Montana’s Truck Screening Systems

Spook Stang, Executive Vice President
Motor Carriers of Montana
2017 WASHTO Meeting
Oct 04, 2017
Montana Facts

• 11,343 miles of highways
  – 1,192 Interstate
  – 2,990 NHS
  – 2,575 State Primary
  – 4,428 State Secondary
  – 158 State Urban

• 81 MCS Officers
  – 55 Weight Station Officers
  – 26 Mobile Officers

• Annual Truck Vehicle Miles Traveled
  – 1,081,752,786 in 2016 (Interstate, NHS and Primary routes)
Montana Enforcement Officer Duties

- Size and Weight
- Commercial Vehicle Safety Inspections
- Dyed Fuel
- Issue OS/OW Permits
Montana’s PrePass and 360SmartView Locations

- PrePass equipped
- PrePass and 360Smart View equipped

<table>
<thead>
<tr>
<th>Montana Location</th>
<th>Highway</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armiton Jct WB &amp; EB</td>
<td>US 87/89</td>
<td>Green</td>
</tr>
<tr>
<td>Billings WB &amp; EB</td>
<td>I-90</td>
<td>Blue</td>
</tr>
<tr>
<td>Butte WB</td>
<td>I-90</td>
<td>Blue</td>
</tr>
<tr>
<td>Broadus WB &amp; EB</td>
<td>US 212</td>
<td>Mint Green</td>
</tr>
<tr>
<td>Haugan EB &amp; WB</td>
<td>I-90</td>
<td>Blue</td>
</tr>
<tr>
<td>Lima NB</td>
<td>I-15</td>
<td>Yellow</td>
</tr>
</tbody>
</table>
Montana PrePass Numbers to Date (1997 - 2017)

PrePass by the numbers

Montana benefits since 1997

- 316 PrePass currently qualified fleets based in MT
- 2,227 PrePass currently qualified trucks based in MT
- 435,917\(^1\) hours saved
- 2,092,402\(^2\) gallons of fuel saved
- 4,619\(^3\) metric tons of emissions reductions
- $3,329,202 invested in infrastructure & maintenance
- 5,231,005 successful bypasses using PrePass
- $41,192,771\(^4\) operational cost savings

National statistics since 1997

- 756,739,100 successful bypasses using PrePass
- $5,584,797,698\(^4\) operational cost savings
- 63,061,592\(^1\) hours saved
- 302,695,640\(^2\) gallons of fuel saved
- 668,186\(^3\) metric tons of emissions reductions
- 54,487 PrePass currently qualified fleets
- 545,296 PrePass currently qualified trucks

Numbers as of April 30, 2017. \(^1\)Based on a minimum of 5 minutes saved per screening bypass. \(^2\)Based on 4 gallons per pull-in. \(^3\)Equivalent to removing 624 passenger vehicles from the road through April 2017 per US EPA estimates. \(^4\)Benefits based on studies by the Iowa State University Center for Transportation Research and Education and the FMCSA. \(^5\)Equivalent to removing 119,177 passenger vehicles from the road through April 2017 per US EPA estimates.
Why Use LPR Ramp Screening?

EB Billings Commercial Enforcement Contacts vs Traffic

Three Year Annual Average (2007 thru 2009)

- Trucks Approaching Facility (Annually) 515,859
- Trucks thru Facility (Annually) 385,891
- Prepass (Bypassing Facility) 25.3% 129,968
- Contacts (Permits, Weights, Dyed Fuel dips, etc.) 8.8% 44,978
- Safety Inspections 0.7% 2,625

Annual # of Trucks
MONTANA’s Experience with IR Thermal Imaging Screening Systems

Lieutenant Russ Christoferson
Dennis Hult, MCS Operations Bureau Chief
Montana’s CVISN Program

2008 CVISN team identifies AWSSS, including SIRIS screening project to improve high volume weigh stations operations

2009 to 2012

- Develop project concept, including need for IR cameras on both sides of vehicle
- Secure Grants and Funding
- Contract Award and deployment
Funding

➤ Deployment
  ➤ ECVISN Grant
    • 50% CVISN Funds
    • 50% UCR Funds
    • Legislative Approval

➤ Maintenance
  ➤ ECVISN Grant
  ➤ UCR Funds
Comprehensive Solution

**With PrePass:**
- Electronic identification of ~40% of trips on mainline
- Remainder are manually processed on the ramp

**With PrePass and 360SmartView:**
- Integrated solution for mainline and ramp
- Data-driven inspection selection decision based on key screening factors

![Annual Truck Trips – Montana PrePass Ports, Open Periods April 2014 - 15](chart)

- Cleared by PrePass for Bypass
- PrePass Pull-ins
- Unable to be identified

![With Implementation of 360SmartView at Montana PrePass Ports](chart)

