

qMetric™ for Transportation

Presenters:

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VoIPcare Background: qMetric Product Suite

- **qMetric for Healthcare**

- Collection of quality metrics, increasing requirements
- Payment at risk
- Supply chain analogy
- Solution: web-based platform; iPad, IVR; database

- **qMetric for Transportation**

- Inspection of product at different points along supply chain
- Cost of poor quality/damage
- Solution: web-based platform; inputs via web, phone, or paper; database with photo archive



Quality problems do not arise by accident

As Juran noted: “A principle finding has been that quality problems are planned that way, which means that the ***quality problems are largely traceable to deficiencies in the methods used to plan for quality.*** Those deficiencies are still in place. To get rid of those deficiencies we must revise the quality planning process and then learn how to acquire mastery over that revised process.”



qMetric Data Collection Principles

- Collection of data needs to be efficient
- The mechanism should provide timely and accurate data
- Everyone must be able to access the same data
- Data must be delivered with consistency
- Analysis requires completeness



Paper Industry Shipping Issues

- Paper is often damaged in-transit due to:
 - Damaged equipment being loaded
 - Improper use of protective measures
 - Incorrect loading procedures
 - Equipment defects that were not observed
 - Excessive stress on the product during shipment
 - Handling issues
- Damage claims are often not addressed in a timely manor resulting in the claim going unpaid
- Damage claims are increasing year after year



TAPPI SRW Committee Objectives*

- Identify damage as early as possible in the supply chain process
- Begin to process the damage event within 24 hours of awareness
- Build a lessons-learned capability to identify and reduce the root cause of damage
- Minimize the impact on operational performance

* TAPPI Damage Prevention Committee Report – April 2008



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qMetric™ Program Timeline

TAPPI SRW
Committee
Approached
VoIPcare

- 2006

Six-Month
Expanded Trial
of qMetric

- May 2010-Nov.
2010

Trial Review at
TAPPI SRW
Conference

- April 2011

Test with UPM
and Quebecor

- 2008

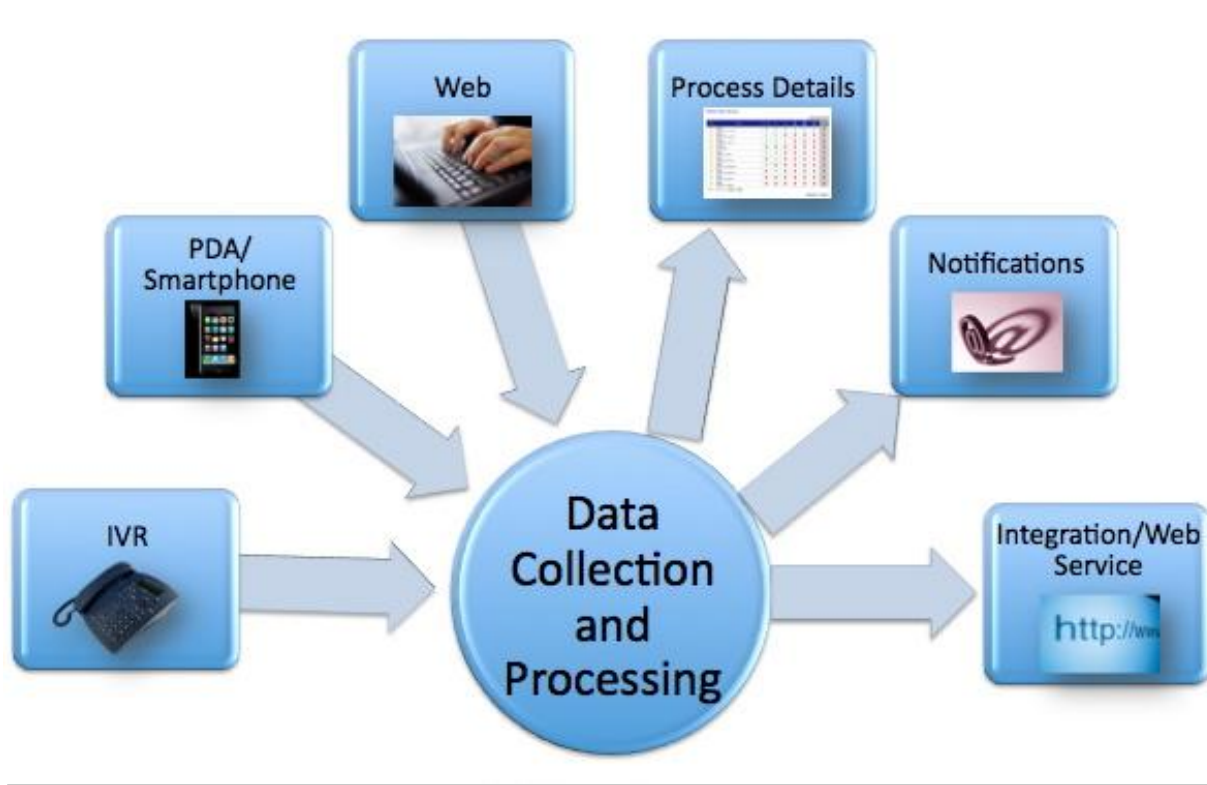
Expansion of
Trial Period

- End Feb. 2011



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qMetric™ System



qMetric™ Inspections

- Equipment
 - Is the equipment useable for paper shipment?
- Shipping Inspection
 - What protective measures were used?
- Receiving Inspection
 - How did the protective measures perform?
- Damage Inspection
 - What damage occurred to the paper rolls?



