TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Date: ____October 31, 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, 2013**	**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
$6,676,382.00	$ 6,656,613.42	99.70%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
$229,940.60 (3.44%)	$229,940.60	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.):

- A Phase VII Final Report was started with a rough draft completed by the end of Q3.

- The three preexisting MDSS specification documents were updated to reflect changes in MDSS' software and operation procedures during Phases VI and VII.

- Presented a summarization to performance of the WMRI toolset against PFS agency data at the June '13 Technical Panel meeting.

- Communicated with each agency and developed costs for anticipated operations. Each agency, funding operations via the MDSS PFS contract, received cost estimates. Adjustments were made as necessary.

- Final edits were made to training materials and user guides for 2013-14 winter operations.

- Route configuration edits for the upcoming winter season began as each agency made adjustments to their configurations upon changes they received from the field. This also included material changes and material aliasing for AVL/MDC data. This process will help reduce the number of "unrecognized" materials from trucks.

- A specification was developed for the processing needed to permit MDSS users to modify recommendations if the

MDSS generated initial conditions did not match user observed conditions. Various processing options were

evaluated to determine their ability to improve the recommendation update speed with minimal impact on the existing user interface.

- The Android MDSS app continued to undergo a major overhaul during Q3 in an effort to address some longstanding issues, improve usability, and provide a better code base on which to build additional features going forward. Looping capability / controls were added, as was local caching to keep the app from having to go back to the server each time the time slider adjusted. A layer depicting snowplow locations and data was also added.

- Development of the first formal release of the iOS MDSS app continued during the quarter. This included testing and debugging, as well as the addition of some features (such as looping capabilities and controls in the iOS MDSS Map View). The iOS MDSS app was approved by Apple, Inc. and made available to the PFS

MDSS user community in early August of 2013.

Anticipated work next quarter:

- Continue enhancement of both the iOS and Android apps, to include addressing bugs that are likely to be noted by users due to the relatively new code bases associated with both.

- Work with the MDSS Technical Panel to identify factors limiting implementation and operational utilization of the WMRI toolset. Work to add useful visualization and analysis tools, such as seasonal graph summaries of severity measures and spatial aggregation capabilities.

- Operations will begin during Q4. This will include MDSS customer support, on-site training, and operational weather forecasting support where necessary.

- A final draft of the Phase VII final report will be completed and distributed for review.

- The modification of MDSS code to integrate the recommended code will be addressed in the MDSS code revisions

The existing recommendation approach will be left in place until MDSS code is updated.

- Route configuration will be performed in most locations after training. Each year, training brings out unanswered questions and this generally leads to route configuration changes.

- Training documentation will be finalized and used to help augment training activities.

Significant Results:

- The MDSS mobile 'app' for iOS devices was approved by Apple and made available to the PFS MDSS user community.

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 to a Phase VIII. This will be a two-year phase, with the first year of funding approved by the project Technical Panel. The primary foci of Phase VIII were determined based on rankings submitted by Technical Panel members, and include assessment of recommendations, continued enhancement of the MDSS mobile apps, facilitation of implementation of the Management Tools, and design and development of MDSS 'dashboards'.

Potential Implementation:

- The MDSS research program completed its 7th phase of work during the quarter. 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.