

Road Weather Management Strategies

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MnDOT Overview

- MnDOT has been a part of IMO 1-2-3
- To date MnDOT has 750+ plow trucks, 25 light duty vehicles and 35 mower tractors deployed with AVL systems
- Mobile data collected
 - Air Temperature
 - Surface Temperature/Surface condition/Friction
 - Spreader controller information
 - CAN BUS data
 - Camera Images

Goals

- Provide a robust system with built in interfaces providing real time mobile data to enhance MnDOT Operations
 - Fleet Management/Vehicle Maintenance information
 - Traveler Information Systems (511)
 - Web MDSS
 - Managers/Supervisors (MDSS Reports Interface)
 - Internal reporting system (RCA) Through TAMS (not developed)

Navistar Interface



Fleet

Vehicle Information



Home Publications Service Reference Write Up Customer Solutions Fleet Warranty Support

Chassis / VIN Number

View

Page partially disabled

Summary Connection Warranty Coverage

OnCommand[®]
Connection

Health Reports for 2FZAABWS29AAK1507

Note: Some of these reports came from other dealers. You may only open cases from reports that were created at your dealer locations.

Note: The date range for this report defaults to the previous 90 days. To report on a custom date range, enter the dates below.

Show scans from to or show all scans ☐ [Apply Filters](#)

[Refresh](#) [Print](#) [Export](#)

Show Records. 5 record(s) found.

Derate Condition Stop Now Service Immediately Service Soon

ID	Date of Scan	Tool	VIN	Dealer Acct	Mileage	Hours	Engine Cal	All DTCs	Create Case	Customer Check-in	Reset Health Report
31148526	12/3/2017 12:09:02 PM	Ameritrak	2FZAABWS29AAK1507	Telematic	68266 M	4882.00		Active DTC: 0, Inactive DTC: 3			
30712246	11/21/2017 2:02:36 PM	Ameritrak	2FZAABWS29AAK1507	Telematic	68036 M	4841.00		Active DTC: 1, Inactive DTC: 1			
30387857	11/15/2017 3:34:54 PM	Ameritrak	2FZAABWS29AAK1507	Telematic	67968 M	4829.00		Active DTC: 1, Inactive DTC: 1			
30082951	11/4/2017 2:02:27 PM	Ameritrak	2FZAABWS29AAK1507	Telematic	67577 M	4804.00		Active DTC: 0, Inactive DTC: 1			
29782332	11/1/2017 5:03:29 PM	Ameritrak	2FZAABWS29AAK1507	Telematic	67401 M	4790.00		Active DTC: 0, Inactive DTC: 4			4

511

Browser address bar: <https://hb.511mn.org/#roadReports?timeFrame=TODAY&l> Minnesota 511 Travel Infor...

Navigation: File Edit View Favorites Tools Help
Convert Select
Web Reports (3) NWChat Live Welcome to Access Online Get Help - MN IT Services COSWeb - Office of Enter... SAE Standards Works Web Reports (2) Web Reports

Minnesota 511 Travel Information

Road conditions are updated Mon - Fri, 3-6 am and 3-6 pm, and as conditions change.
After normal business hours, weekends and holidays, conditions are updated as they change.

Your 511 (sign in)

NEED HELP? Truckers' Info Streamlined Version Links Contact MnDOT

Text Size A A A Text Only Future Info: [Calendar Icon]

Menu

- Personalize your 511
- All Reports
- Traffic Speeds
- Cameras
- Weather Stations
- Plow Cameras
- Metro Traffic Map