Equipment Inspection – Manual Input Form

qMetrix For Transportation - Equipment Inspection Form																							
Inspector:							Date:							Page:									
Servicing Carrier:							Time:							Pre-Load: X									
Equipment Number	Defects	Door Defects						Holes										General Conditions				Photos Taken	Bad Order
		Left			Right			Roof		Floor		Left Side			Right Side			Ends					
		Operation	Seals	Holes	Operation	Seals	Holes	A End	B End	A End	B End	A End	Door	B End	A End	Door	B End	A End	B End	Floor Condition	Contamination		
BNSF4502	X	X	X			X	X	X		X			X		X		X		X	X	X	X	X

Equipment Inspection – Web Application

▼ New Equipment Inspection

<p>Equipment: <input style="width: 100%;" type="text"/></p> <p>Last Reported Status: <input style="width: 100%;" type="text"/></p> <p>Servicing Carrier: <input style="width: 100%;" type="text"/></p> <p>Inspected By: <input style="width: 100%;" type="text"/></p> <p>Inspection Date And Time: <input style="width: 100%;" type="text"/></p> <p>Pre-Load Inspection: <input type="checkbox"/></p>	<p>Equipment Defective: <input type="checkbox"/></p> <p>Door Defects:</p> <p>Left Door: <input type="checkbox"/></p> <p>Right Door: <input type="checkbox"/></p> <p>Door Seal Defects:</p> <p>Left Door Seal: <input type="checkbox"/></p> <p>Right Door Seal: <input type="checkbox"/></p> <p>Holes:</p> <p>Roof: <input style="width: 100%;" type="text"/></p> <p>Floor: <input style="width: 100%;" type="text"/></p> <p>Left Wall: <input style="width: 100%;" type="text"/></p> <p>Right Wall: <input style="width: 100%;" type="text"/></p> <p>A End: <input type="checkbox"/></p> <p>B End: <input type="checkbox"/></p> <p>Left Door: <input type="checkbox"/></p> <p>Right Door: <input type="checkbox"/></p> <p>Floor Condition: <input type="checkbox"/></p> <p>Contamination: <input type="checkbox"/></p> <p>Needed Swept: <input type="checkbox"/></p> <p>Dunnage Present: <input type="checkbox"/></p> <p>Photos Taken: <input type="checkbox"/></p> <p>Bad Order Equipment: <input type="checkbox"/></p>
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Equipment Inspection – IVR Dialog

Information Requested	Actual Prompt	Possible Responses
Equipment Number	Car Initials Car Number	Carrier Name Numbers
Equipment Status Announced	Status	GOOD, DAMAGED, UNKNOWN
Delivering Carrier	Servicing Carrier	Carrier Name
Pre-Load Inspection	Pre-Load	Yes, No
Equipment Defective	Defects Present	Yes, No
Door Operation	Door Defects	No, Left, Right, Both
Door Seals	Seal Defects	No, Left, Right, Both
Holes In Car	Holes	Yes, No
Hole Location	Hole Location	Roof, Floor, Left Wall, Right Wall, A End, B end, Left Door, Right Door, Done
Location Qualifier	Hole End	A End, B End, Both
Floor Condition	Floor Problems	Yes, No
Car Contaminated	Contamination	Yes, No
Car Swept	Needed Swept	Yes, No
Dunnage Removed	Dunnage Present	Yes, No
Photos Taken	Photos Taken	Yes, No
Bad Order Car	Bad Order	Yes, No

Trial Participants

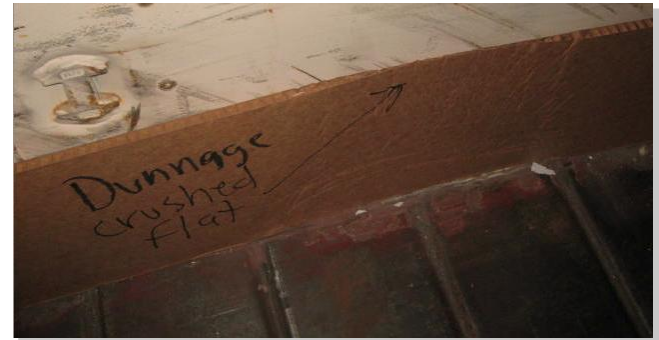
- Participants - 16 companies/27 locations
- One publisher
- BNSF, NS, CSX
- UPM, Norske Skog, Irving Paper, AbitibiBowater...
- Quad/Graphics, Vertis Communications...



