Ontario

Targeted Hazard Enforcement Cranes – The Ontario Experience

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January 27, 2009

“Obvious problems”

Our Dilemma in enforcement?

- *Many stakeholders and trades have already instituted various OHS programs and brought Lost Time injuries (LTI's) down from historical levels. Our targets are often employers with a current rate of less then 2.0 LTI's*
- Is strict enforcement of the OHSA becoming counterproductive? Would a requirement for strict compliance with the OHSA and all Regs drive a company out of business in a recession economy?
- Are we now facing an industry that accepts "pretty good", and that what we have now is enough?

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What is wrong with this picture? What are they doing that is unsafe?

- Look closely and see if you can spot any hazards… I am sure you will.

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What's *really* wrong with this picture?

- EIGHT typical workers can see what you see and not one of them feels empowered to stop this.

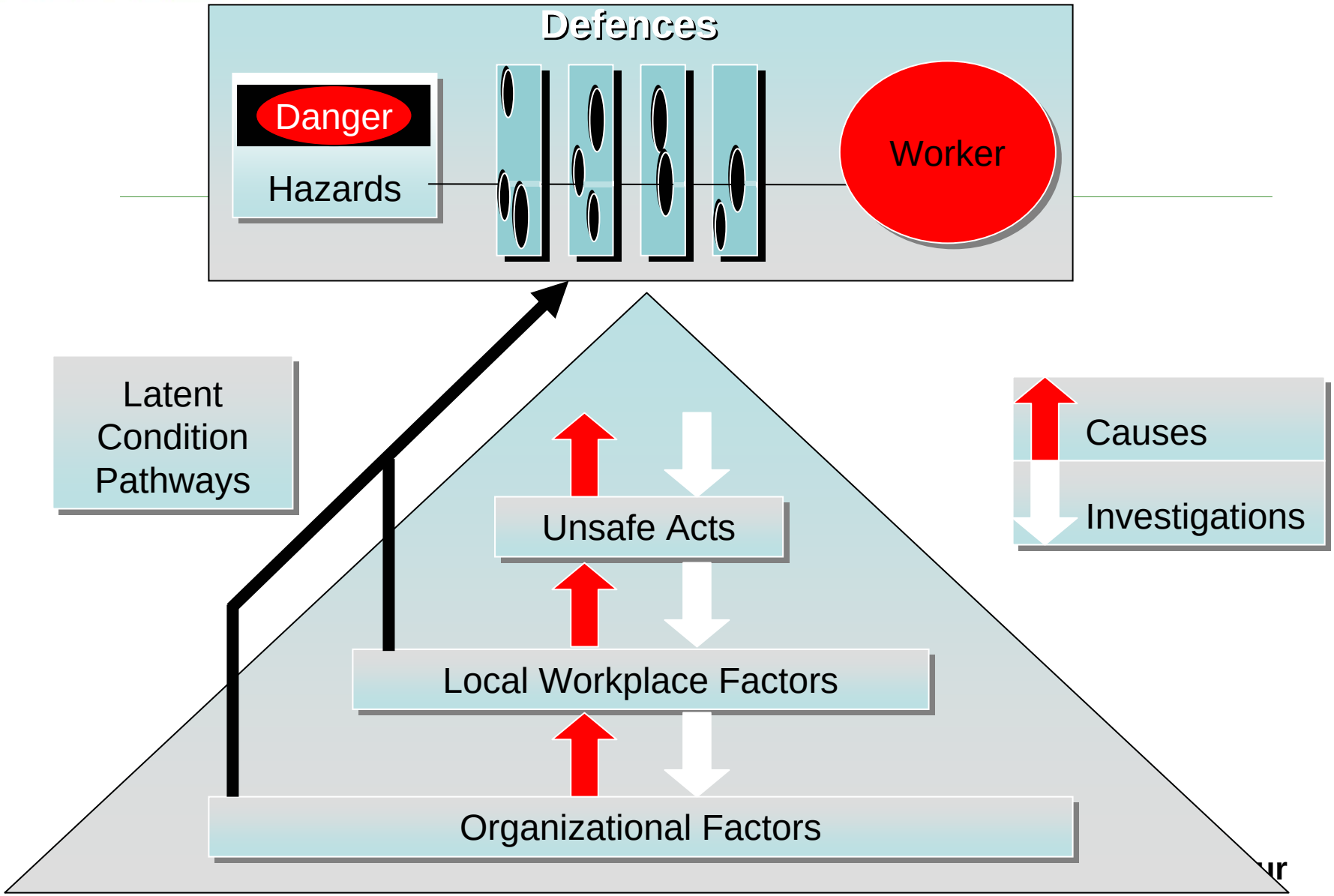
- Although this is not a Construction site, it is typical of the way construction workers ignore unsafe conditions

- How can a regulator hope to change complacency about unsafe conditions?

