Greenbelt Project 983

Achieve a 50% Reduction In Forklift Truck Related Incidents (Damage to Plates)

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Kodak

Define

Project 983 Summary

Target: - **50%** Reduction in FLT Incidents (Damage to plates)

Problem: - **168** recorded FLT incidents in the last 12 months

Resulting in: **9570** m2 scrapped plates

£15130 scrapped plates

£20000** other damage

** Figure is an estimate as not all incidents recorded

Scope: - Unwrapped plates between the end of the conveyor and the wrappers

Business Case: - To have a safe working environment and to minimise loss due to damage

Goal: - **50%** reduction – equates to **84** FLT incidents

Metrics: - Baseline **13.81** incidents/month

- Target **7** incidents/month

Team: - T Cook, C Wake, A Garnett, H Gillet, S Leather, S Harding, D Lawrence, M Ramsden

Background

168 Forklift Truck (FLT) related incidents have been reported between Sept 06 – Sept 07. This figure is a minimum as not all incidents are reported or easily identifiable as FLT type damage.

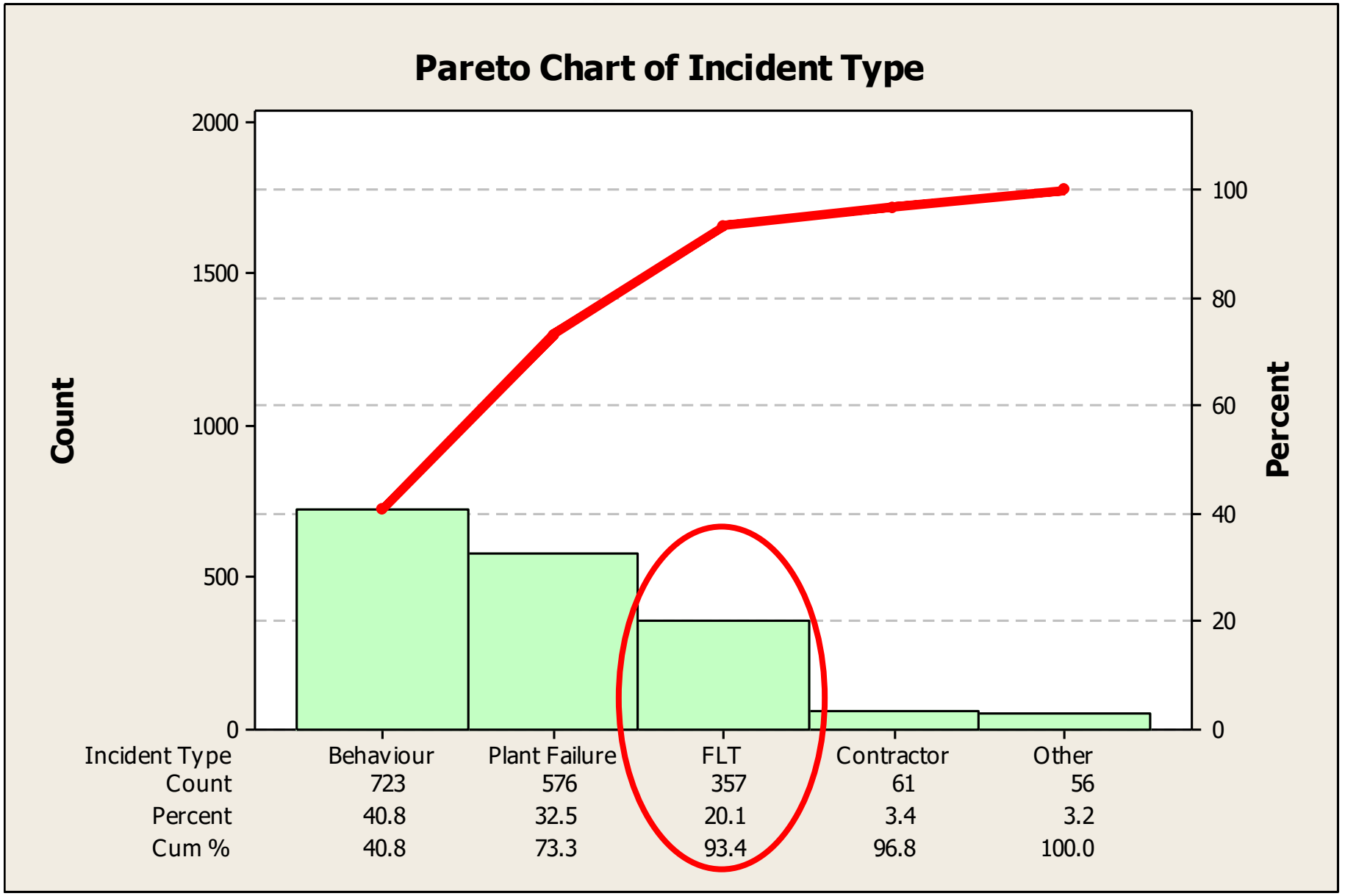
The HSE believe that only around **46%** of all incidents are actually reported. (www.hse.gov.uk)

This means there have potentially been between **168** and approximately **365** incidents and therefore opportunities to cause injury or damage.

We need to greatly reduce the number of incidents in order to reduce the likelihood of injury to persons and damage to product.

The Pareto chart on the following page shows all recorded incidents across the Leeds Manufacturing site.

All Incidents Pareto Chart



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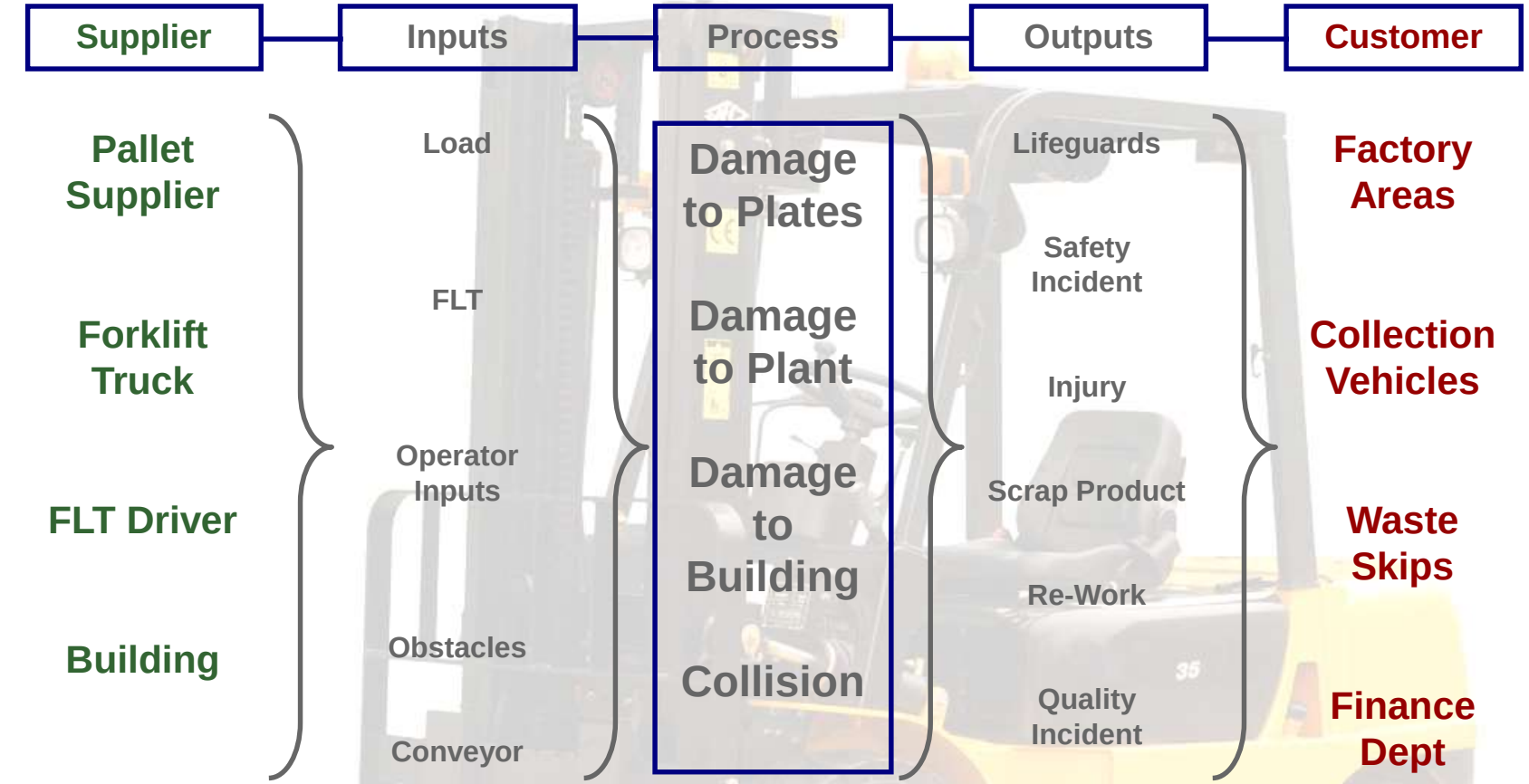
SIPOC Diagram



Process Steps:

Start

Collect Item → Identify Delivery Location → Deliver Item

Stop

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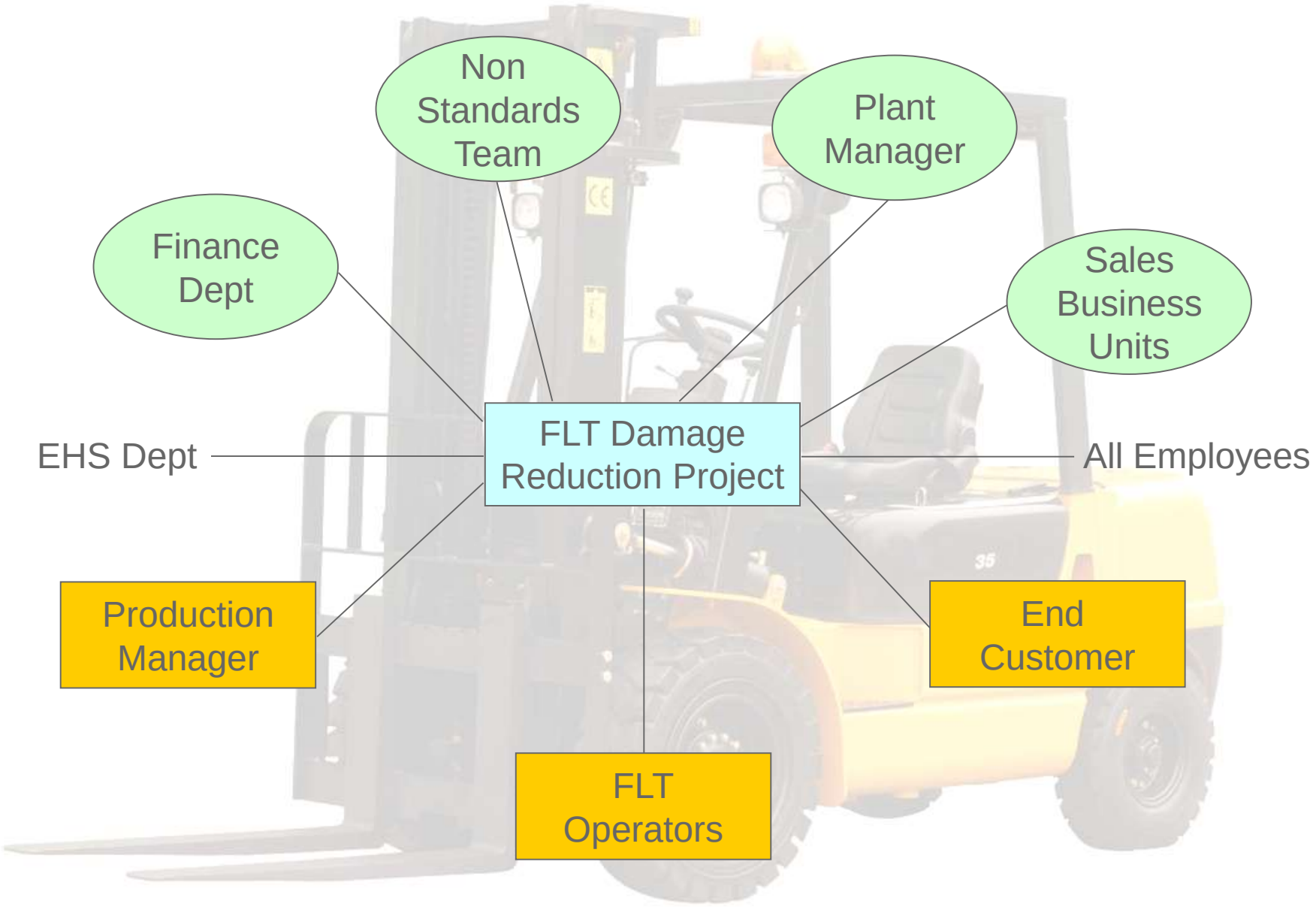
Stakeholder Plan