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Results

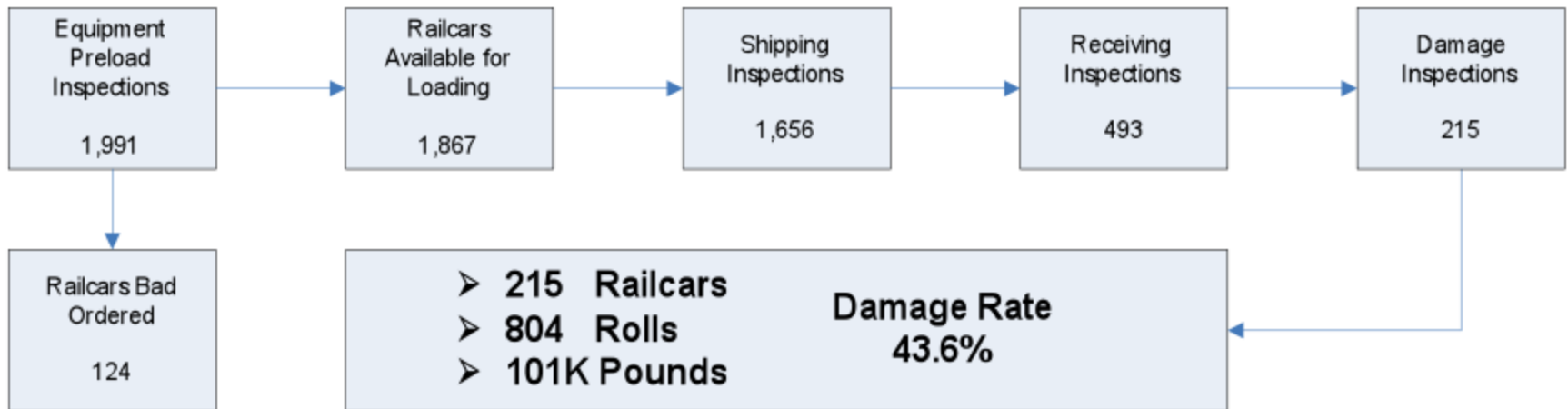
- Impact on operations has been minimal
- Some railroads are receiving notifications faster through the trial than through their electronic systems
- In response to failed measures and photos provided in receiving inspections, mills are making changes to loading procedures
- Almost half the reported damage was caused by Transit Burst
- Wall protection is used on nearly every shipment and fails 1 out of 5 times