The case for targeted sector specific enforcement initiatives

- When erected, Tower cranes must be inspected by a Professional engineer, any defects corrected, and a report prepared, signed by the Engineer.
- After erection the “employer” is responsible to maintain the crane in good condition, under section 25 of the OHSA
- Must be re-inspected every 12 months
- Cranes being imported into Ontario, must meet design standards, and be electrically certified.

Sounds great in Theory!


Defences
Danger
Hazards
Worker
Latent Condition Pathways
Causes
Investigations
Unsafe Acts
Local Workplace Factors
Organizational Factors

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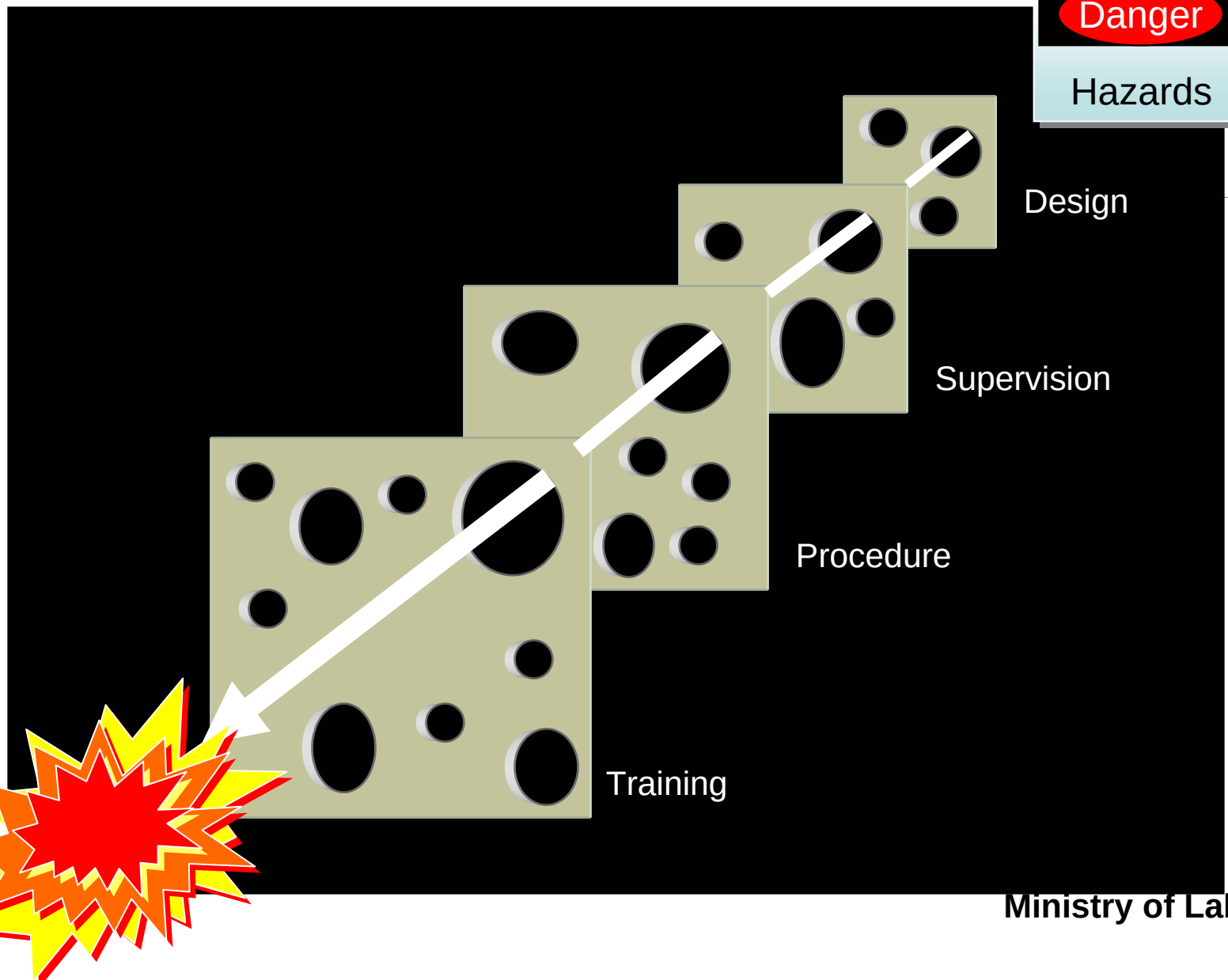