Voice Of The Customer

What

- Metal
- Consumables
- Waste

Who

- FLT Drivers
- Factory Areas – e.g. CTL
- Finance Dept
- Team Leaders
- Operations Manager

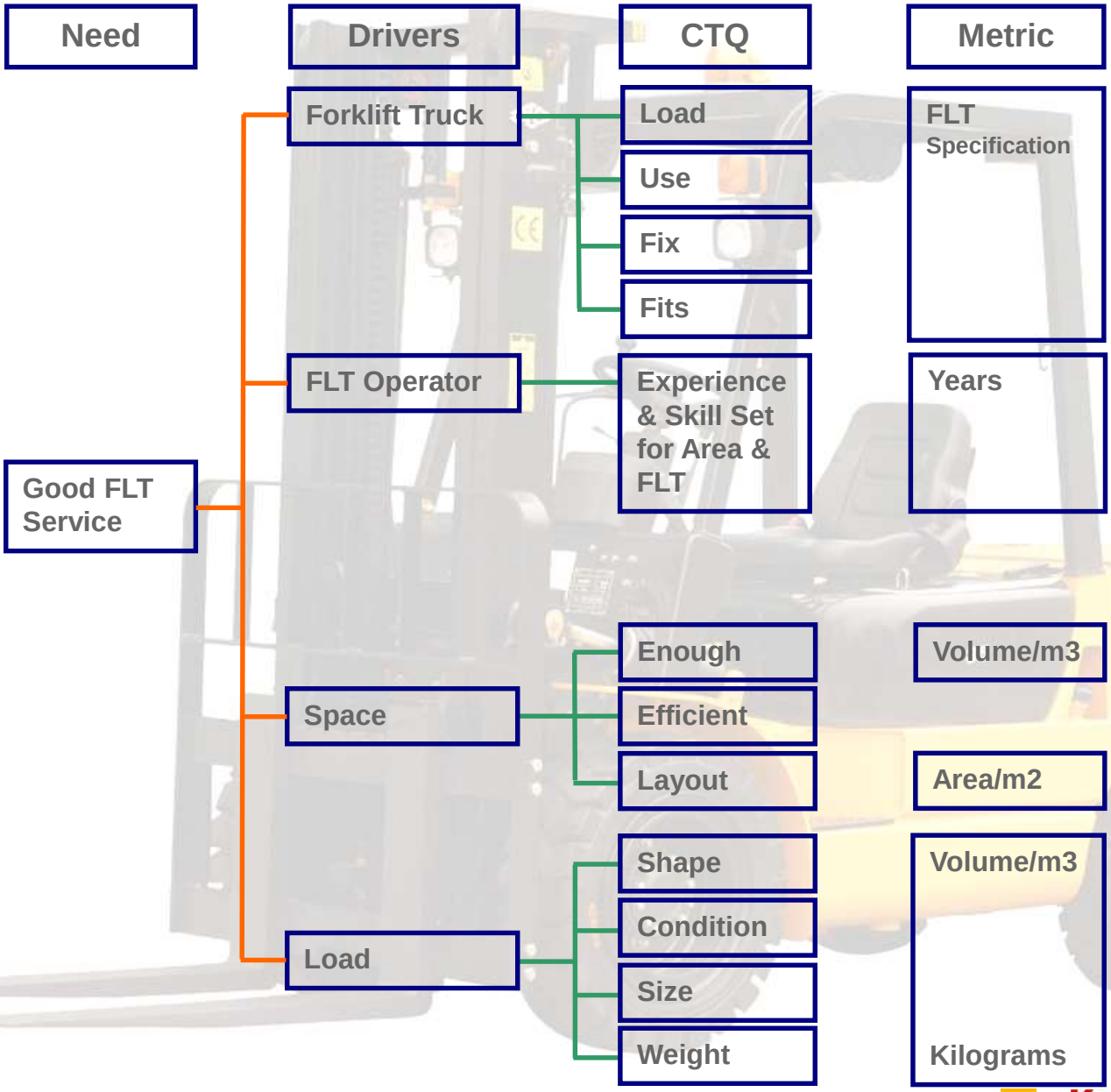
Why

- Damage
- Plates
- Right First Time
- Less Re-Work
- Downtime / Repairs

Information Providers

- EHS Database
- Quality Database
- Quality Department
- PPIC & SAP etc
- FLT Drivers

Critical To Quality Diagram



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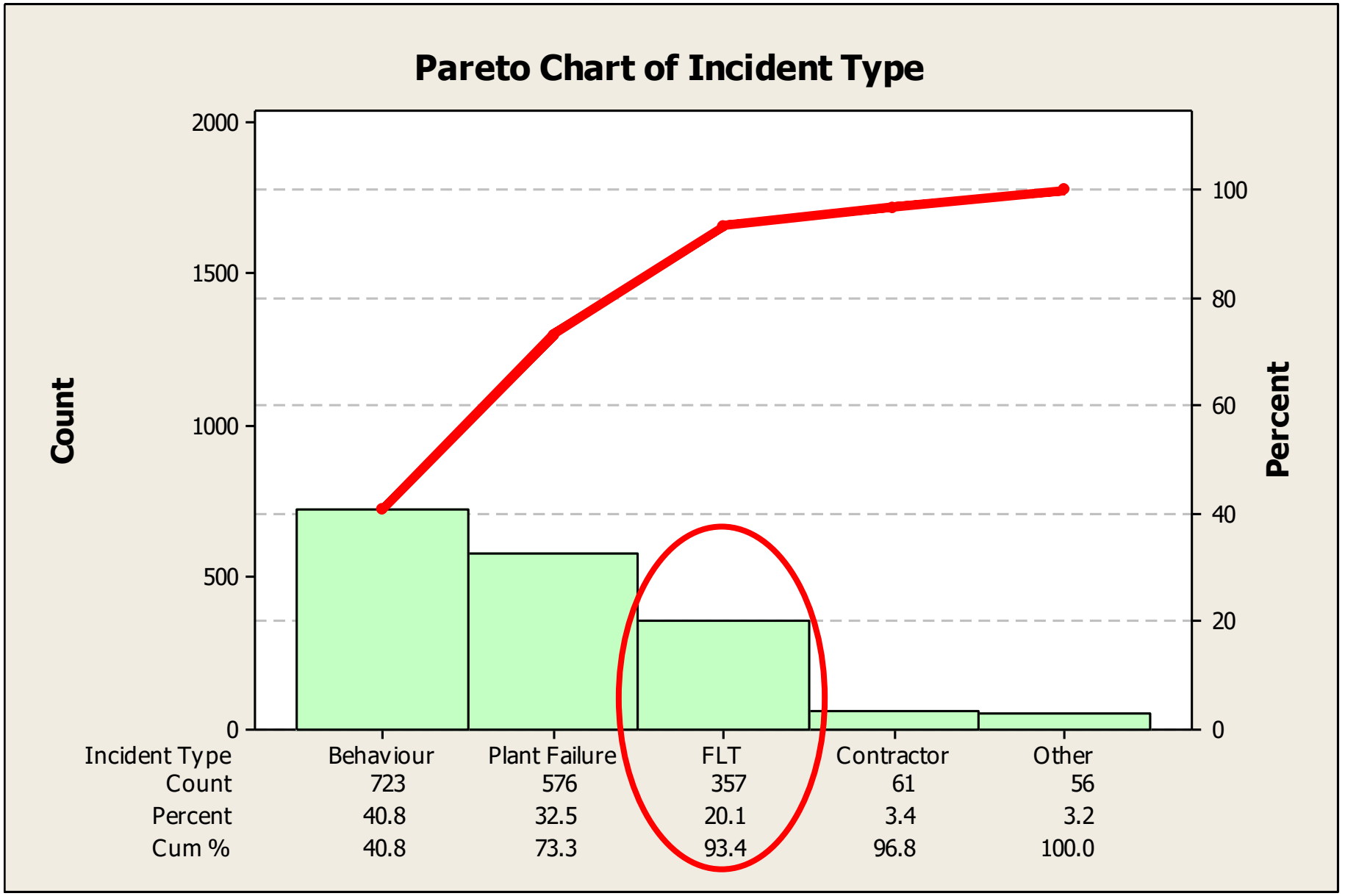
Measure

All Incidents Pareto Chart



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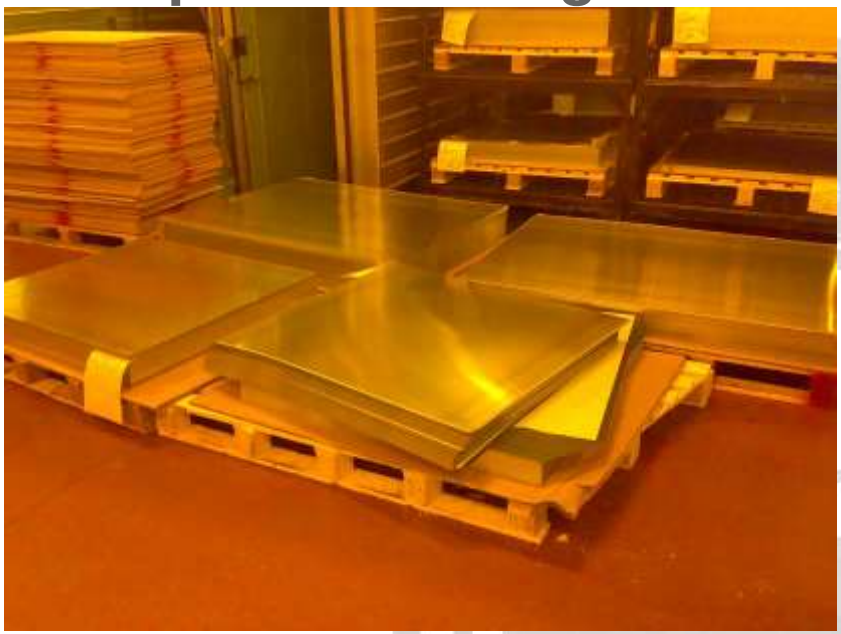
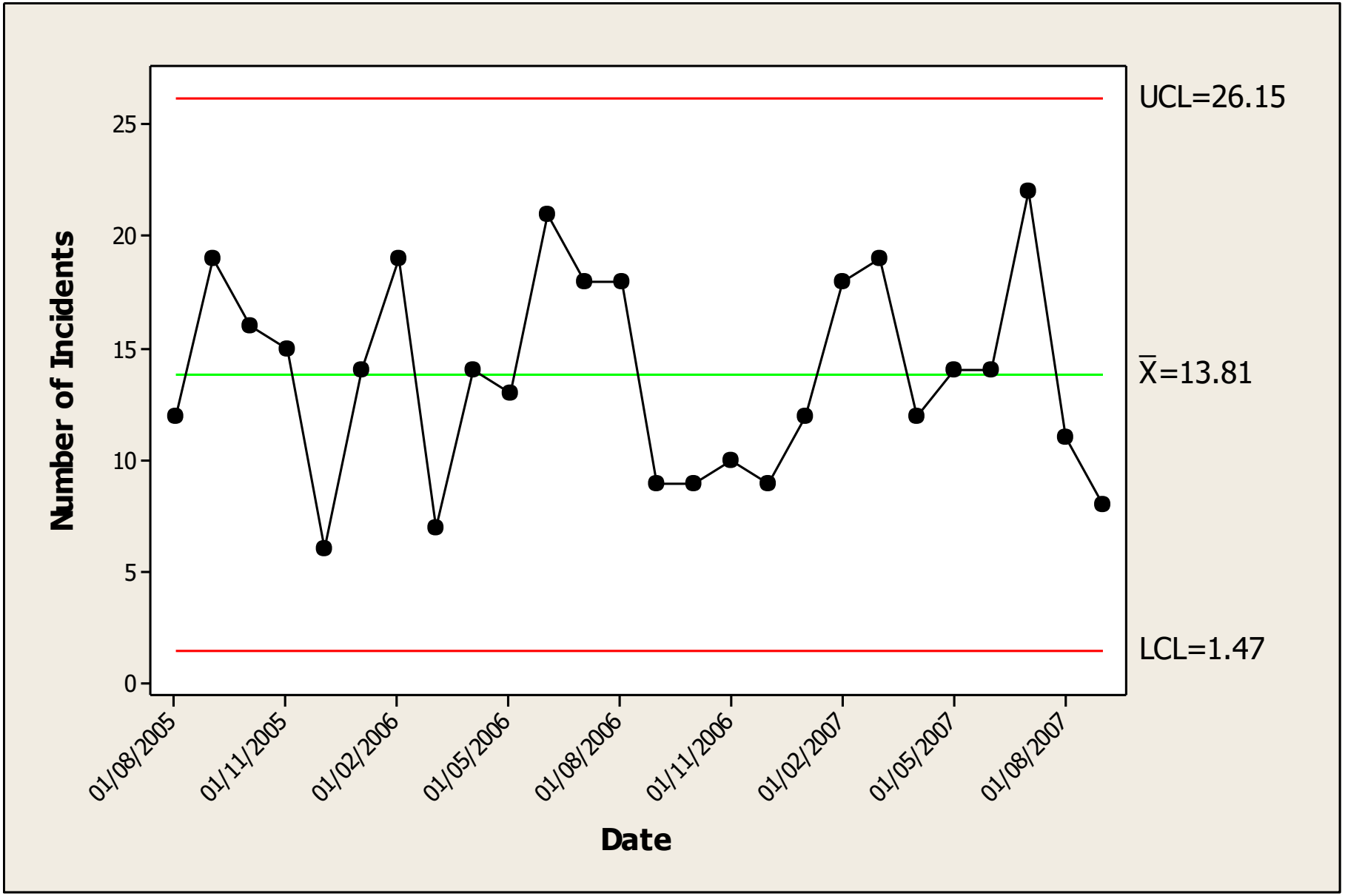
Examples of damage caused by Forklift Trucks