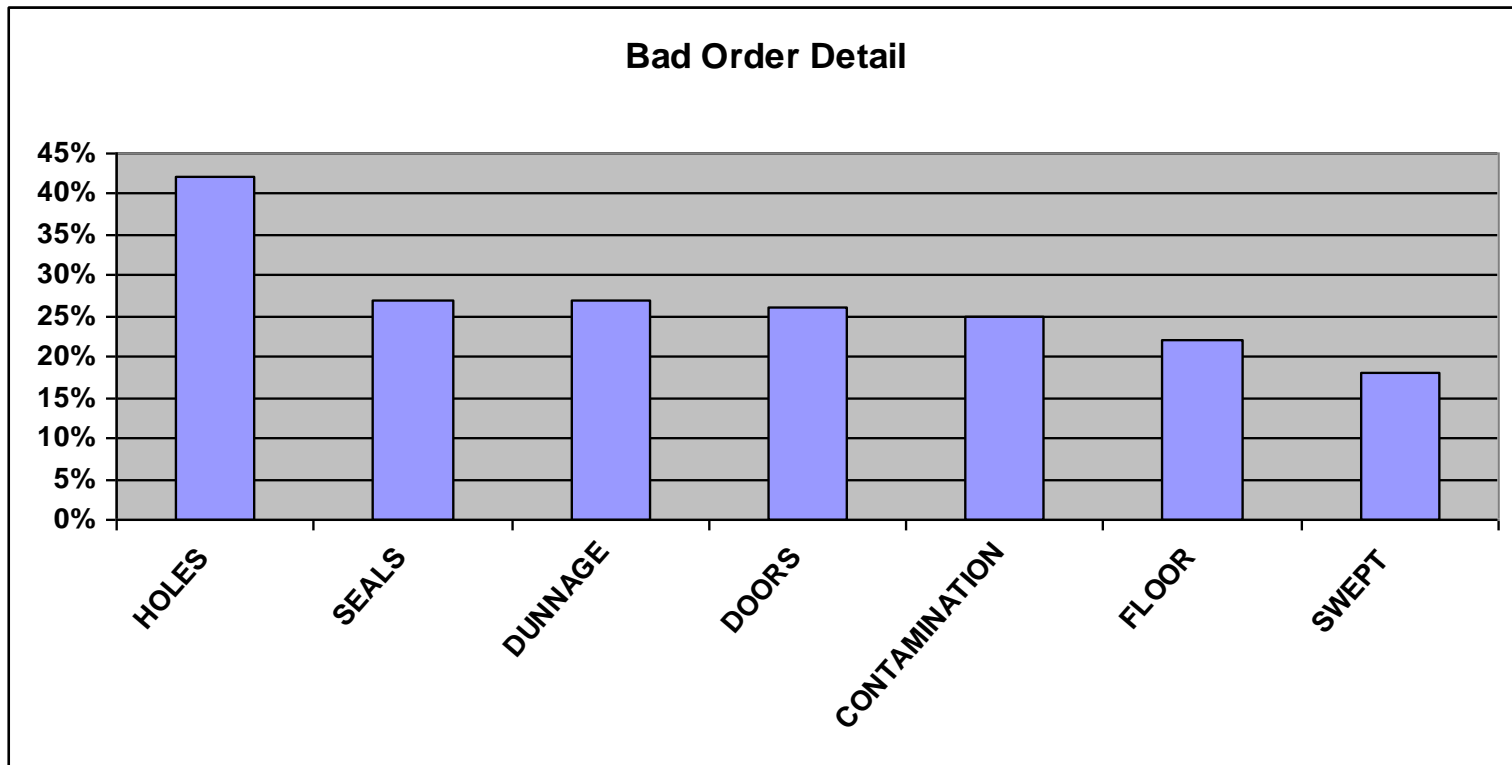
Statistics - Key Ratios

- **Bad Order Car Rate 6.2%**
 - 124 bad ordered cars of 1,991 cars inspected
- **Receiving Rate 29.7%**
 - 493 cars received of 1,656 cars shipped
- **Load Movement Rate 3.7%**
 - 18 cars with movement of 493 cars received
- **Wall Protection Failure Rate 18%**
 - Used in 98% of the cars shipped
- **Overall Damage Rate 43.6%**
 - 215 cars with damage of 493 cars received
- **Transit Burst Damage 48.7%**
 - Of total damage reported