- Cleared by PrePass for Bypass
- Screened by 360SmartView

**TRUCKING**
Moves America Forward

**Motor Carriers of Montana**
Comprehensive Solution

Montana 360SmartView systems

Currently operated at 3 locations in Montana

Butte Westbound weigh station on I-15 / I-90
Billings Eastbound and Westbound weigh station’s on I-90
  • Billings Westbound location has an inspection barn within the facility that is staffed separately from the weigh station
Haugan Westbound and Eastbound weigh station on I-90
  • Joint POE with Idaho
  • Facility in the median
360SmartView Screening Factors

Carrier
- Federal Operating Authority
- Federal OOSO
- MCSIP Level
- ISS score
- Vehicle & Driver OOS rates
- UCR
- Insurance
- IFTA

Truck
- OOS within last x hours
- Vehicle Registration
- Weight / Height
- Stolen Vehicle
- Stolen / Lost Plates
- State-specific requirements

Trailer
- Stolen Vehicle
- Stolen / Lost Plates

Driver
- OOS within last xx hours
- CDL Status
- CDL Restrictions / Endorsements
- Active Driver Warrants
- Driver age
- HOS

States can configure additional factors as needed
PrePass and 360SmartView

PrePass + 360SmartView = Complete Solution

• Approximately 100% of traffic is screened, or attempted
• Officers still in control of questionable vehicles or companies and able to manually intervene
• Safety increased due to full lifecycle of screening, inspection and reporting.
360 Ramp Cameras and Lasers
Computer Screen Display
Inside Weigh Station
360 SmartView Screening

Plate: P884408 - IL
DOT: 5005795

Plate: P47808 - MT
DOT: 320009

Plate: LAK7933 - NY
DOT: 000934

Plate: P47747 - MT
DOT: 596934

Alerts:
- Brake Alert
- Unidentified Vehicle
- Tire Pressure Alert

LLanes viewed: [Image]
First Year Results with 360 Screening

- Violations per safety inspection – Up 23%
- Vehicles with an ISS “Inspect” rating – Up 25%
- Temporary Fuel Permit Revenue – Up 55%
- Temporary Registration Permit Revenue – Up 88%
# Detailed View of Tire Pressure Alert

## Vehicle Identification
- **Vehicle**: Mossman-WB OC1
- **Date**: 2015-07-28 13:55:02.776 DST
- **ID**: 47643

## System Information
- **Session**: 7/28/201
- **Module**: Modu
- **Connected**: Connecte

## Vehicle Information
- **Vehicle**: Vehicle in 2015072
- **Axles**: 7
- **Appr**: Free

## System Parameters
<table>
<thead>
<tr>
<th>Left 7</th>
<th>Left 6</th>
<th>Left 5</th>
<th>Left 4</th>
<th>Left 3</th>
<th>Left 2</th>
<th>Left 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>OK</td>
<td>OK</td>
<td>Tire</td>
<td>Tire</td>
<td>OK</td>
<td>OK</td>
</tr>
</tbody>
</table>

## Collected Data
- **07/28/2015 13:51:28**
  - Inspection #56
  - Vehicle #20150728135116
  - 7 Axles
  - Alert
- **07/28/2015 13:51:44**
  - Inspection #57
  - Vehicle #20150728135128
  - 7 Axles
  - In Progress - Collecting
Detailed View of Brake Alert
Thermal Images for a Brake Alert
Drawbacks

- SIRIS system MT uses required traffic at maximum of 20 mph as trucks pass by the camera’s
  - Installed the electronic speed limit displays
  - Longer ramp queues from time to time
Drawbacks

- Interpretation of information returned
  - Brake, tire and hub alerts are showing because one or more of the brakes, tires or hubs have temperatures outside the average
  - Does not necessarily mean that there is a problem
  - Does not always show when there are problems

- Misreading of information
  - System will return incorrect information or will not return any information at all
Drawbacks

► Officers must be paying attention to screen to utilize the information
  ► Officer “Buy In” can be difficult
  ► During testing and implementation many officers lose faith in the system as it takes time to fine tune it

► Hub alerts show a hot wheel hub assembly but it can be difficult to prove why the hub is hot and have cause to list a violation
Successes

- To be used as a Screening Tool to help select which vehicles to conduct inspections
  - Inspectors must have the right mindset that it is a tool to use and is prone to mistakes but that ultimately it will help them decide what trucks to inspect

- Officers who utilize the system more frequently are finding more violations during Level 1 or 2 inspections and have higher quality inspections
  - First year’s inspection results
    - Violations per safety inspection - Up 23%
    - Vehicles with an ISS “Inspect” rating - Up 25%
Successes

- Having it used in conjunction with the inspection barn in Billings results in higher quality inspections.

- Officers who are using it as a screening tool and conduct inspections based on the information are finding a higher number of OOS vehicles than officers who don’t utilize the system and randomly select vehicles.
Value Added

- Safety
- Increased compliance and revenue to states
- Level playing field for carriers

How?

- Accessing clearinghouse carrier registration information for all jurisdictions
- Timely data verification
- Data verification with CVIEW
Questions?