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Compliance Background

- Up until the recent enforcement initiative, MOL inspectors had not climbed Tower cranes or closely inspected them for a number of years
- MOL relied on Professional Engineer Certification
- MOL also depended on individual crane operator's undertaking regular checks and uncovering problems, forcing repairs to be carried out

What are risks surrounding adequate crane updates and repairs?

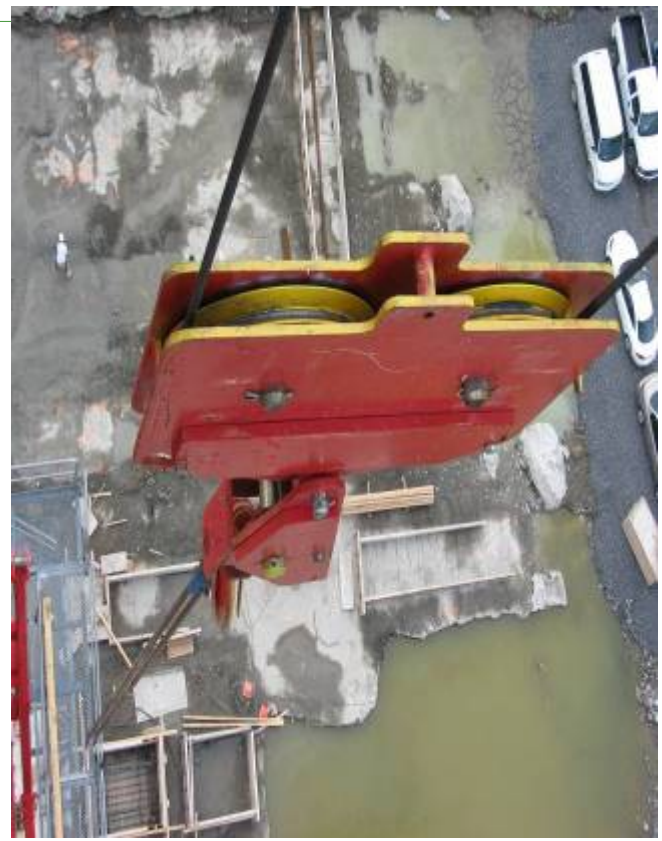
- No C of Q for a mechanic, no formal way to become a crane mechanic.
- As a result a wide range of mechanics exist, and there is a large inconsistency in the way they carry out repairs.

How it all Started… Near Misses

- Toronto, 2003: a crane was hoisting a full bucket of concrete on a high rise building, a replacement pinion gear in the transmission failed, transmission acts as the brake for the winch cable drum, bucket fell striking a scaffold missing the workers on the scaffold, workers fell 18 to 20 feet from the scaffold
- Mississauga, 2005: following up on a lead regarding cracks in the main structural frame of the tower of a tower crane, the ministry found that the “engineer” that had signed off on the crane had previously lost his licence to practice

How it all Started… Near Misses

- Ottawa, 2005: unexpected uncontrolled up motion “snapped the main cable” and dropped the 200+ lb block into an intersection.
- Ottawa, 2005 again uncontrolled downward motion (after “first problem was fixed”)luckily this time the operator applied brakes in time.