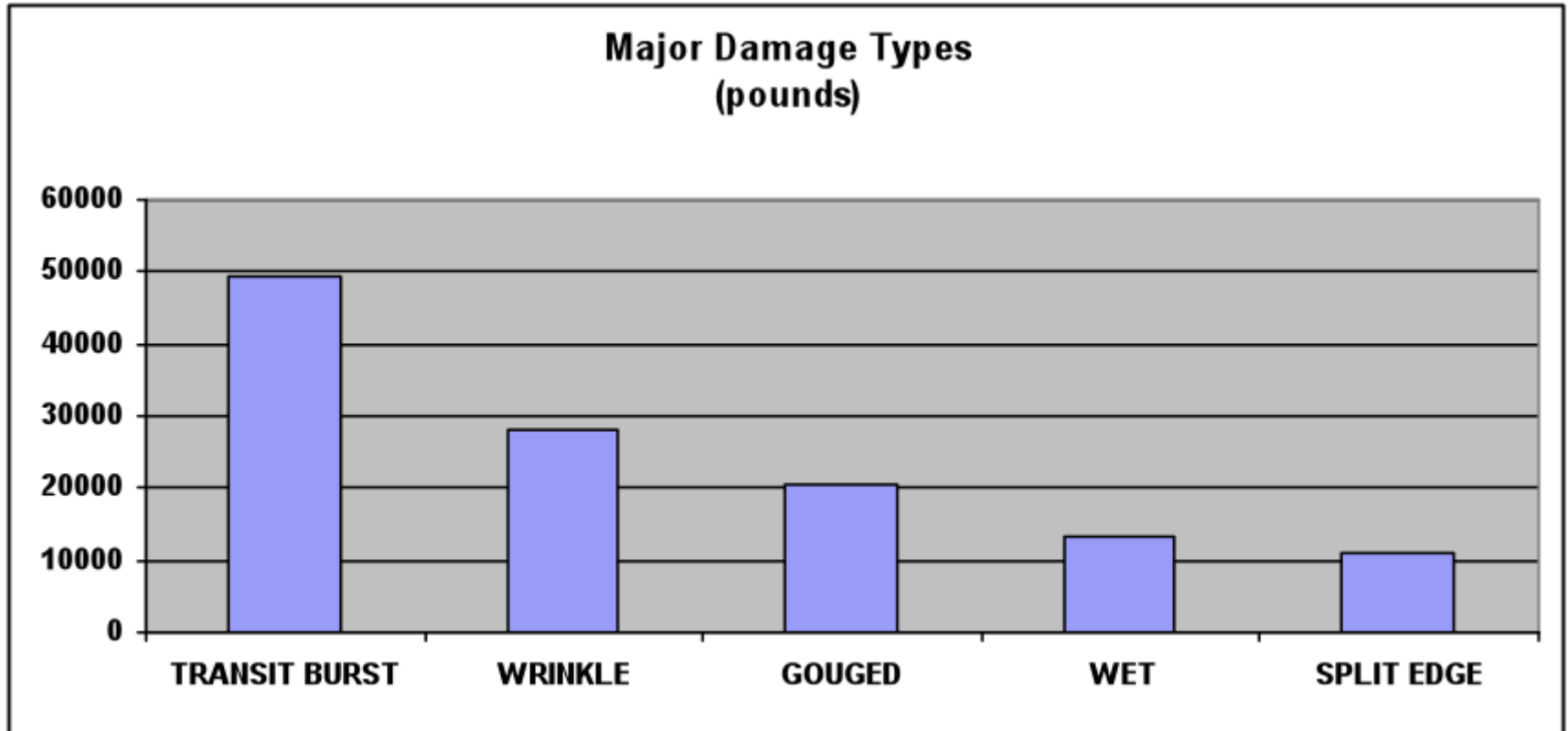
Statistics – Overall Performance



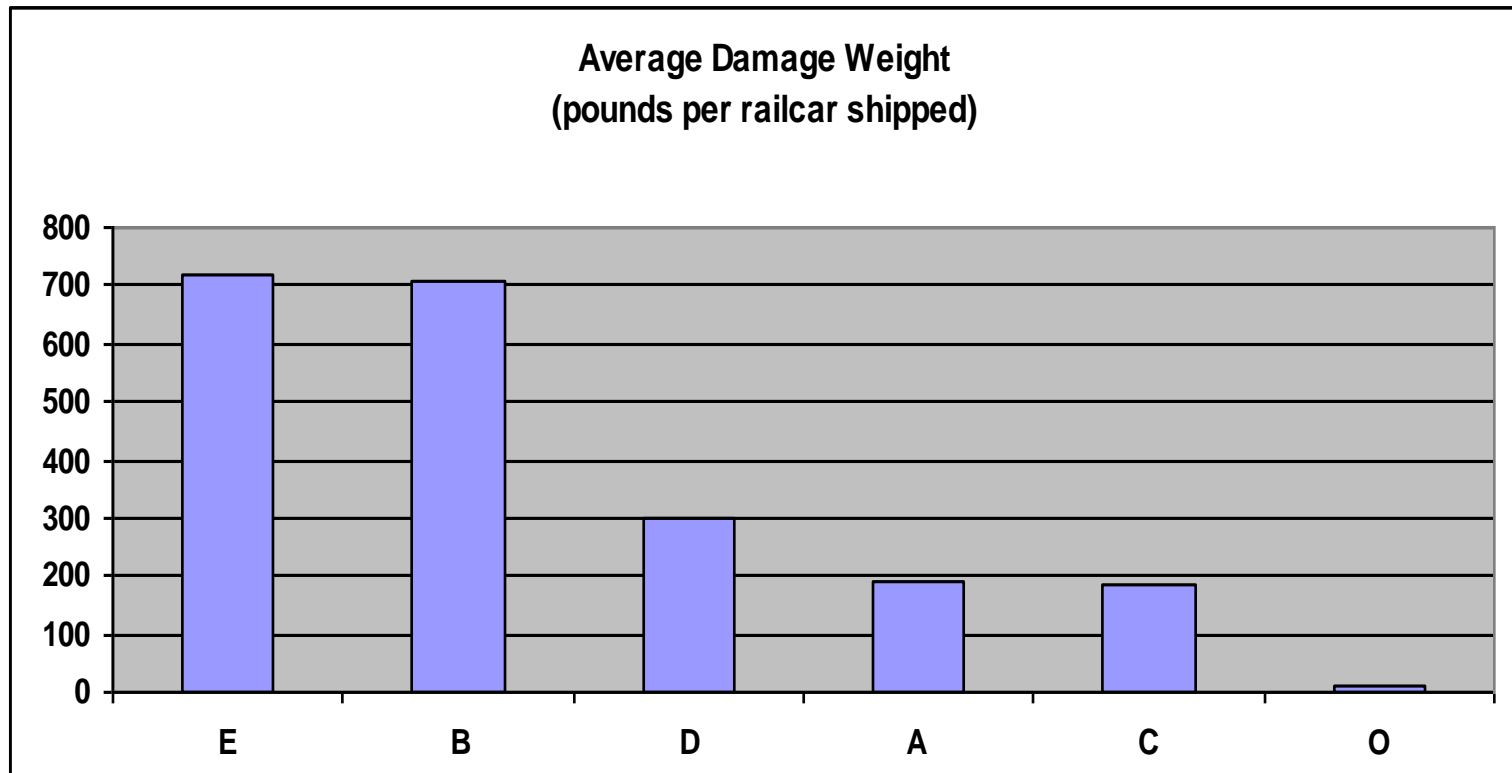
Statistics – Bad Ordered Railcars



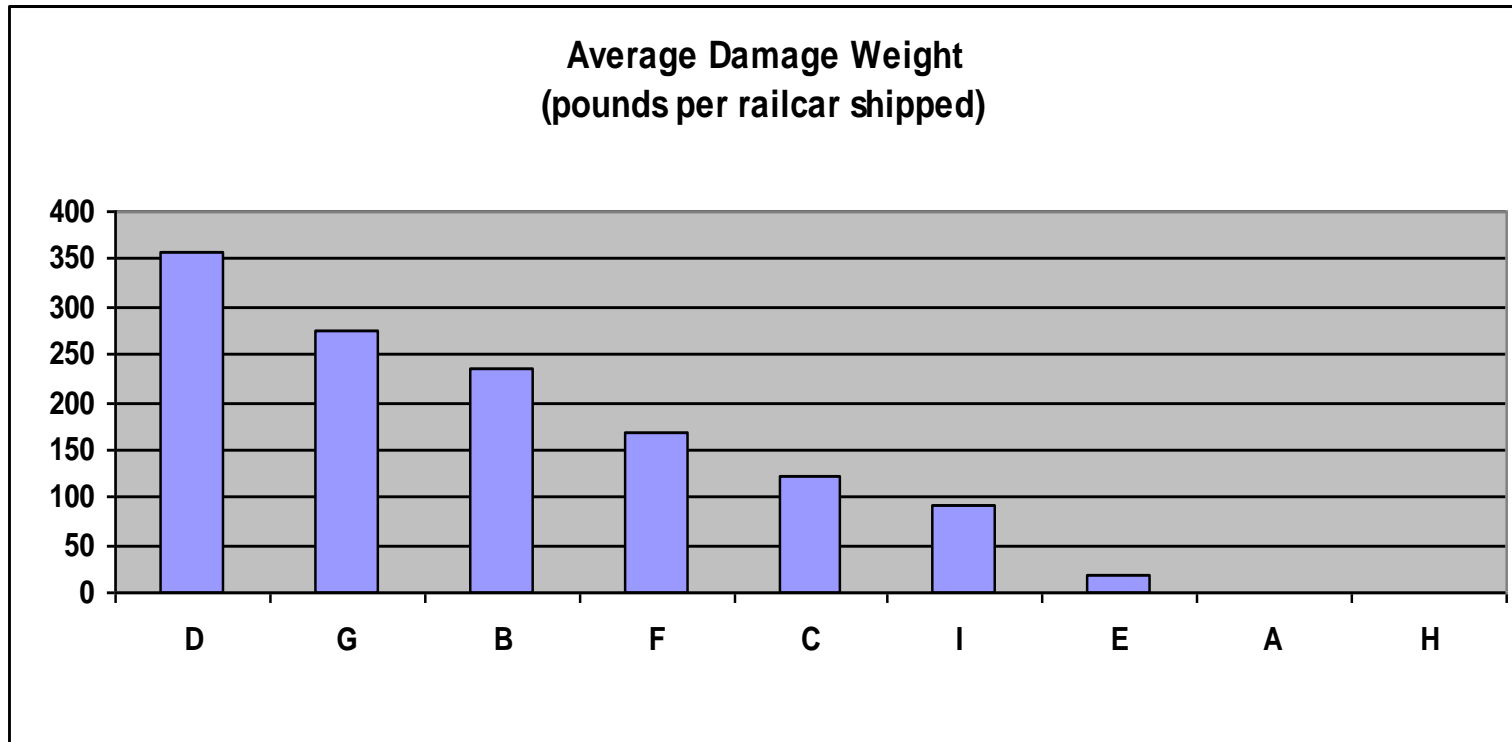
Statistics – Major Damage Types