Examples of damage caused by Forklift Trucks

Incident I Chart – showing mean incident rate/month



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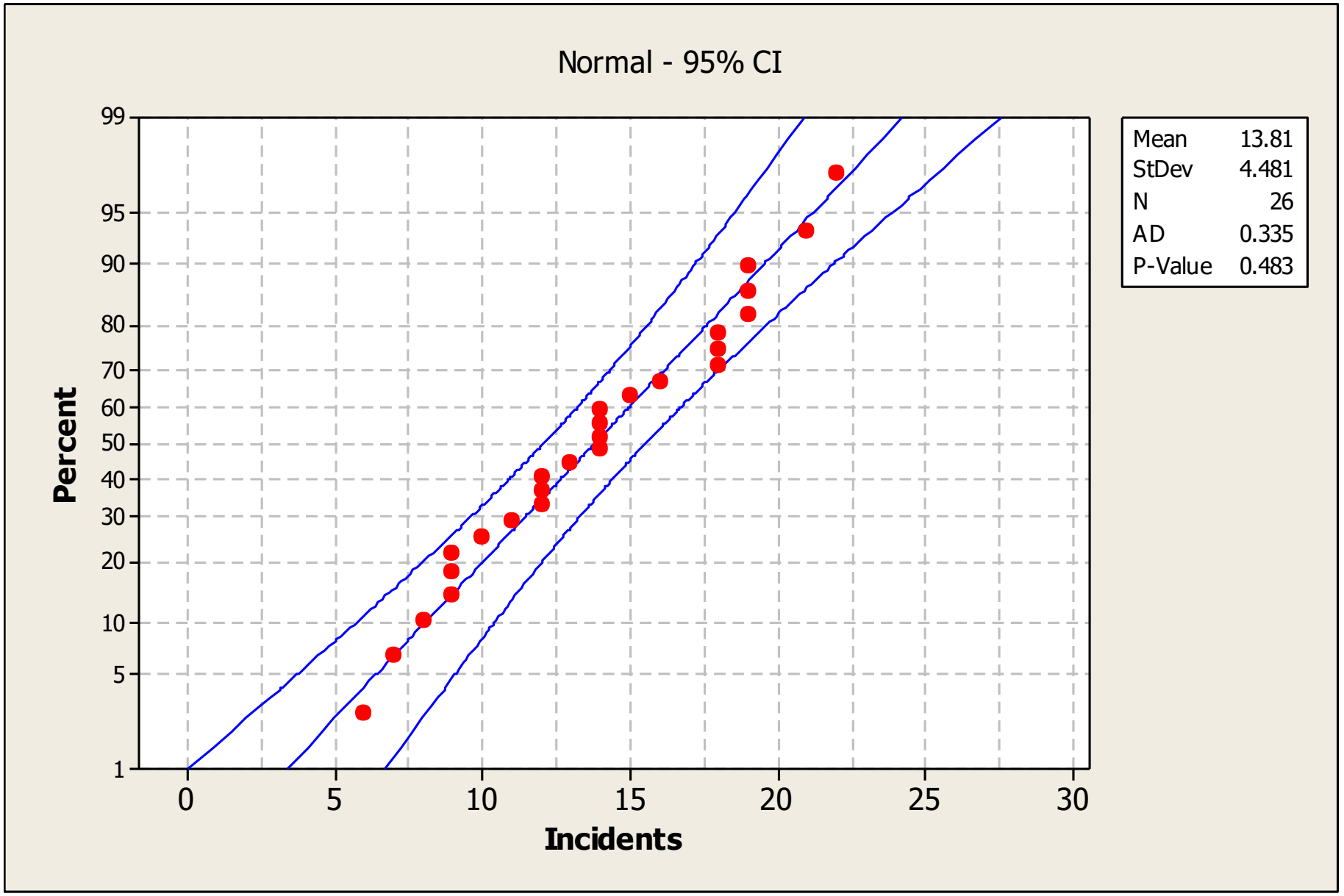
Incident Probability Plot – checking for normal data



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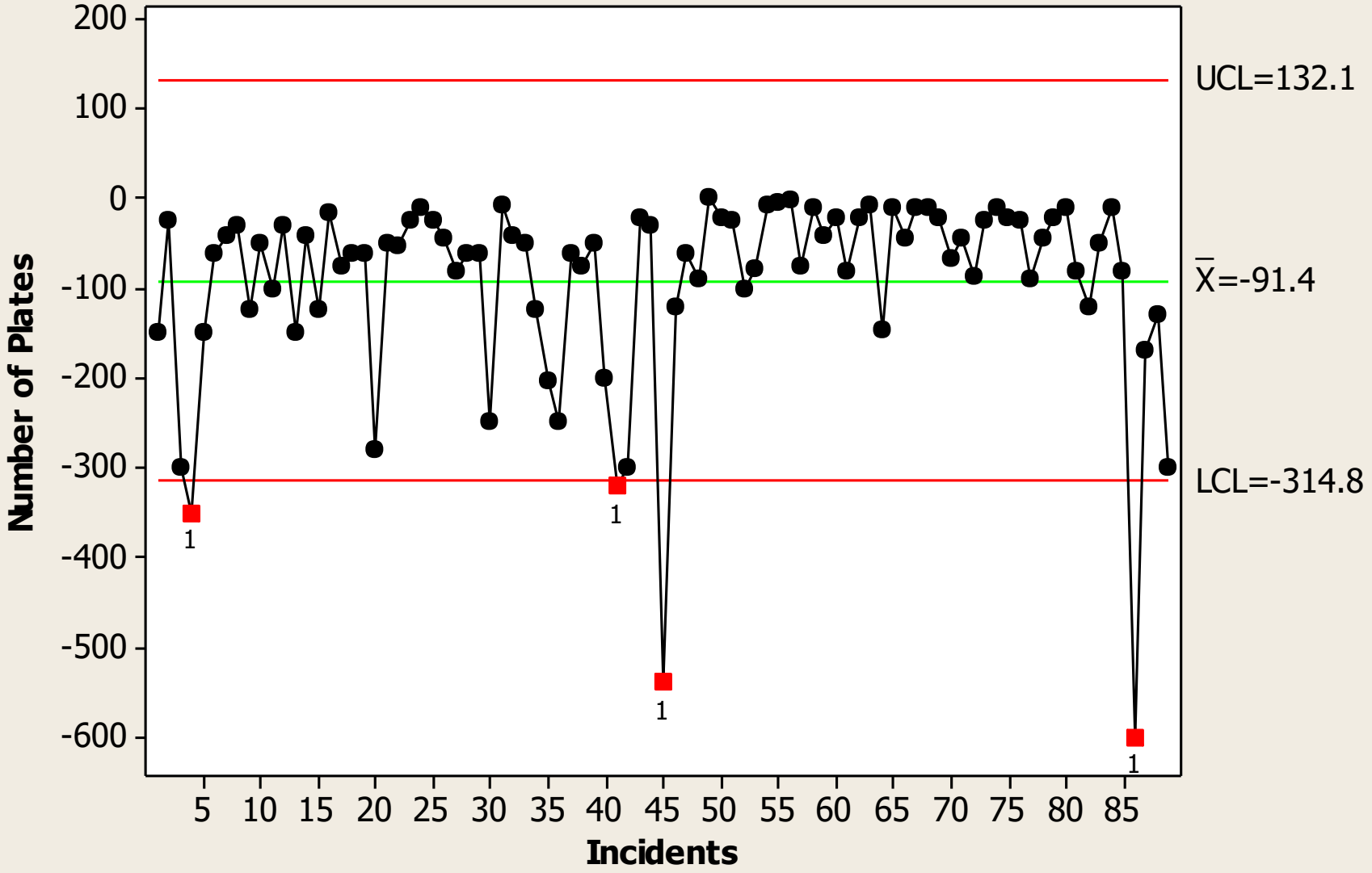
I Chart All Box Sizes excluding outliers



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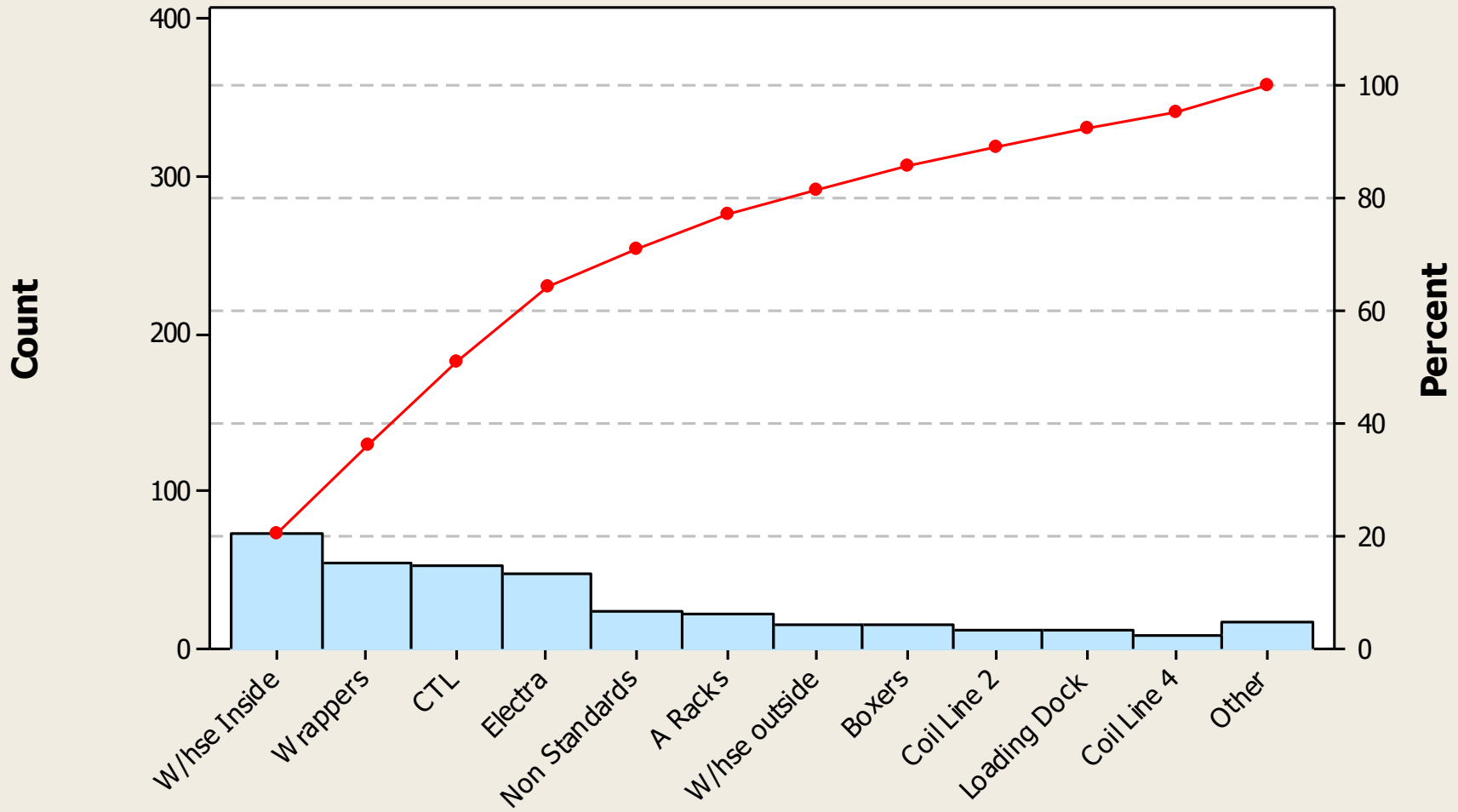
Site Pareto Chart