Plow Cameras

Legend

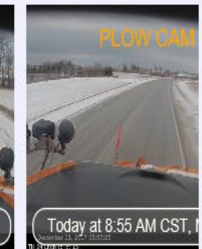
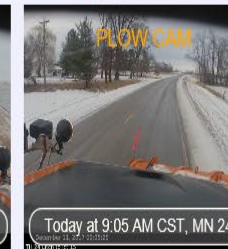
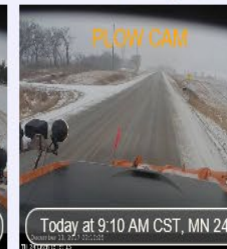
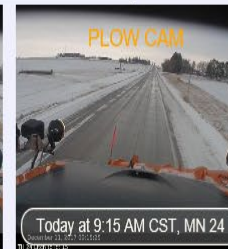
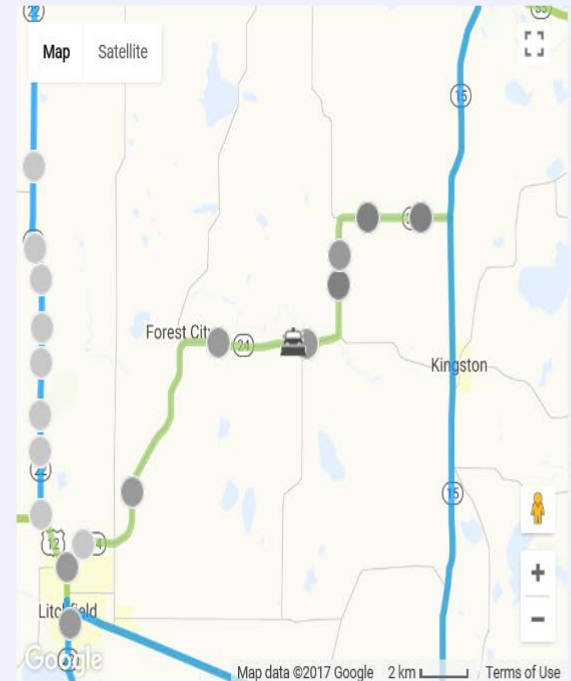
Map data ©2017 Google 50 km 5

9:46 AM 12/11/2017

Plow Cams

Road conditions are updated Mon - Fri, 3-6 am and 3-6 pm, and as conditions change.
After normal business hours, weekends and holidays, conditions are updated as they change.

 MN 24: Snow Plow Camera: Today at 9:40 AM CST



MnDOT WRMS

- WebMDSS
 - Maintenance Decision Support System
 - Provides detailed, hour by hour weather and pavement forecasts at the maintenance route level
 - Provides live, near real time map of current operations in the network
 - User interface provides truck, route, forecast, recommendation, images, and long range forecast data
 - MnDOT's Reports interface

WebMDSS/Reports

Salt Usage vs. MDSS Recommended

Salt usage reported by operators vs. recommended by MDSS

Vehicle Speed While Applying Chemical

Puts data points in bins based on speed while spreader is running

Average Precipitation

Average precipitation by route and also sort by Sub Area/district

End of Shift Report

Provides same end of shift data received in truck in reports application

Material Usage By Route

Details of all winter materials based on route as reported by RCA

AVL Status Report

Reports AVL status for quick reference for supervisors

Sander Status

Reports quick reference of sander, Auto, manual, conveyer, etc.

