Change of Seasons
Seasons of Change

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“There are two basic rules of life: Change is inevitable and everybody resists change”

- Author Roger Von Oech
How do we respond to change emotionally?

How does Change affect the way we view ourselves and our jobs?
Change affects People, Processes and Culture - What can we do about it?

Not all change is bad
Okay some change is good, but I’m comfortable with what I’m doing now. Why do we need to change?
The Winds of Change
Did you know?

• One load of salt is approximately $500 in materials.
• There are over 1100 Snow Trucks in the INDOT fleet.
• One extra trip per event is over $500,000 in material. One trip saved could result in significant reductions in salt usage.

MDSS

Maintenance Decision Support System
**What is MDSS?**

- Decision logic system that integrates current weather, maintenance and road condition information with forecasted weather and road surface conditions to evaluate and recommend treatment options

- Transforms huge volumes of weather and maintenance information into better decision support tools

- Objective - provide guidance to achieve more effective use of maintenance resources

**AVL and MDC**

Automated Vehicle Location and Mobile Data Collection
Conceptual Diagram of INDOT AVL Network Using SAFE-T Radio Network

- GPS Satellite
- SAFE-T Radio Network System
- Data File
- Server
- District or Sub-district Office
- Central Office Indianapolis
- INDIANET T1
- Control Center

Data file contains:
- Location data
- Time
- Chemical
- Application rate

Map-based Software
Intranet Application - Chemical Distribution Analysis
Internet Application - Road Condition Report

AVL HARDWARE DIAGRAM

- GPS Antennae
- Data Collector: Laptop or Data Terminal
- Wireless Modem: Sends data string to AVL server in Indianapolis
- Muncie Controller: Used to control chemical spread, collects road temperature data

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MDSS Implementation Team
Put all this in the truck and...
Vehicle Computer

- Dash mounted screen - 7"
- Computer box under passenger seat
But we already know how to fight snow!
“When everything seems to be going against you, remember that the airplane takes off against the wind, not with it”

- Henry Ford
INDOT’s MDSS Implementation - How did we do?

“There are two basic rules of life: Change is inevitable and everybody resists change”
- Author Roger Von Oech

“Always bear in mind that your own resolution to succeed is more important than any other”
- President of the United States, Abraham Lincoln
Four Main Areas of MDSS Implementation

- Equipment Purchasing - Went Well
- Defining and Naming Support Staff - Went Well in Most Cases
- Training - Went Well
- Implementation and Follow-Up - Some Resistance in Middle of Winter
  - Refresher Training - Has Helped
  - QA/QC Accountability Program - This part of the program has received heavy resistance.

Training - Six Main Areas

- Introductory
- GUI
- Driver
- Mechanics
- QA/QC Accountability Introductory
- Refresher and Follow Up - Very Important
The Plan

- How did the Plan go?
- Did we meet the Deadlines?

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### September

| M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

- The 2008 INDOT Snow and Ice Conference was held on September 9 & 10.
- This conference provided an introduction to MDSS, and basically began the training. The time between the conference and GUI training allows for logistics such as classroom and computer availability in each district to be worked out.

### October

| M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

- Each district will send 2 people to Indy for "train the trainer" on October 27. The districts will then train their drivers with a firm completion date of November 21.
- Each district will send 2 - 4 mechanics to Seymour for installation training for the IWAPI/AVL units. Each district will send an International and Sterling so that an installation can be performed in both vehicle types.

### November

| M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F | M | T | W | Th | F |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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What did not go so good - Some common quotes

- “The forecasts are never right” - Perception that Forecasts were Bad - There’s at least a 20% probability that this wasn’t always just a perception
- “Rates were too high”
- “Rates were too low”
- “If I follow that Rate Recommendation my Barn will be empty before sunup”
- “The IWAPI’s are a piece of junk” We have had an issue with Verizon
- “Your system sucks”

Statewide Salt Usage Comparison
All Districts Combined Usage

ALL DISTRICTS - STATEWIDE SALT USAGE

<table>
<thead>
<tr>
<th>Months</th>
<th>NOV</th>
<th>DEC</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tons</td>
<td>0</td>
<td>100,000</td>
<td>200,000</td>
<td>300,000</td>
<td>400,000</td>
<td>500,000</td>
</tr>
<tr>
<td>5 Year Ave.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>70% of FY 2008</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>FY 2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Hours of Snow/Freezing Rain at Major Observing Stations Through 02/28/09

<table>
<thead>
<tr>
<th></th>
<th>Valparaiso</th>
<th>Fort Wayne</th>
<th>Indianapolis</th>
<th>Evansville</th>
<th>Cincinnati</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 06</td>
<td>162</td>
<td>329</td>
<td>220</td>
<td>56</td>
<td>74</td>
<td>843</td>
</tr>
<tr>
<td>FY 07</td>
<td>220</td>
<td>279</td>
<td>235</td>
<td>48</td>
<td>95</td>
<td>877</td>
</tr>
<tr>
<td>FY 08</td>
<td>297</td>
<td>449</td>
<td>353</td>
<td>95</td>
<td>130</td>
<td>1,324</td>
</tr>
<tr>
<td>3 Year Ave</td>
<td>226</td>
<td>352</td>
<td>269</td>
<td>67</td>
<td>100</td>
<td>1,015</td>
</tr>
<tr>
<td>FY 09</td>
<td>368</td>
<td>473</td>
<td>324</td>
<td>67</td>
<td>127</td>
<td>1,359</td>
</tr>
</tbody>
</table>

**Summary**

The stats above show the number of hours of snow/freezing rain through February 28 of the noted periods. The 3 year average is then compared to the number of snow/freezing rain hours observed for this fiscal year, as are the FY 08 numbers. Salt usage for these same periods is similarly compared.

Comparison of FY 09 to 3 year average:
- 134% of statewide snow / freezing rain hours
- 92% of statewide salt usage

Comparison of FY 09 to FY 08:
- 103% of statewide snow / freezing rain hours
- 64% of statewide salt usage
## The Bottom Line

<table>
<thead>
<tr>
<th></th>
<th>FY 08 Through February</th>
<th>FY 09 Through February</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed SN/FZRN Hours</td>
<td>1,324</td>
<td>1,359</td>
</tr>
<tr>
<td>Tons of Salt Used</td>
<td>511,328</td>
<td>327,364</td>
</tr>
<tr>
<td>Dollars of Salt</td>
<td>$27,100,384</td>
<td>$17,350,292</td>
</tr>
</tbody>
</table>

### If We continue on the Same Trend for the Winter

- 3 yr salt usage: 214K tons
- $1.88 \times$ (3 yr salt usage): 402K tons
- FY09 salt usage: 285K tons
- Salt savings = $\frac{(402-285)}{402} = 29\%$ Savings from what we normally would have used.
Advice

- Get your equipment installed and tested early - before it snows.
- Use professionals to help in training.
- Plan for follow up training - this is important to stop the resistance to change movement that will come.
- Most importantly - Get executive and Management buy in - You’ll have to have it during the implementation phase.

Questions?