Statistics – Average Damage Weight by Railroad

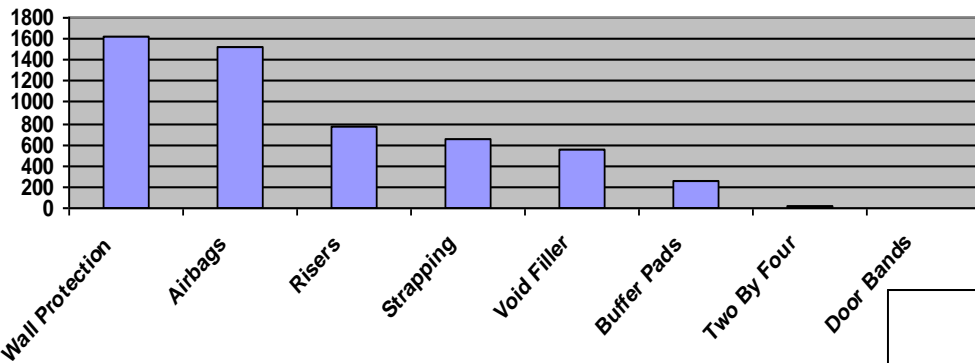


Statistics – Average Damage Weight by Mill

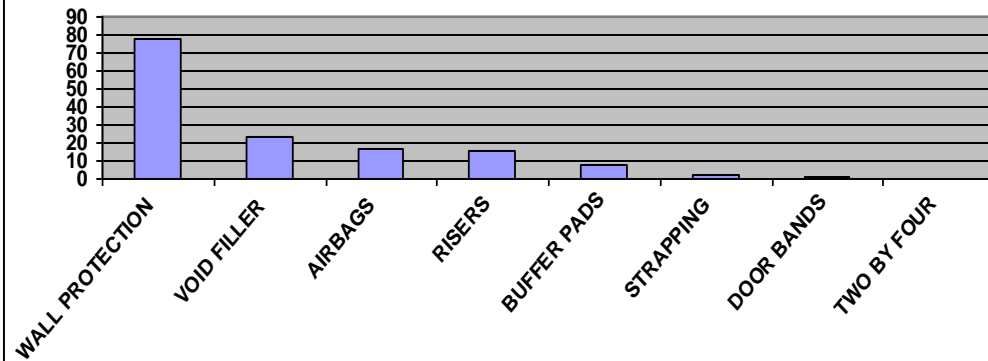


Statistics – Protective Measures

Protective Measure Utilization
(per railcar loaded)