How it all Started… Near Misses

- Ottawa, 2005: A fully loaded Concrete bucket (4 tonnes) suddenly descended in an uncontrolled manner.
- Operator stated that the mechanic had glued a safety switch with bathroom silicone…

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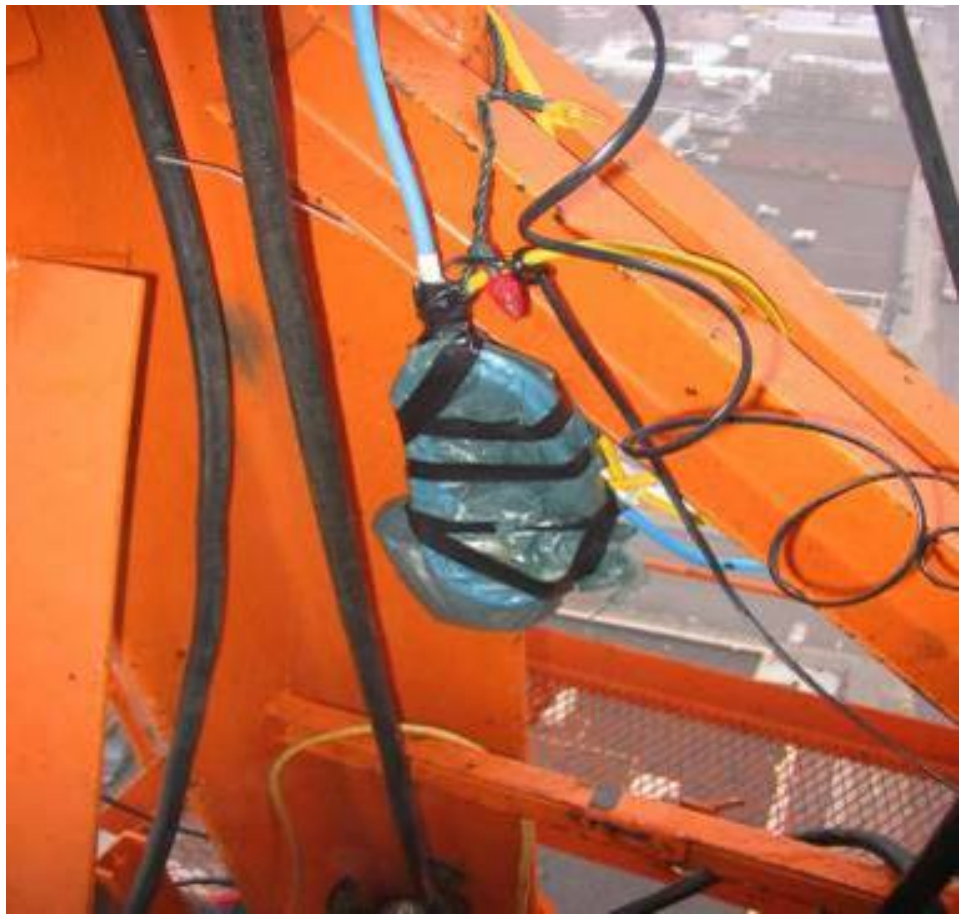
How it all Started… Near Misses



Ottawa 2005: What was found!

The object in the blue plastic and black tape, was originally glued with bathroom silicon in the box on the previous slide.

The plastic and tape are makeshift attempts to weatherproof it

Local Staff & Stakeholder Involvement

- Based on the Ottawa findings, an MOL inspector and an Engineer undertook proactive inspections of other tower cranes in their region
- Stop Work orders were issued for EVERY tower crane inspected, for a variety of related hazards.
- The inspector and Engineer attended the MOL Construction Provincial Program Advisory Committee, to share their findings.
- It was agreed by MOL & stakeholders that improvements were needed.
- The Industry was given 3 months notice

Stakeholder Engagement

- Prior to the start of the province wide crackdown initiative, presentations of the findings in Ottawa were made at:
  - PLMHSC (Provincial Labour Management Health and Safety Committee
  - High Rise LMHSC
  - Toronto Regional LMHSC

- A number of Meetings with owners renters/lessees

Stakeholder Engagement

- MOL staff presentation to the Provincial Labour Management Health and Safety committee (PLMHSC), in February 2007
- Presentation repeated in March to the “Heavy Civil”, the “High Rise Forming” and the Toronto & Eastern Regional Labour/ management committees
- CSAO (Construction safety Association of Ontario) produced an article outlining the hazards in cranes and announced MOL’s intended blitz in May-June 2007
- COCA’s Health and Safety committee and the Council of Construction Users (COCU), were also briefed.