Count	74	55	53	48	24	22	16	15	12	12	9	17
Percent	20.7	15.4	14.8	13.4	6.7	6.2	4.5	4.2	3.4	3.4	2.5	4.8
Cum %	20.7	36.1	51.0	64.4	71.1	77.3	81.8	86.0	89.4	92.7	95.2	100.0

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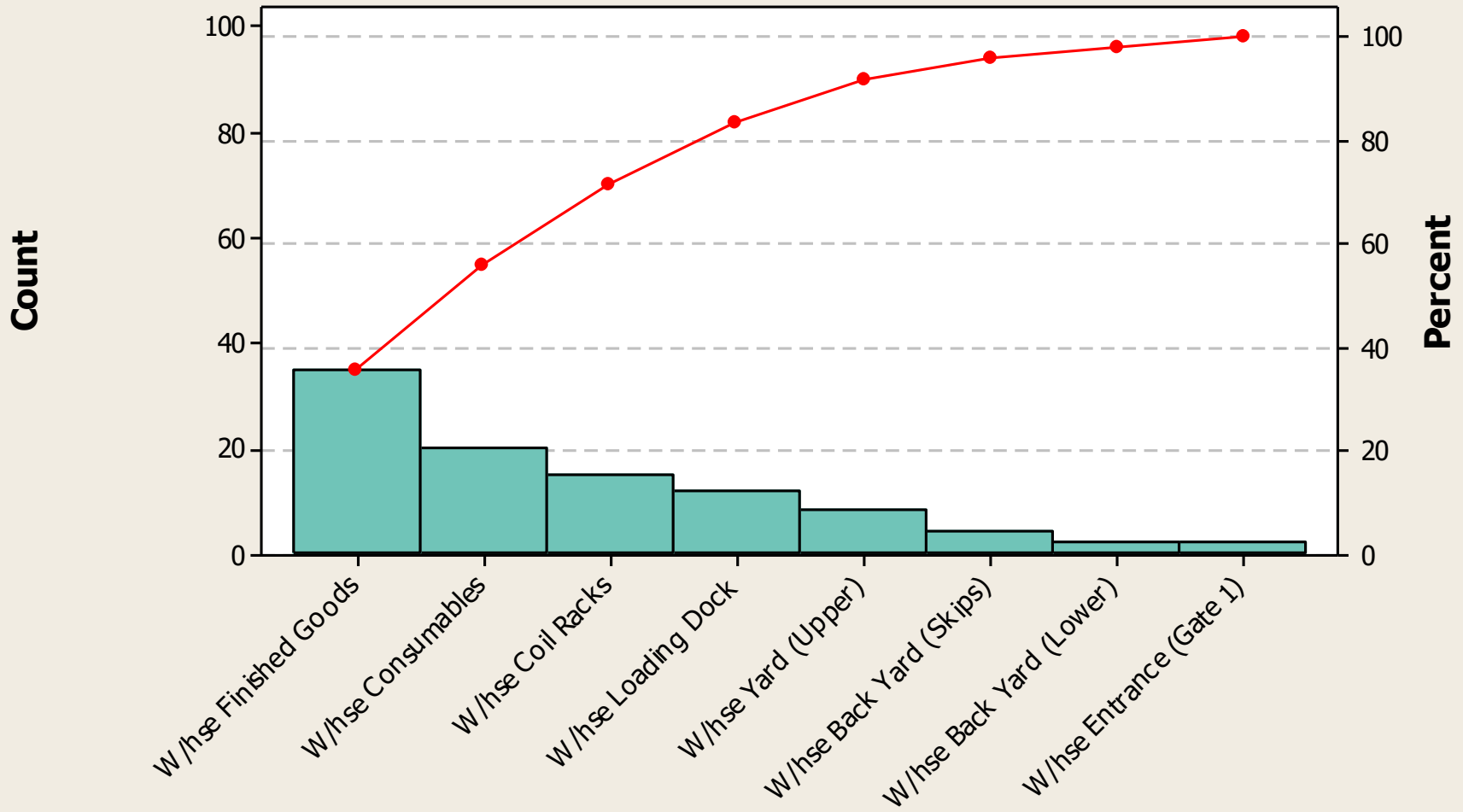
Pareto Chart for Warehouse Areas



Count	35	20	15	12	8	4	2	2
Percent	35.7	20.4	15.3	12.2	8.2	4.1	2.0	2.0
Cum %	35.7	56.1	71.4	83.7	91.8	95.9	98.0	100.0

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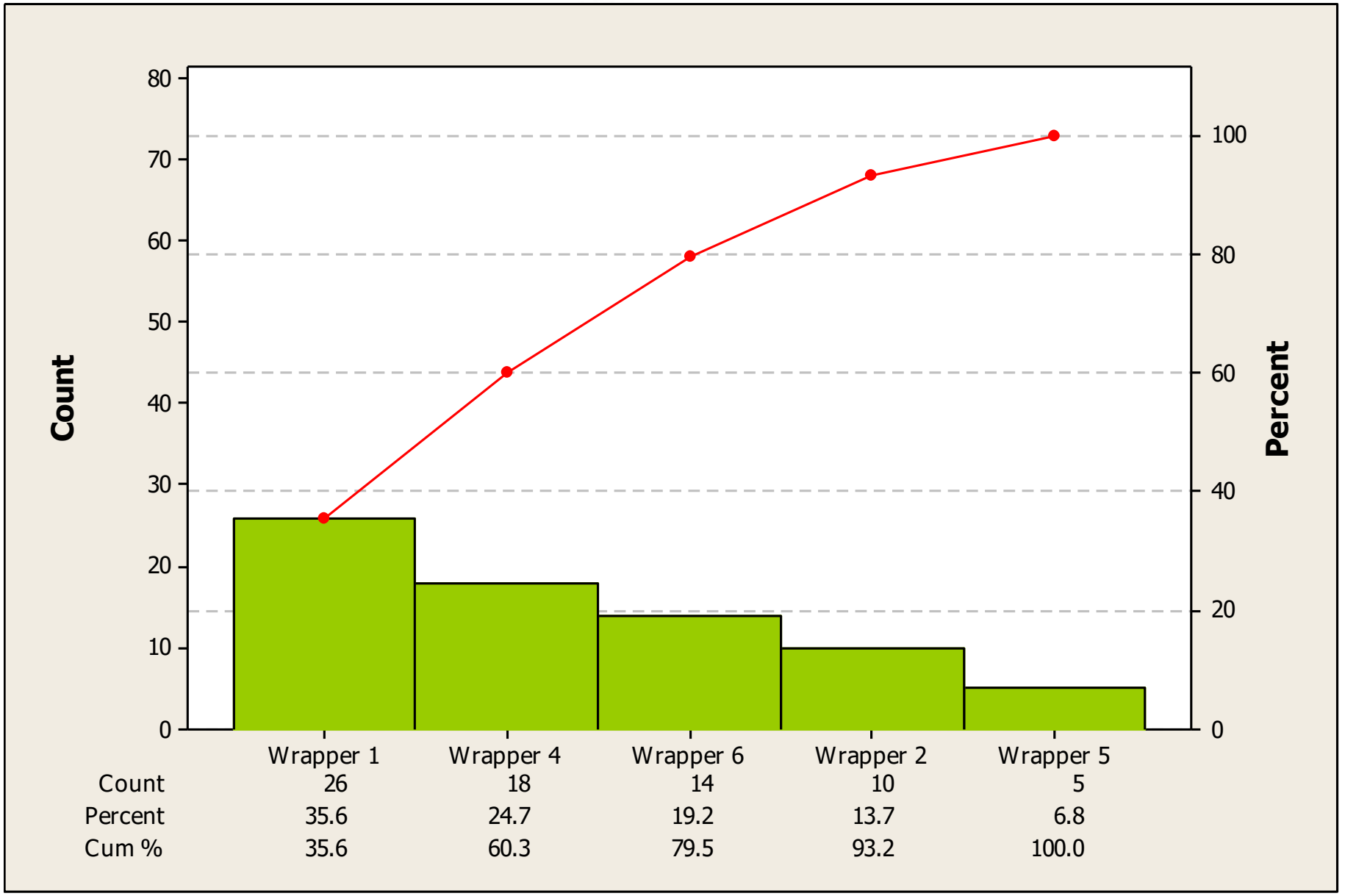
Pareto Chart for Wrappers



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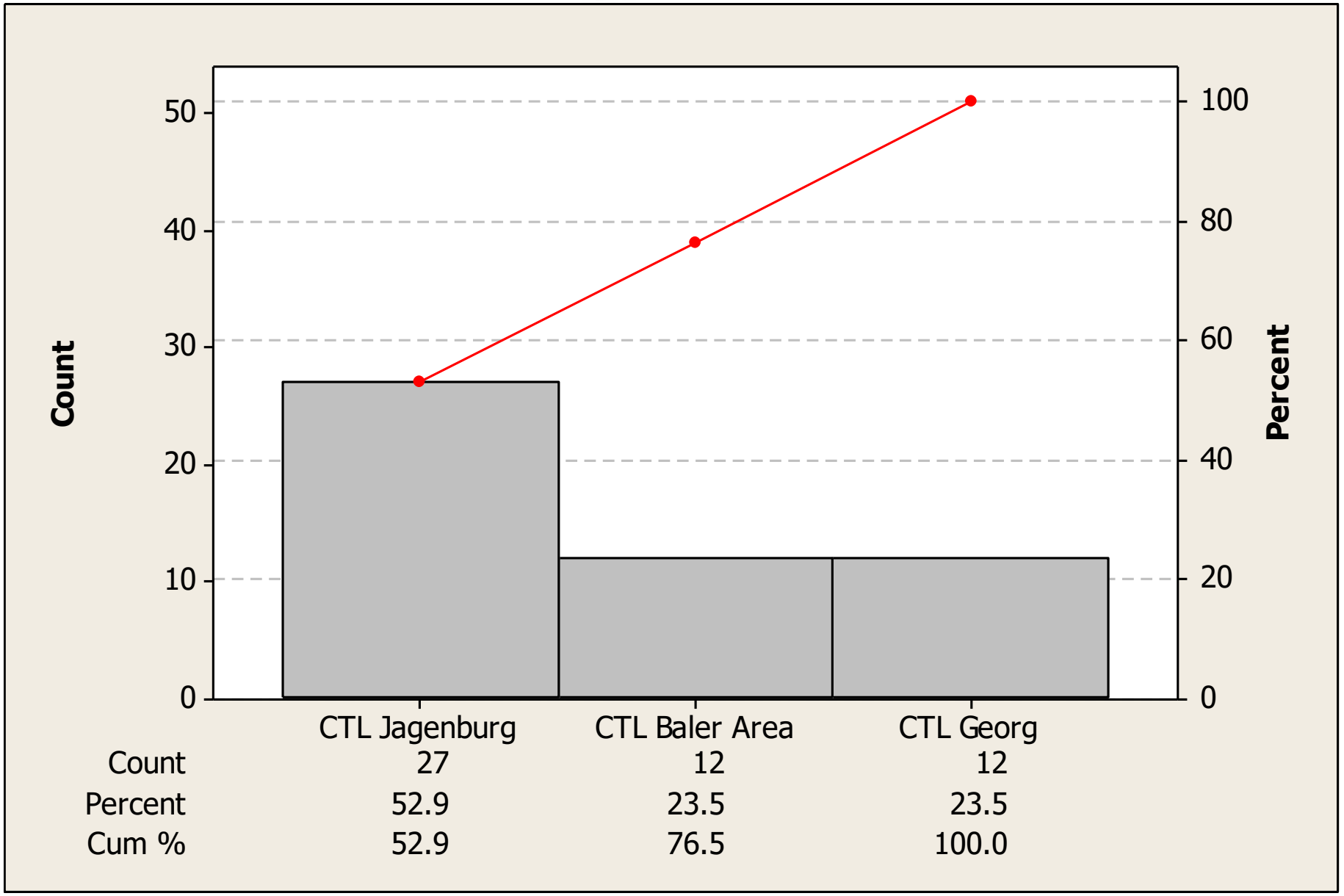
Cut to Length Pareto Chart