Reports Interface

Salt Usage vs. Recommended

Salt Usage
vs. MDSS
Recommended

Vehicle
Speed While
Applying
Chemical

Average
Precipitation

End of Shift
Report

Material
Usage By
Route

AVL Status
Report

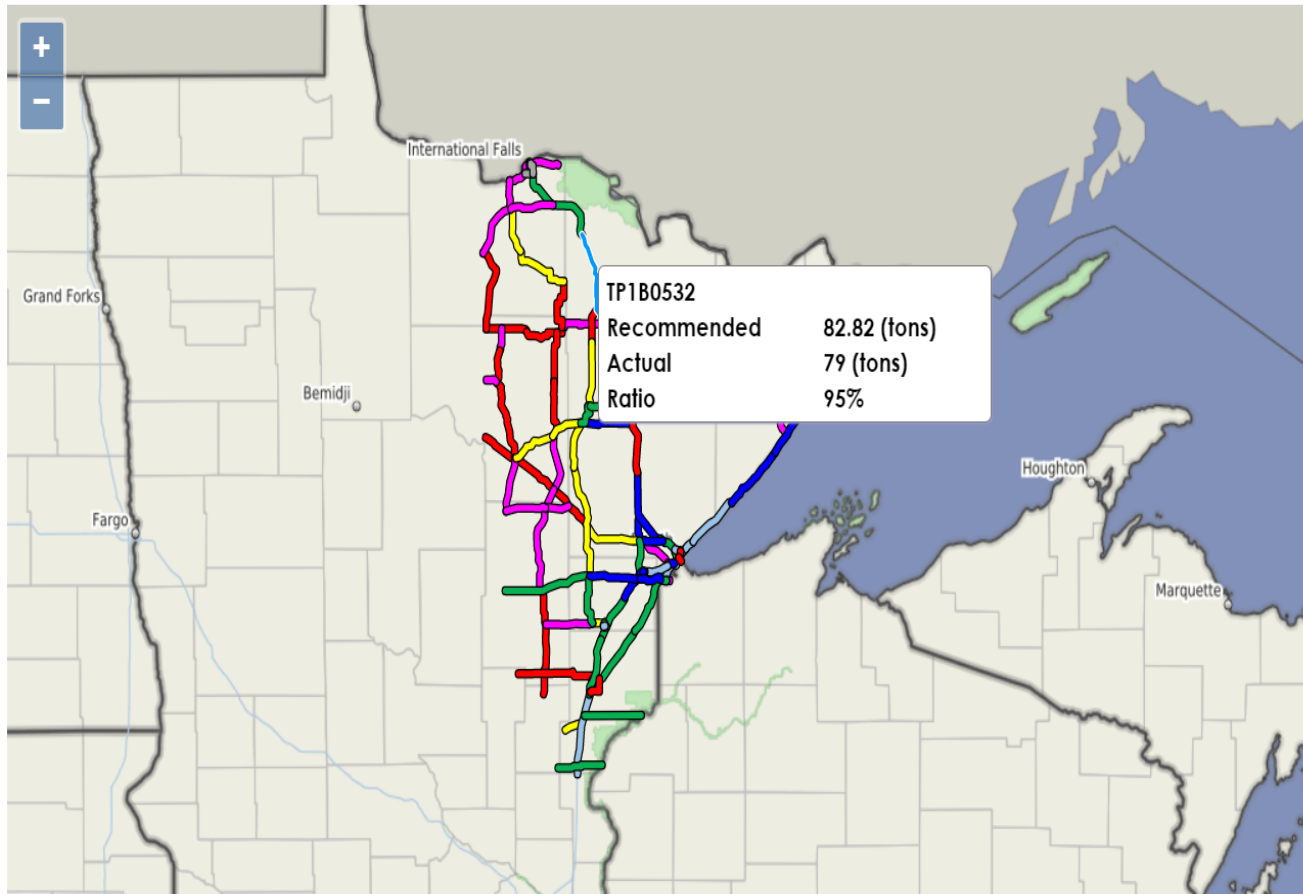
Sander
Status Report

Salt Usage vs. MDSS Recommended

2/1/2017 - 2/28/2017

Export to CSV

● Tons
● lbs / In mi



Error

Recommendation Without
Application

< 50% Recommended
(Under Application)

51% - 79% Recommended
(Under Application)

80% - 120% Recommended
(Target Application)

121% - 149% Recommended
(Potential Over Application)

150% - 249% Recommended
(Potential Over Application)

> 250% Recommended
(Over Application)