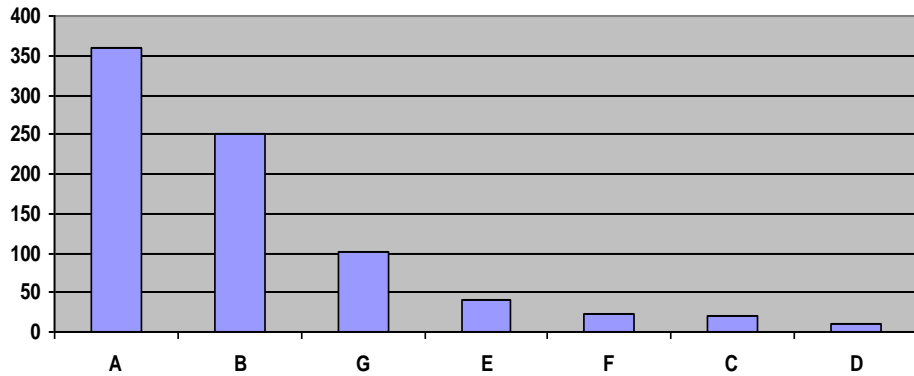


Protective Measure Failures
(per railcar received)

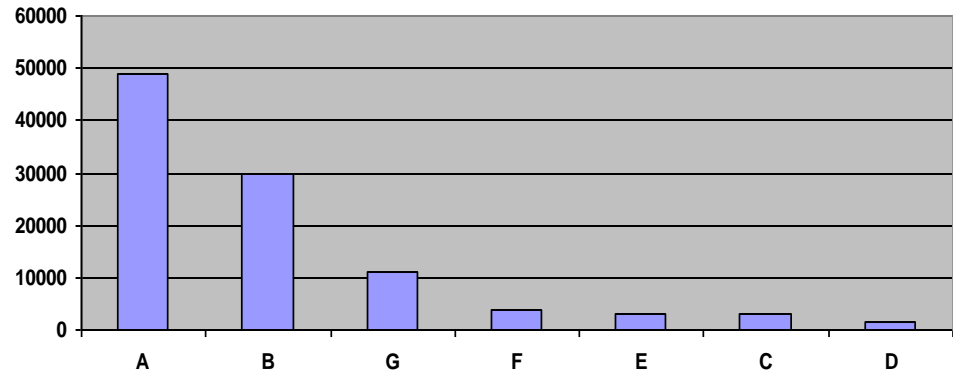


Statistics – Damage Reported by Printer

Damaged Rolls Reported



Damage Weight Reported



Projected Savings

- One mill ships 15,000 railcars of paper per year
 - 43.6% of cars have damage – 6540 cars
 - Average damage per car – 470 pounds
 - Estimated cost of damage per car - \$218
 - Estimated annual claims for this mill - \$1.426M
- qMetrix™ system could reduce damage by 20%, saving the mill \$285,000 annually



Financial Impact - Mills

- Mills can recoup part of the lost revenue they are experiencing due to in-transit damage
- Potential to increase the damage claim recovery rate through improved communications and documentation
- \$2,000,000 in in-transit damage for a mill could potentially be reduced by 10%-20%; this translates to \$200,000 to \$400,000 in savings



Financial Impact - Printers

- Printers can reduce manpower by decreasing claims
- Claims Processing, Handling, Reordering, Rescheduling and Warehousing all contribute to the cost of in-transit damage for the printers
- If a printer is processing 500 damage claims per month at an average cost of \$100/claim for the above items, the total cost for a year would be \$600,000
- Reducing in-transit damage by 10%-20% would save the printer \$60,000 to \$120,000 per year



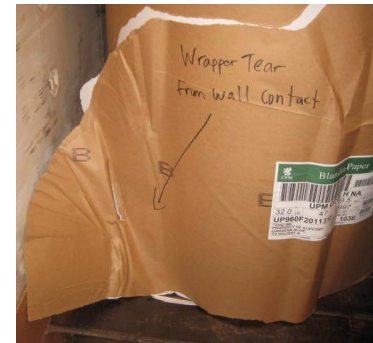
Financial Impact - Railroads

- Each railcar is being inspected by the customer and the status is being reported back, reducing the need for manpower or a contractor to inspect railcars at another location prior to delivery
- Reduced switches when a railcar is damaged due to immediate notification of damage found
- Typical switch costs \$25 and minimum number of switches to get a damaged car to repair facility is 8 including the replacement car
- In a month there are 25,000 pulp and paper shipments on all railroads; if 6% are rejected the railroads are spending at least \$300,000 per month moving railcars
- Reducing multiple rejections of individual cars by 10% would save the railroads \$360,000 annually on switches alone



Moving Forward

- Industry-wide involvement is key to detecting trends and identifying the root causes of damage
- Data can provide individual companies with information about areas to focus on for improvement
- An enhanced level of communication and cooperation can save money across the industry
- Standardization of industry processes and forms will improve systems and simplify claims resolution



What this means for everyone

- Lower operating costs
- Reduced costs of handling the logistics of rush paper orders and damage claims
- More on-time press runs
- A lower rate of increase in paper cost
 - Mills and railroads will have a lower cost from paper damage, thereby reducing costs for everyone in the supply chain
- Estimated weight of annual damage in the paper industry
 - 24,376,526 pounds
- Estimated annual cost of damage \$11,335,084