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Measure Summary

- The initial scope of the project was to look at all incidents relating to FLT's, however it was determined that it needed to be more focussed on FLT damage to plates as this has the most direct affect on the customer

- The main area of focus for this project was from when the plates are taken off the CTL conveyor and until they reach the wrappers

Therefore the following were discounted from the scope of the project:

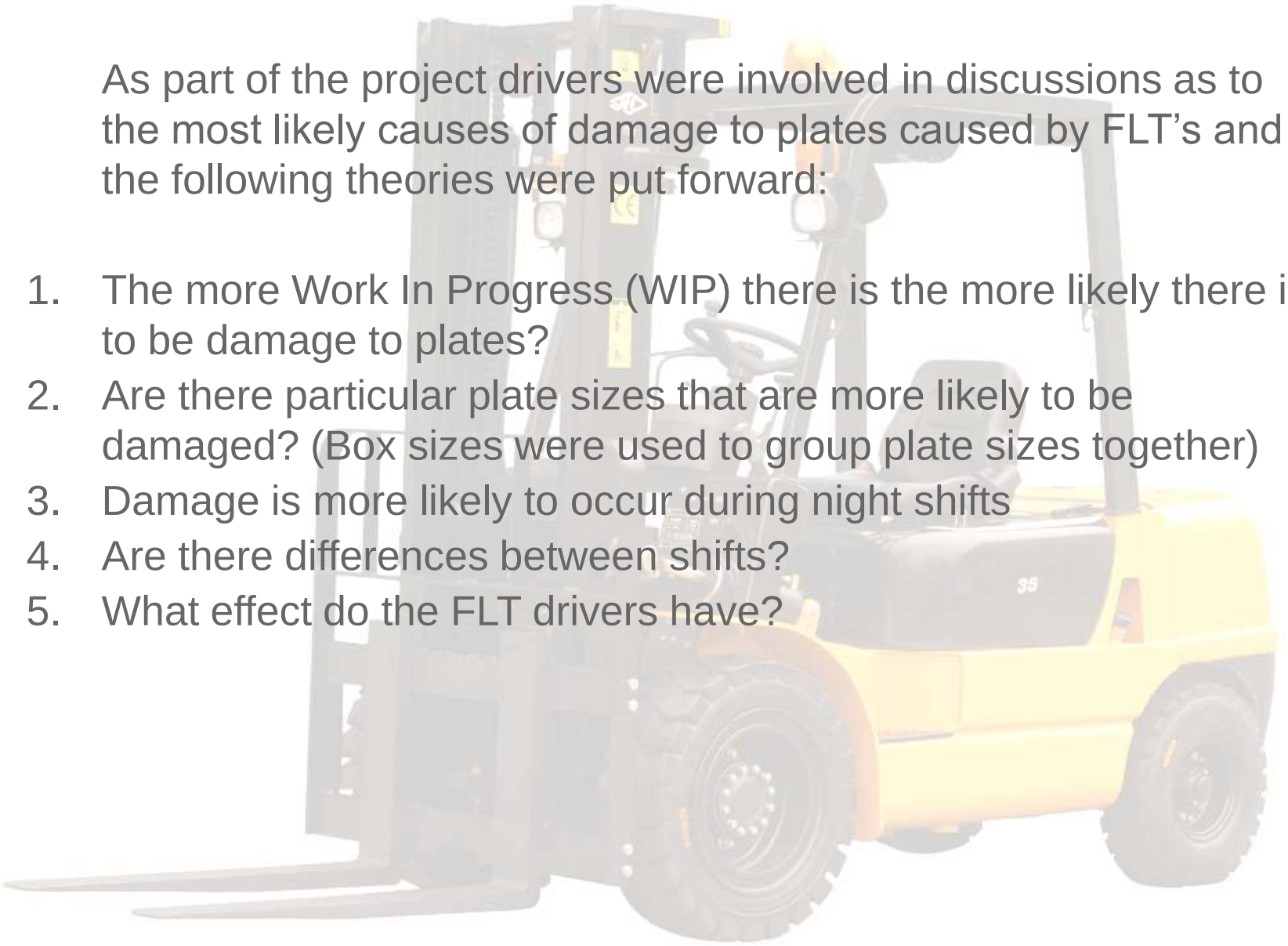
- FLT damage to anything other than plates
- Damage occurring within the coil line areas – not enough reported incidents
- Damage occurring in the warehouse area – most damage to plates occurs when they are unwrapped

Analyse

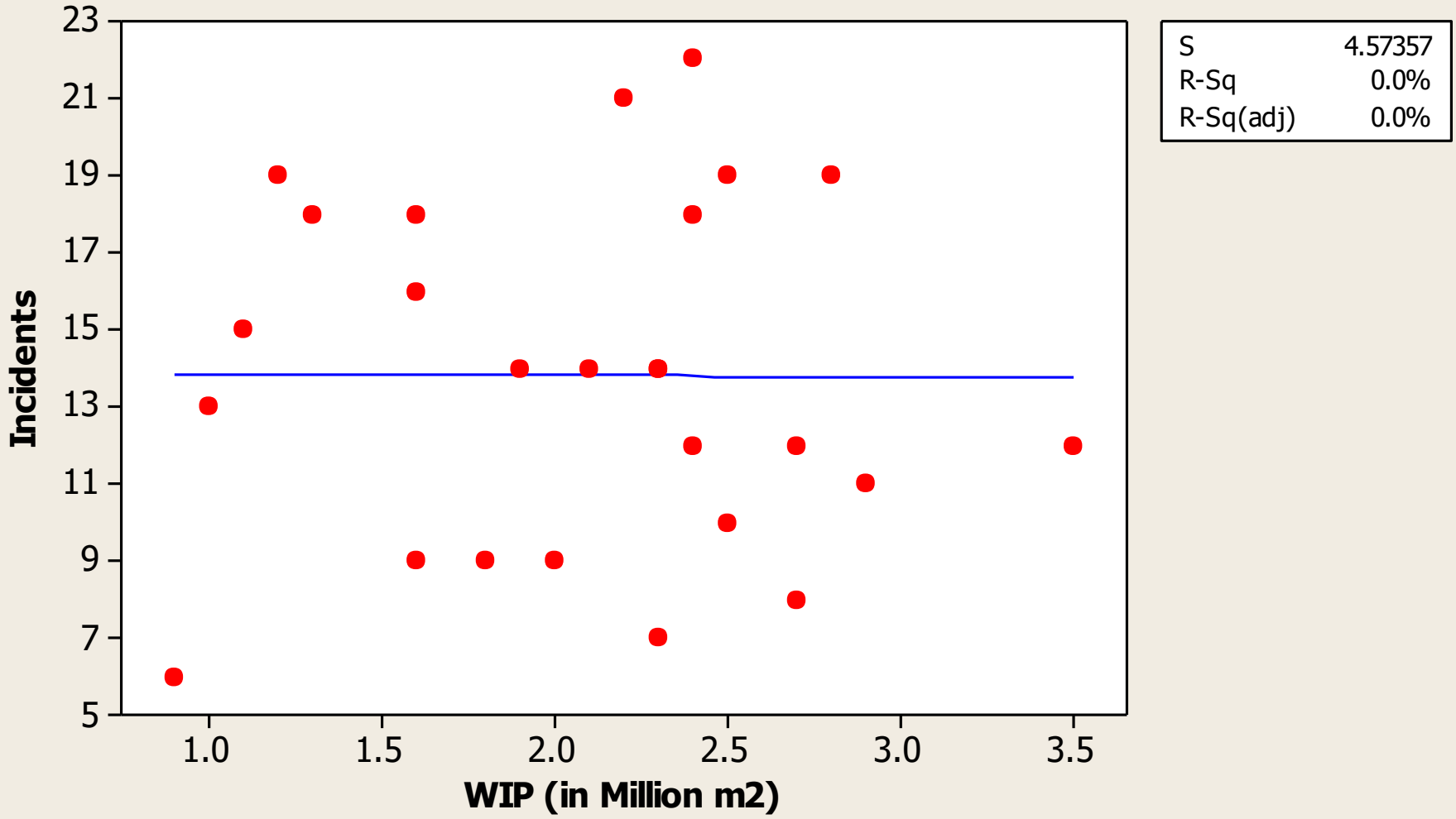
Analyse Introduction

As part of the project drivers were involved in discussions as to the most likely causes of damage to plates caused by FLT's and the following theories were put forward:

1. The more Work In Progress (WIP) there is the more likely there is to be damage to plates?
2. Are there particular plate sizes that are more likely to be damaged? (Box sizes were used to group plate sizes together)
3. Damage is more likely to occur during night shifts
4. Are there differences between shifts?
5. What effect do the FLT drivers have?



Work In Progress vs. Incidents – checking for relationship



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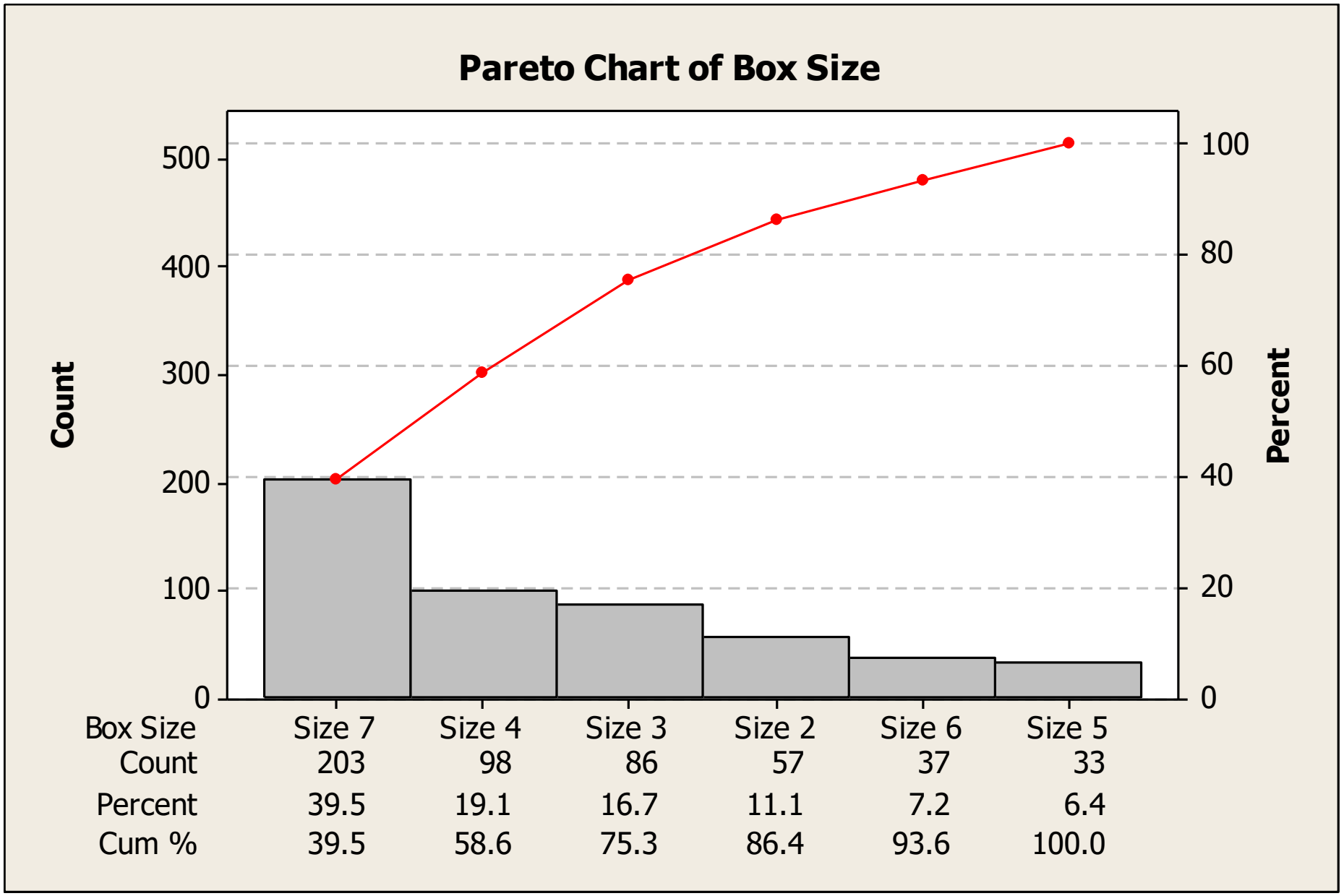
Pareto Chart of Normalised Data for Incidents / Million Plates



