TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: ___Jan. 15th, 2013_____

Lead Agency (FHWA or State DOT): ___South Dakota DOT_____

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(054)	Transportation Pooled Fund Program - Report Period: ☐Quarter 1 (January 1 – March 31) ☐Quarter 2 (April 1 – June 30) X Quarter 3 (July 1 – September 30) ☐Quarter 4 (October 1 – December 31)
Project Title: **Development of a Maintenance Decision Support System**	

Name of Project Manager(s): **Dave Huft**	Phone Number: **605-773-3358**	E-Mail Dave.Huft@state.sd.us
Lead Agency Project ID: **SD2002-18**	Other Project ID (i.e., contract #) **310814**	Project Start Date: October 14, 2002
Original Project End Date: **April 30, 2003**	Current Project End Date: **September 30, 2012**	Number of Extensions: 29

Project schedule status:

X 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
$5,476,937.00	$5,466,209.33	99.80%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$146,224.49 (2.67%)	$146,224.49	100.00%

Project Description:

- The Maintenance Decision Support System research program is responsible for research and development related to the implementation of new information technologies to support transportation maintenance decisions, including winter and summer decision support tools. The program also performs substantial research and development into parallel applications for the transportation industry that may either share data with MDSS, or benefit by leveraging technologies developed under the program (for instance, sharing of data between MDSS and other agency systems, or the development of management-oriented tools that leverage MDSS' capabilities).

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

- Continued development of MDSS applications for Android and iOS smartphone and tablet devices. As of the end of Q3 the initial operational release of the Android MDSS app was largely complete. This app featured a map-oriented view with selectable map objects, tabular and graphical route views, RWIS and METAR current condition views, and a tie-in to Meridian's METAlerts automatic alerting system. Development of the iOS MDSS app also continued during Q3. The initial operational release of the iOS MDSS app is expected to occur midwinter 2012/13.

- Software enhancements in preparation for release of Version 9.0 of the MDSS GUI continued.

- Training reference guides were shared with the Technical Panel for review.

- A draft training guide was started for the MDSS mobile application in development. Although, the app is being developed with common app functions a user guide is necessary for basic navigation.

- Route configuration changes began in the latter half of the quarter as operations were getting closer to beginning.

- Each agency, funding operations through the PFS, received cost estimates of up-coming operations. In most cases several iterations were necessary to clarify route numbers, AVL/MDC unit integration, and training options.

- Preliminary training schedules we developed with several agencies.

- Work continues on the assessment of successes and shortcomings from the PFS MDSS experiences in participating states.

- Mobility Index - Mobility index curves for snow, ice, water, and slush were evaluated; a tentative set were selected for testing and implementation.

-Fine-resolution mesoscale model applications: Adjustment of domains was needed due to delays in upgrades to the Meridian computing cluster. This forced additional computer model management code to be developed to support interleaving of model domains. Survey instruments were designed to support asynchronous reporting by field personnel. These are assigned to each individual participating state in the exercise. Code was completed for identifying high wind events and generation of alerts for the two high-wind regions. Code was begun for the effect snow alerting.

Anticipated work next quarter:

- Complete the desired 'Summary' screen in the Android MDSS application and formally release MDSS for Android to the MDSS user base. Continue development of an iOS-based application to be released later in the year.

- Continue to build out and evaluate the designed suite of functionality for the combined WMRI and MDC/AVL Management Tools, specifically focusing on evaluating the usefulness of the WMRI tool in several states and and on rounding out the aspects of the MDC/AVL Management Tools that facilitate comparison of maintenance activities against both weather events and guidance provided to snowplow operators via MDSS or other more traditional mechanisms.

- Continue work to improve upon MDSS' precipitation analysis data based on issues identified during the winter season, and continue the general process of refinement to other MDSS components based on feedback received.

- Testing of Assessment tool to work out any remaining functionality issues, or documentation issues for users of tool for next winter season.

- Operations for all states will begin on October 15th.

- Route configuration changes and additions will likely occur due to on-site training feedback. Several agencies use training as a way to coordinate these changes.

- All training materials will be developed before on-site training begins. This will include a presentation highlighting the new features available within version 9.0 of the MDSS GUI.

- Mobility Index - Refine the mobility index curves and integrate the new processing into MDSS.

- Completion of lake effect snow alerts will be completed and tested. Identification of field personnel to support evaluations will be completed in December with subsequent testing to begin immediately using the web survey instruments. Final testing of alert text messages will be complete and implemented. Upgrades to the Meridian computing cluster are expected in early 2013 and adjustments of modeling integration limits will be made accordingly to provide a longer forecast interval for lake effect events.

Significant Results:

- Significant results this quarter include the initial release of an operational MDSS smartphone app for Android as well as Version 9.0 of the MDSS GUI.

-Mapping of high-wind events to maintenance routes providing along route and cross-route wind speeds and wind gusts.

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).

- Project was extended 1 year to continue work on the states research priorities and conduct operational field deployment trials.

Potential Implementation:

- The MDSS research program is presently in its 7th phase of work. The core MDSS software / services have been operational within numerous state transportation agencies for several years or more, depending upon the agency.

- An initial suite of "Management Tools" has been implemented within the past several years, starting first with a WMRI tool to aid managers in quantifying winter severity across their jurisdiction from a winter maintenance perspective, followed up more recently by a complementary suite of MDC/AVL-oriented tools analyzing and visualizing maintenance being performed by the agency's MDC/AVL-equipped snowplow fleet.

- An operational MDSS application of Android devices was released in late fall of 2012. A similar application for iOS devices is expected midwinter of 2012-2013.