Traffic numbers estimated from AAR 9/4/2010



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10/19/2010

10\18\2010

Projections for Test Group Based on Reported Inspections

- **Recommended Actions**

- Engage a cross-functional team with representatives from AAR, mills, printers and dunnage suppliers
 - Establish a clear definition of Transit Burst Damage
 - Identify primary causes for Transit Burst Damage
 - Review current application of Wall Protection Measures
 - Identify primary type of Wall Protection Measure failure
 - Look for potential association of Transit Burst Damage to Wall Protection Failure
- Institute corrective actions
- Monitor effectiveness through qMetrix™



BNSF Railway



BNSF, TAPPI and qMetrix



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Points of Carrier Relevance

- Railcar quality improvement
- Improvement of securement devices and protective shipping methods
- Damage Claims and root cause analysis
- Communication improvement
- What lessons can be learned from data



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Railcar Quality

BNSF is committed to providing quality equipment with the newest fleet in the industry and ongoing maintenance, resulting in:

Greater efficiency

High available capacity

Strong reliability

Broad availability



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Railcar Quality

Initial quality inspection with reported results

Acceptable at origin?

Are there problems which could cause damage or delay?

Carrier is notified of rejection with specific information as to reason for rejection with photographs to ensure specifics addressed

Examples:



Reporting damage to ceiling and walls is essential to help avoid damage to product.



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Railcar Quality

Destination quality inspection with report results

Before opening car door, was there any damage to the car during transit?

Initial inspection upon opening door

Are there reportable car problems?

Reporting of any problems at this point will move the car to a repair facility rather than the next loading location.

Velocity and quality improvements due to increased awareness of car condition

Car damage examples:



Bowed floors can cause product to shift during transit



Bowed walls can cause product to shift during transit



Bad seals can cause leaks



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Securement and Load Protection

Are AAR approved shipping patterns used?

Different size rolls and patterns require specific protection to ensure there is no inadequate or improper use of specialized packing material

Documentation of load condition record at origin before shipping to create accountability to ensure proper techniques are used.

What was used to secure lading and condition of lading?

Photographic evidence of proper procedures

Record of who did loading

Documentation of load condition record upon arrival at destination to create visible level of responsibility.

Evidence of damage immediately reported to all parties involved

Comparable photographs

Record of who did unloading

Example:



Loading requires care not to damage the railcar



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Damage Claims

Common damage information accessible to all parties involved, including photographs to streamline creating, processing and tracing procedures.

Immediate notification of deficient product upon arrival to all parties to initiate paper replacement procedure and meet press deadlines.

Better information for claim resolution and determination of cause to help prevent damage in the future.

Carrier – railcar physical condition or transit handling and conditions

Origin – Improper handling at the mill or loading of railcar

Destination – improper handling or unloading at intermediate location or publisher

Securement devices – inadequate, improper use or failure to use specialized packing methods

Claim resolution processes and timing improvement

All parties automatically notified

Claims settled faster

Reduction of correspondence



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Loading examples:



Improper loading and handling increases the number of claims

Communication

Consistent and standardized information accessible by all parties involved

Documents what is working or not working on industry-wide scale

Trends

Reduction in process steps

Elimination of forms, processing time and duplication of efforts

Automation of reports and processes

Improves efficiency and reduces errors

Monitoring by outside 3rd party

Impartial evaluation and reporting for information accuracy and integrity

Tighter inspection processes

Identify quality of loading and unloading

Proper transportation leads to better understanding of damage, how it occurs and what we can do to eliminate it



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Summary

Data

Helps answer questions:

Do the loading patterns provide adequate protection?

Do the lading devices work and can they be improved?

Can the process be improved at all points of contact?

Proves that damaged paper is not just a railroad challenge.

There is sufficient data to change habits.

Conclusions

The root of the problem must be identified before the problem can be fixed.

Damage results from actions that can be changed, ultimately saving time and money.

Communication among all partners is essential to efficiently and effectively solve and prevent problems.

We need to work together to determine best practices to safely transport paper.



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A paper claim has just been filed with X Mill by Printer A or B

**How Many Times Do You See
This Message?
What are you doing about it?**



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Why Should Publishers, Paper Mills, Printers, Railroads and Trucking Companies Have An Interest in Transit Damage

- Industry Costs = \$2,000,000 Estimate
- We jeopardized the completion of thousands
of print jobs
- Hundreds of hours tracking and Filing claims
- Lost Sales



Qmetrix Damage Reduction

A Big Opportunity for 4 Mature Industries to Improve Service and Profits

- Using 21st Century Technology
- Improve Environmental Footprint
- Improve Utilization of Boxcars
- Reduce Risk of Not Completing Press Run



TAPPI SRW Workshop

April 11-13 Hilton Downtown

Nashville TN

-Results of Expanded Qmetrix Test

-Next Steps



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\$2,000,000+
Could have been profit across 4
Industries
Instead everyone incurred added
costs!