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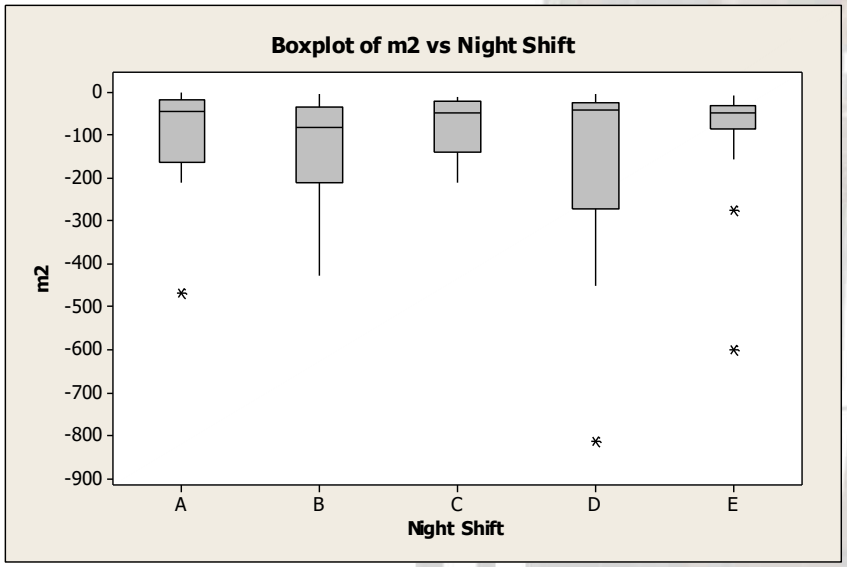
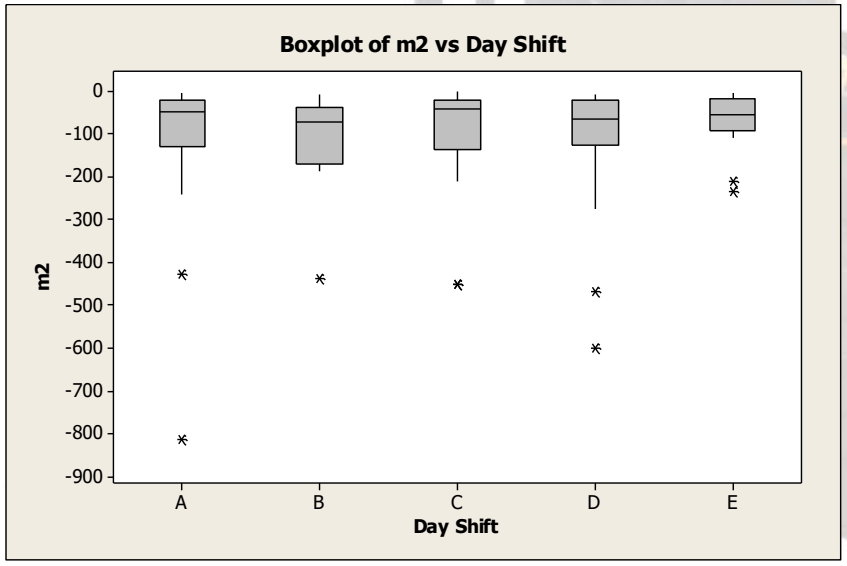
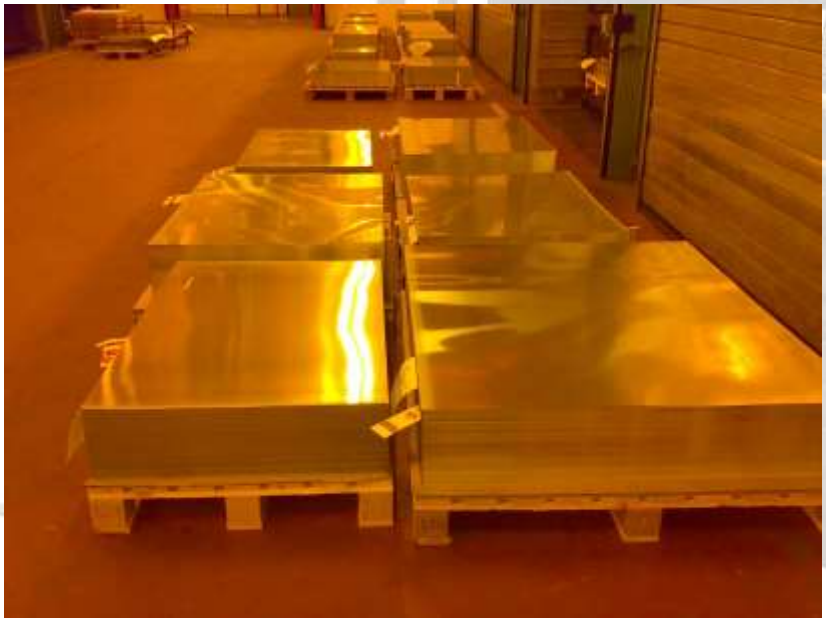
Determining Differences Between Night & Day Shifts



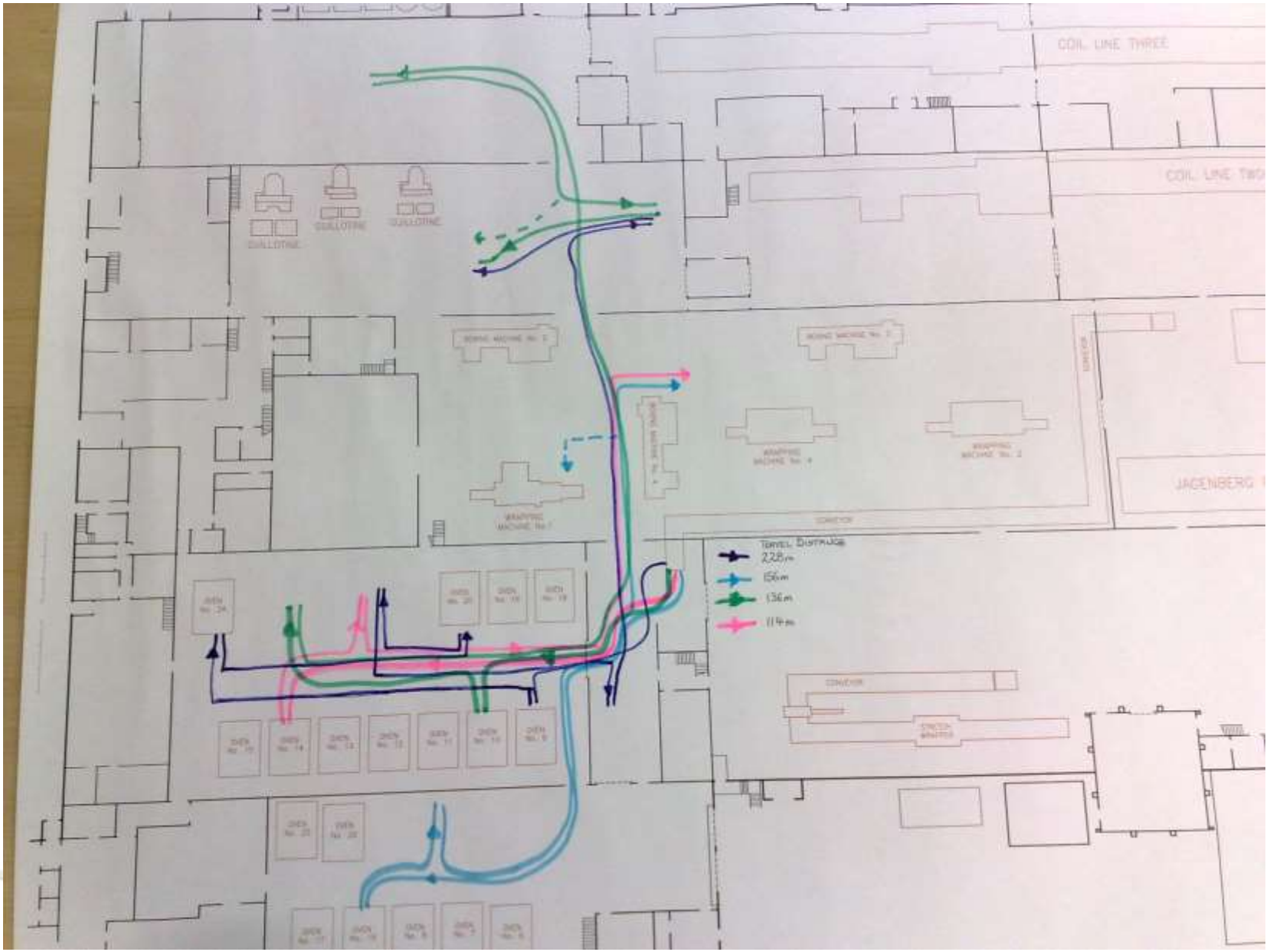


A comparison of shifts was carried out to determine if there was a difference between day and night shifts using both boxplots and ANOVA tests and it was determined that there was NO statistical difference

