A Snapshot in Time

Managing High Impact Wheels With Today’s Technology

Presented By:
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Chief Mechanical Officer
Chicago Freight Car Leasing
Definition of a High Impact Wheel

• A high impact wheel is one that records 90,000 pounds of impact or greater on a detector.
R3 Wheel from CRDX 13648
1<sup>st</sup> Step - Registration

- September 2004 car owners were asked to register their cars in the EHMS system.

- The EHMS is a secure system that allows the car owner to designate who will receive the daily Maintenance Advisory messages in e-mail format.
E-mail notifications sent from these addresses:

InteRRIS@Railinc.com   EHMS CRDX Final Alert_140KIP 1 Event   Fri 9/2/2005
InteRRIS@Railinc.com   EHMS CRDX AAR Condemnable _90-140KIP 4 Events   Fri 9/2/2005
InteRRIS@Railinc.com   EHMS CRDX Opportunistic Repair_80-90KIP 3 Events   Fri 9/2/2005
InteRRIS@Railinc.com   EHMS CRDX Window Open_ 65-80KIP 17 Events   Fri 9/2/2005
Data Provided in Attached Spreadsheet

- **CAR_NAME**: CRDX 11153
- **UMLIER_TYPE**: C614
- **TRAIN_DATE**: 01-SEP-05
- **TRAIN_SPEED**: 45.71
- **SITE_NAME**: CSXT SPRINGFIELD TRACK_2
- **EVENT_NAME**: SWMV GT_EQ_90
- **LEVEL_IN_GRP**: 1
- **PRI_OR_SEC**: P
- **AXLE_NO**: 2
- **TRUCK**: B
- **CAR_SIDE**: L
- **PCT_LOAD**: 92
- **MEAS_TYPE**: SWMV
- **MEAS_VALUE**: 118.76
- **CRITERIA_VALUE**: 90
- **EVENT_FLAG**: E
- **CAR_MARK**: CRDX
- **CAR_NUMBER**: 11153
Opportunistic Repairs Events

Average Events
NOW “YOU” HAVE THE DATA

How do you compile it?

a) copy & paste into flag types
b) automate the download
c) use 3rd party software
d) turn it over to the “IT” dept.
e) purchase additional “WILD” data
Speed and Load Correction

- 1 mile per hour = 1,000 lb momentum
  - 56 mph = 7 KIPS per wheel
- 286,000 lb car = 35.75 KIPS per wheel
- 263,000 lb car = 32.875 KIPS per wheel
- Average car = 40-43 KIPS per wheel
Axle Location: 3
Car: CRDX 9550

Maximum Vertical By Train Date For This Wheel

<table>
<thead>
<tr>
<th>Date</th>
<th>Maximum Vertical (KIPS)</th>
</tr>
</thead>
<tbody>
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<tr>
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<td>7/29/2005</td>
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Axle Location: 4
Car: CRDX 9550

Maximum Vertical By Train Date For This Wheel

Maximum Vertical (KIPS)

- L
- R

Axle Location: 2
Car: CRDX 9550

Maximum Vertical By Train Date For This Wheel

- L
- R
Axle Location: 1
Car: CRDX 9550

Maximum Vertical By Train Date For This Wheel

Maximum Vertical (KIPS)
Rule 44 – Wheel Sets

- Wheels identified in EHMS through a maintenance advisory as high impact must be reported within 24 hours by the repairing company when wheel change out has been performed. The instruction manuals for this application can be accessed at www.railinc.com.

- Before replacing a wheel set for any reason, repairing party must determine if there is any active wheel impact AAR Maintenance Advisory outstanding and remove from the Maintenance Advisory when the wheel is replaced.
NOTICE

As of September 16, 2005, Early Warning users are required to use Railinc Single Sign On (SSO) to access the Early Warning System.

http://sso.railinc.com
Wheel Set Distribution
“IF YOU CAN’T MEASURE IT, YOU CAN’T MANAGE IT.”

–RUDY BUSSARD
UNION PACIFIC RAILROAD
WILD Snapshot Report

Percentage of Wheel Sets by Flag Type

- No AAR flag: 88.62%
- Maintenance Opportunity: 6.50%
- ▢ Repair: 2.42%
- ▢ High Impact: 0.05%
- ▢ AAR Warning: 2.41%
- Alert: 0.05%
- Final Alert Level: 0.05%

Snapshot Date: 9/7/2005
Number of Cars over Detectors: 5,628
Total Cars in Fleet: 7,533

% of Fleet Detected: 74.71%
## Final Alert Level

<table>
<thead>
<tr>
<th>Car Initial</th>
<th>Car #</th>
<th>Train Date</th>
<th>Location</th>
<th>Max Vert</th>
<th>Proj Max</th>
<th>AAR Flag Description</th>
<th>AAR Warning Message</th>
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</table>
• Rule 41 - Effective July 1, 2005:
  Condemnable when car is on repair track for any reason:

  Detected by a wheel load impact detector reading from 80-90 kips per a single wheel.

  To be coded as why made code 61.
Events in Window of Opportunity

- Average: 24

- Events:
  - 18-19 Aug
  - 20-21 Aug
  - 22-23 Aug
  - 24-25 Aug
  - 26-27 Aug
  - 28-29 Aug
  - 30-31 Aug
  - 1-2 Sep
  - 3-4 Sep
  - 5-6 Sep
  - 7- AVE

- AVE: 25
Approximating Future Wheel Set Change Outs

Step 1. Calculate number of wheel sets for your fleet that will pass over a detector.

Fleet size x 4 x .75

Step 2. Calculate opportunities per month.

Number of events per day x 30

Step 3. Calculate percent of wheel sets moving into the Window of Opportunity.

Opportunities per month ÷ number of wheel sets from step 1
Based on CFCL previous experience changing wheels in 2003/2004:

Avg. 125 wheels sets changed per month.

25% changed for high impact.

Based on future projections for wheel set change outs, CFCL increased the number of change outs on a monthly basis.

Implemented through an agreement with the Belt Railway Company to change out wheel sets within the Window of Opportunity.
Why Made Codes for Wheel Change Outs

June 2005
Why Made Codes for Wheel Change Outs

July 2005
Wheel Sets Changed July 2004 – July 2005

May 2005:
65 Kip program started with the Belt Railway Company.