Application Without
Recommendation

Vehicle Speed While Applying Chemical

Vehicle Speed While Applying Chemical

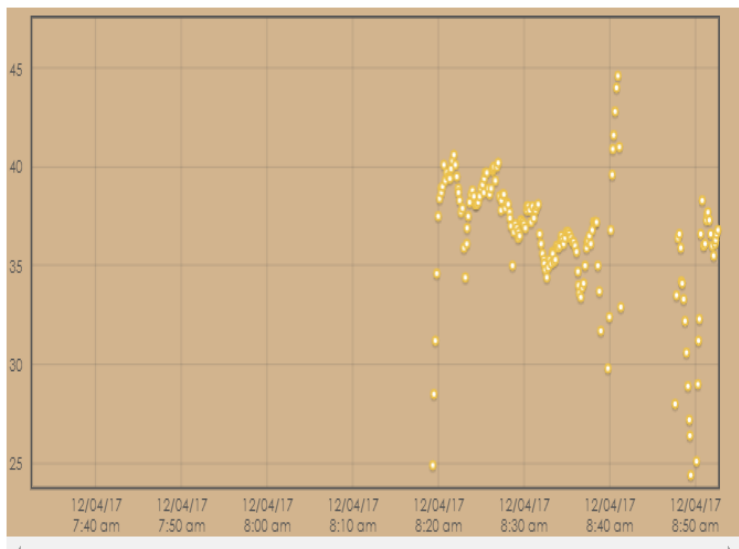
12/4/2017, 7:00:00 AM - 12/4/2017, 9:00:00 AM

Export to CSV

Statewide

Search:

Truck ID	0-4 MPH	5-9 MPH	10-14 MPH	15-19 MPH	20-24 MPH	25-29 MPH	30-34 MPH	> 35 MPH
MN-204558	0	1	0	1	4	4	23	20
MN-204578	3	0	0	0	0	0	0	0
MN-205566	1	1	1	2	1	5	7	6
MN-205574	0	1	5	2	4	8	39	184



End of Shift Report

End of Shift Report

Select Area:

2a

Start

12-03-2017

9:00pm

End

12-04-2017

9:00am

Generate Report

Export to CSV

MN-204561	MN-204563	MN-204564	MN-205503	MN-205564	MN-205565	MN-206569	MN-207508	MN-207509	MN-207570	MN-207571	MN-208556	MN-208558
MN-210553	MN-210554	MN-210555	MN-211552	MN-211553	MN-211554	MN-211555	MN-212504	MN-212505	MN-212552	MN-212553	MN-212573	MN-213553
MN-214554	MN-214555	MN-215562	MN-215563	MN-215564	MN-216562	MN-216563	MN-216564					

MN-215563

Requested Timeframe

2017-12-03 9:00 pm CST to 2017-12-04 9:00 am CST

Route	Miles	Hours	Materials
All	50.5	2	1791 lbs (0.90 tons) Salt
TP2H0112: MN11, E Jct. TH 89 at Roseau to CSAH 74 at W	44.9	1.2	1430 lbs (0.71 tons) Salt
TP2H3131: MN313, Jct. TH 313 at Warroad to Canadian Bor	1.5	0.1	146 lbs (0.07 tons) Salt
TP2H0113: MN11, Baudette Truck Station to CSAH 74 at W	1.2	0.1	159 lbs (0.08 tons) Salt
TP2H0111: MN11, E Jct. TH 89 at Roseau to Jct. TH 32 a	1.3	0.4	None

1 More Details

Salt Sustainability/Reduction

- Goal
 - MnDOT's immediate target is to reduce or mitigate chloride use based on calculated levels from its Maintenance Decision Support System, which is driven by winter weather data
 - Actual/reported usage by route to be not more than 10% over what is recommended by MDSS
 - Data integrity is critical for accurate measure
 - Equipment calibration is critical
 - Proper reporting of material is critical
 - MDSS enhancements

Results

- Some areas report reduced speeds while applying chemical
- Better data reporting by using “End of Shift Report”
- Recommendations are becoming a trusted source of information to operators
- Salt usage vs. recommended is the key performance measure for our Salt Sustainability Effort
- We have peoples attention!

Ongoing and Future Implementation

- MDSS routes automatically reporting conditions to 511
- Fuel Savings/Route Optimization strategies using Can Bus Data
- Use of Mobile RWIS data feeds to MDSS Pavement Model
 - Experimenting with different vendors to determine right application for MnDOT
- Automated work order creation through AVL system to communicate with TAMS and RCA
- LOS study/Automated Bare Lane/Automated Route configurations

Thank you!

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