Opportunities for Forklift Truck damage to occur



Spaghetti Diagram of Plate Movements



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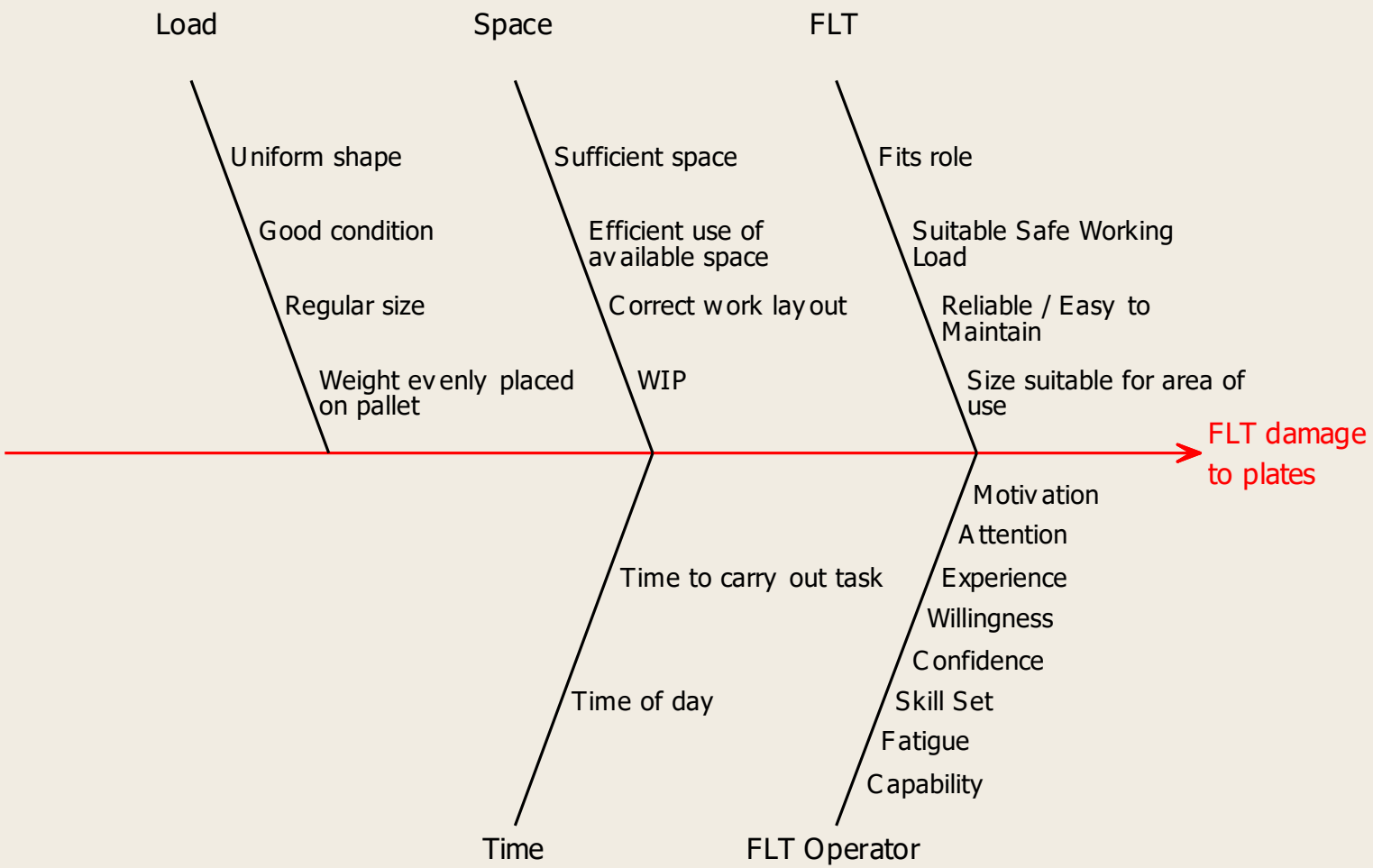
FLT Damage Cause and Effect Diagram



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Analyse Summary

From the information and statistical analysis gathered during the course of this project several points have come to light:

1. The amount of WIP on the shop floor does not affect the number of incidents recorded. More WIP does not equal more damage
2. The area where most damage occurs is between the end of the conveyor and the wrappers
3. Once the plates are wrapped there are very few FLT related incidents occurring
4. There was no significant difference between shifts
5. No statistical difference between day and night shifts
6. Size 7 plates are the most likely to be damaged

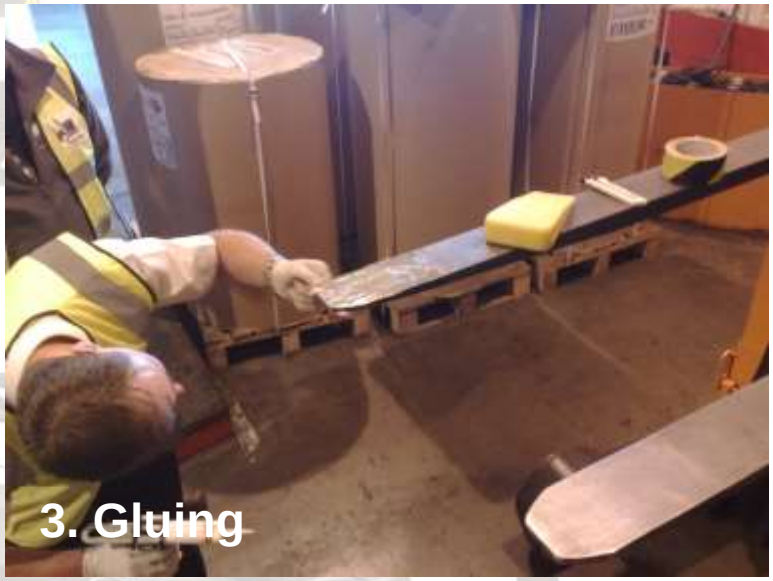

Improve

Fork Tip Protectors

A new product designed to reduce impact damage caused by Fork tips

- Constructed of Polyurethane
- Fixed to Fork Tips by plastic weld type gluing process
- Initial trial to begin with fitment to one Electra FLT and the Non-Standards FLT on Tuesday 26th August
- Approximate Cost to fit to remaining 8 Reach FLT's = <£2200 = £275/FLT

Fork Tip Protector Installation Process



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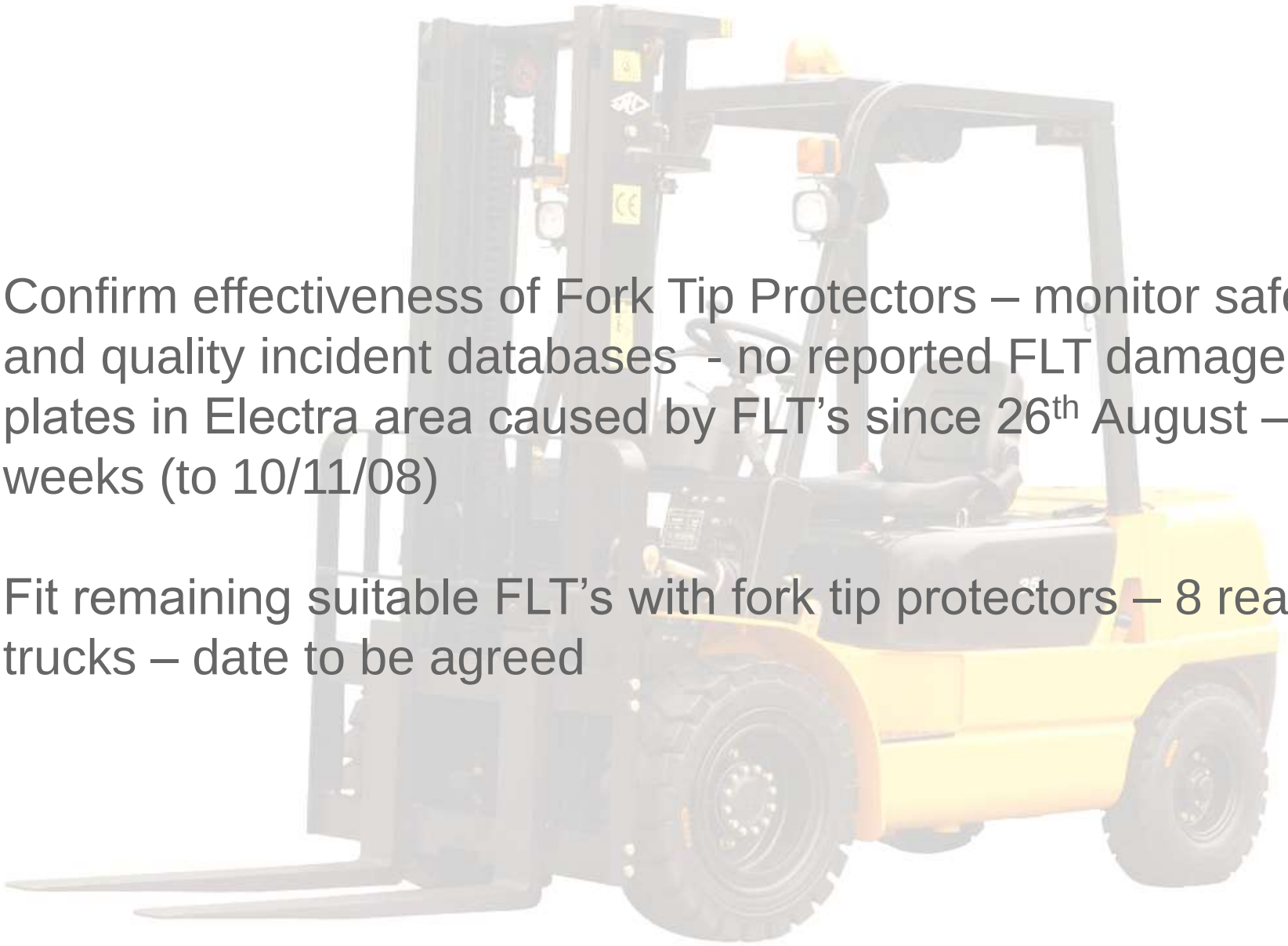
Fork Tip Protector Kit & Video

A Short Video Clip (Separate Video File)

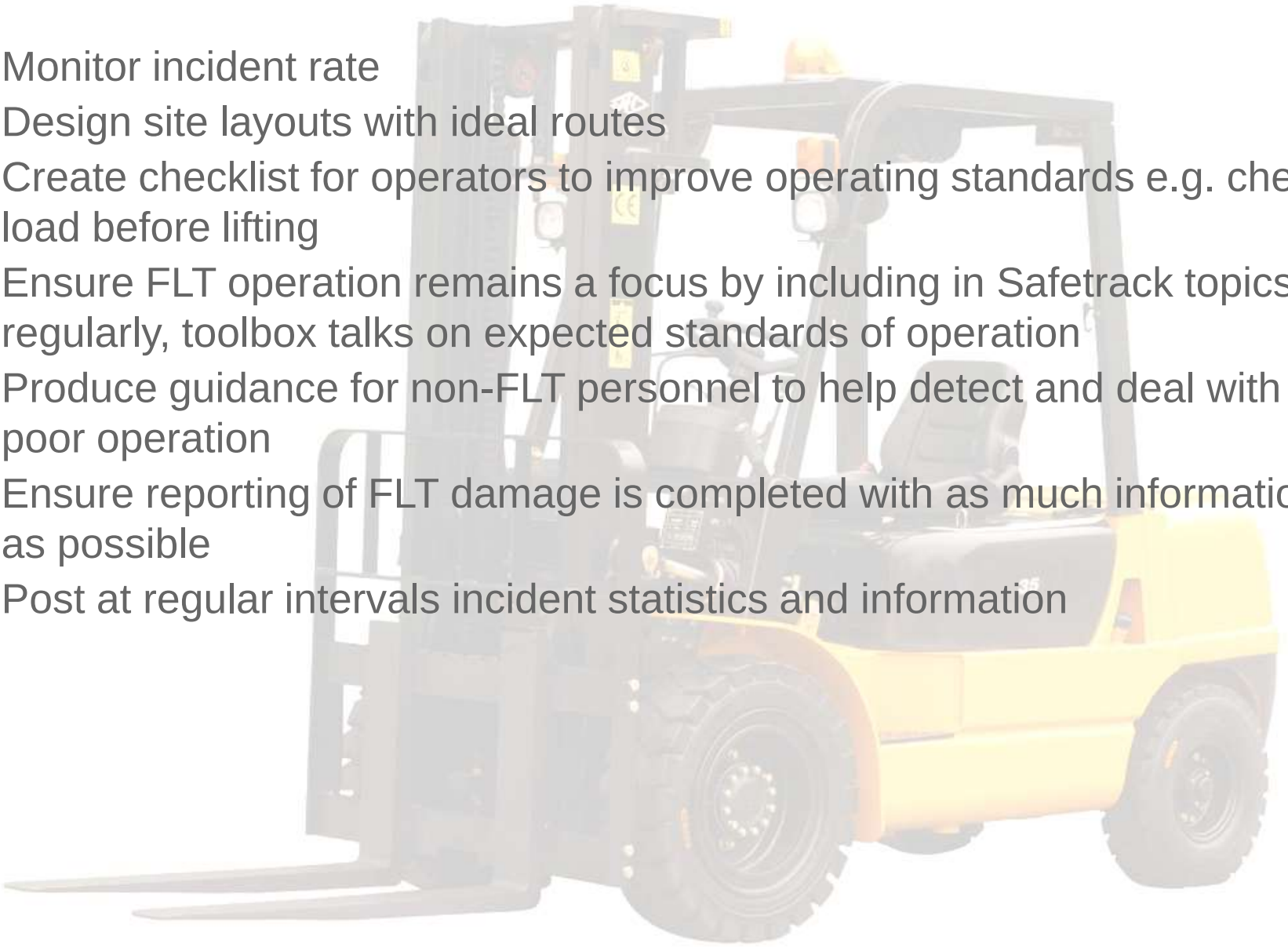
Improve Summary



- Confirm effectiveness of Fork Tip Protectors – monitor safety and quality incident databases - no reported FLT damage to plates in Electra area caused by FLT's since 26th August – 11 weeks (to 10/11/08)

