDSS 'storm server' (after initial hardware proved underpowered for hosting the saved storms).

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.

Research into the potential for application of MDSS as a tool for generating reports tailored to high-level management within state transportation departments has continued during Q3. Efforts during the quarter focused on building and enhancing a capability for generating management-oriented reports into the MDSS GUI. Initial reports that have been generated under this new capability focus primarily on the visualization and analysis of data coming out of the MDSS WMRI simulation system as well as out of agency MDC/AVL systems. An initial functioning version of the Management Reports interface was prepared for demonstration to the MDSS Tech Panel at the early Q4 meeting. It is expected that the Management Reports interface will be made available to a select group of MDSS users during the first half of Q4.

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

No changes were made to the procurement specifications during Q3. The PFS MDSS Deployment Guide, developed under this task during Q2, was edited and a final version approved by the technical panel during this quarter. As per the technical panel's direction at the Q2 meeting, an Executive PFS Deployment Guide was developed to bridge the gap between high-level decision-makers and on-the-ground deployment managers. This document is 2 pages in length and provides an overview of the PFS project, a statement of the benefits of the PFS MDSS, and a brief description on considerations when deploying the PFS MDSS. It will be presented to the Technical Panel at the Q4 meeting.

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

No activities have been performed for this task during Q3.

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 Q3.