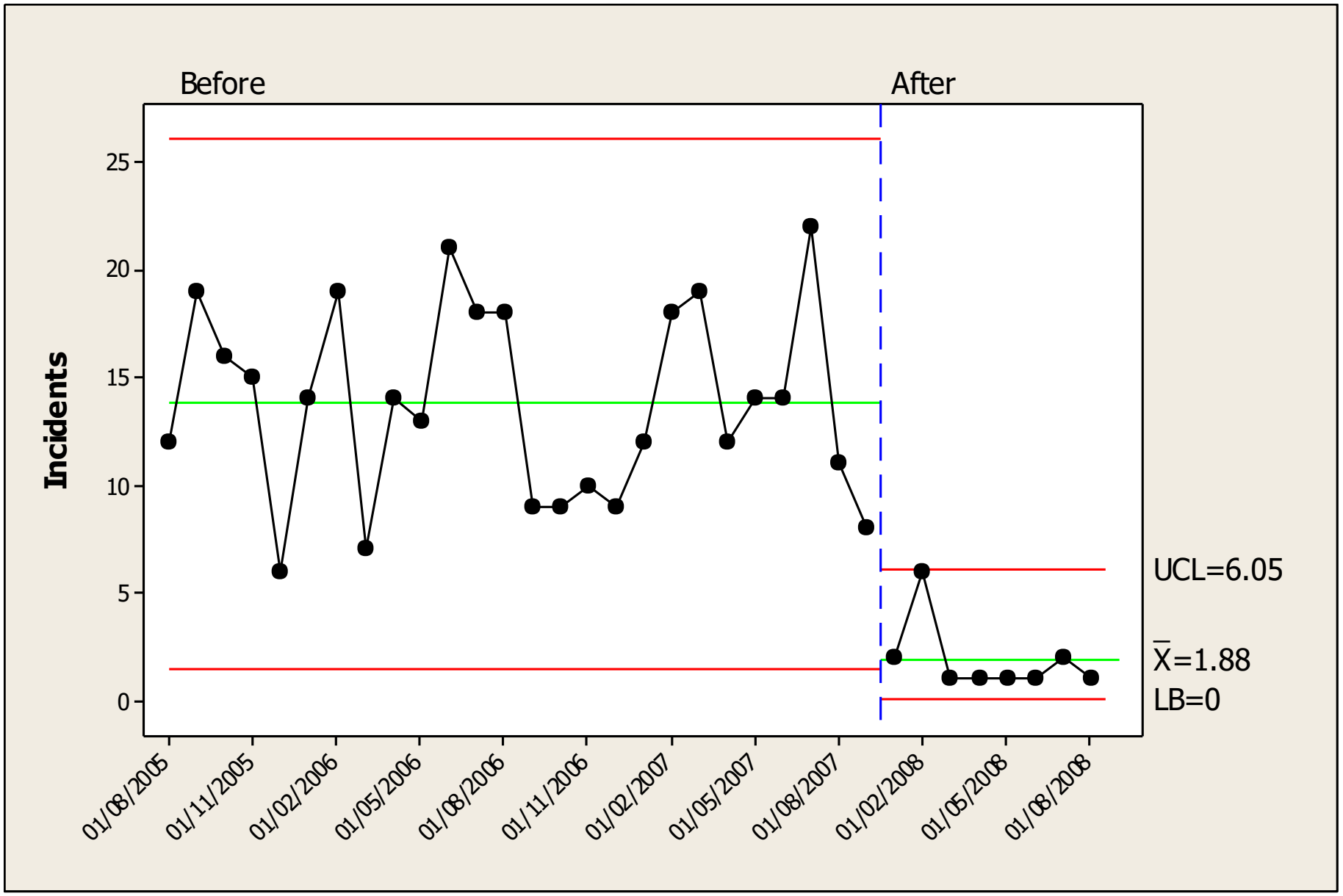
- Fit remaining suitable FLT's with fork tip protectors – 8 reach trucks – date to be agreed

Control & Sustain



- Monitor incident rate
- Design site layouts with ideal routes
- Create checklist for operators to improve operating standards e.g. check load before lifting
- Ensure FLT operation remains a focus by including in Safetrack topics regularly, toolbox talks on expected standards of operation
- Produce guidance for non-FLT personnel to help detect and deal with poor operation
- Ensure reporting of FLT damage is completed with as much information as possible
- Post at regular intervals incident statistics and information

Incidents Rate Before and After Project Started



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Control & Sustain continued

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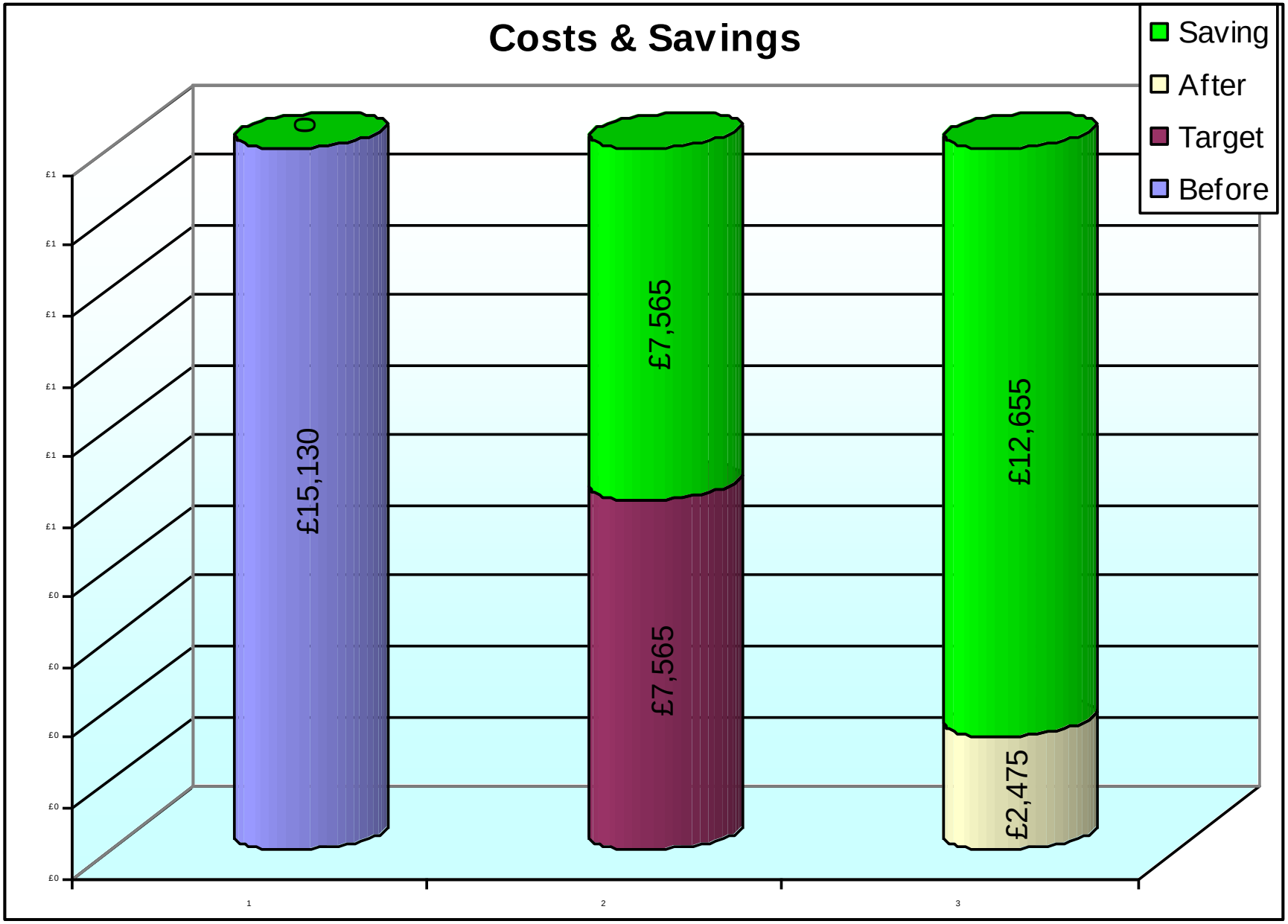
Control & Sustain continued



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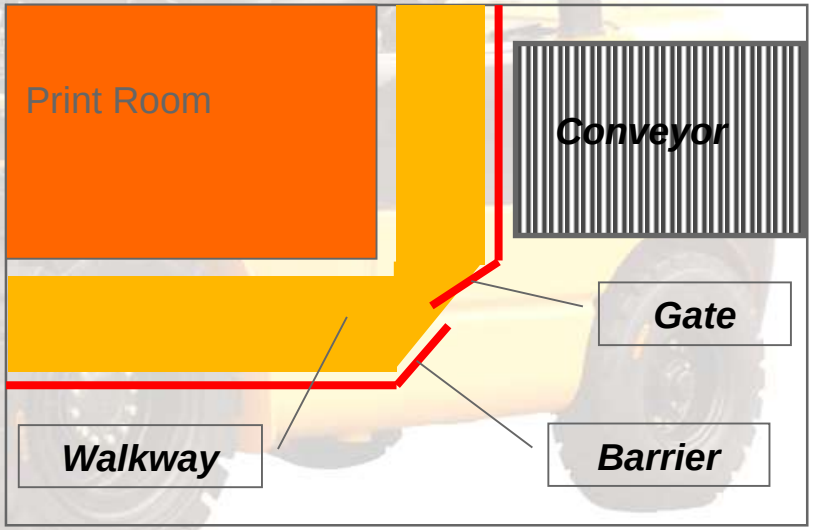
Completed Solution

Barrier Alteration – Quick Win

- The position of this barrier means that it gets clipped on a regular basis when moving pallets by the end of the conveyor
- Angle the barrier more to improve the access to the conveyor area and to modify the gate accordingly (both low cost modifications). This reduces the likelihood of damage to plates due to better access to the end of the conveyor



Further Recommendations

Outside the scope of this project but will have benefits

1. Determine future strategy for Forklift Trucks and adjust as appropriate – Action RR / PW / DD

2. Retrain all remaining drivers as per RTITB recommendations – Action RR / PW

3. Investigate key fob system to encourage ownership of FLT – Action RR / PW

4. Continue to work with fork tip protector supplier to enhance and improve design – Action RR

5. Investigate the fitting of protective corners to Size 7 pallets at CTL to reduce likelihood of damage – Action NC / SA / DD

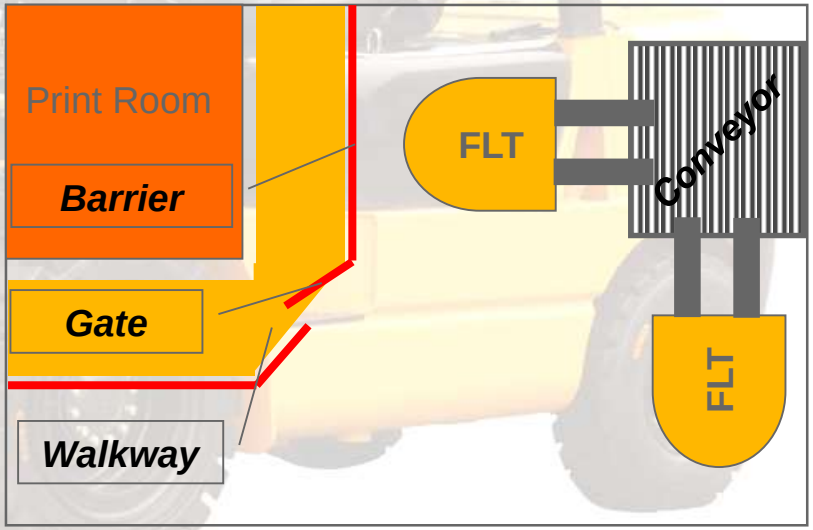
6. Conveyor Alterations (see next slide) – Action JL

Further Suggested Solutions

Conveyor Alterations

- Remove the last section of conveyor to allow FLT's to unload pallets from the end. (this would reduce the handling of pallets as the drivers would be able pick the pallet up the way it needs to be stored in the racks
- Remove a section of the plinth to continue to allow FLT's to unload from the side as well

(relatively low cost modifications)



Questions ?

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