Potential Crane Disaster in Toronto

- In early spring 2007, a tower crane collapsed apparently due to high winds
- No one injured, but a warning all was not well with Tower cranes in Ontario

Potential Crane Disaster in Toronto

MOL Compliance Activity Results

Provincial Compliance Audit:

May 1 – September 31, 2007

Project visited	120
Orders issued	1415
Stop Work Orders	151

(Stop work orders issued on more then half of all field visits!)

What the Compliance Initiative Found:

- The condition of the tower crane :
  - Depends on…
    the age of the crane.
  - Does not depend on…
    - who owns the crane
    - the sector of construction

- Most of the problems are in the control systems.
- Similar issues found in all cranes across the province.

The Last Field Visit

- Observations from the last field visit, 3 months after the start
  - Missing guardrails on rest platforms
  - Emergency disconnect for power inadequate
  - Poorly maintained or improper electrical cables
  - Missing bolts connecting operators cabin to turntable
  - Support for main power cable
  - Maintenance of rest platforms and walkways – broken welds
  - Improper and missing lock pins
  - Improper hoist cable
  - Hoist cable not spooling properly

Structural Defects

A crack completely through a critical structural member, could reduce crane capacity significantly

Crane Defects

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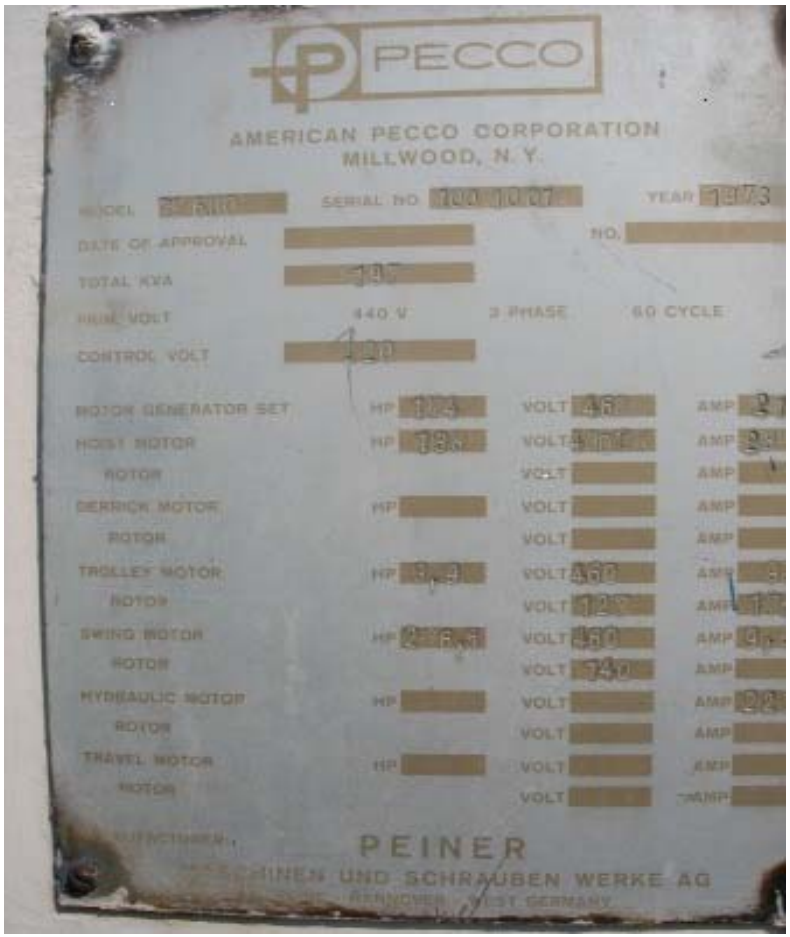

Crane Defects

- Control mechanisms inoperable

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Crane Defects

Load limit switch broken

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Guarding Hazards

Unguarded chain pulleys.

Load Block tests

Obviously not being done weekly

Load Tests not done

Crane Cables.

Improper spooling was found on numerous cranes

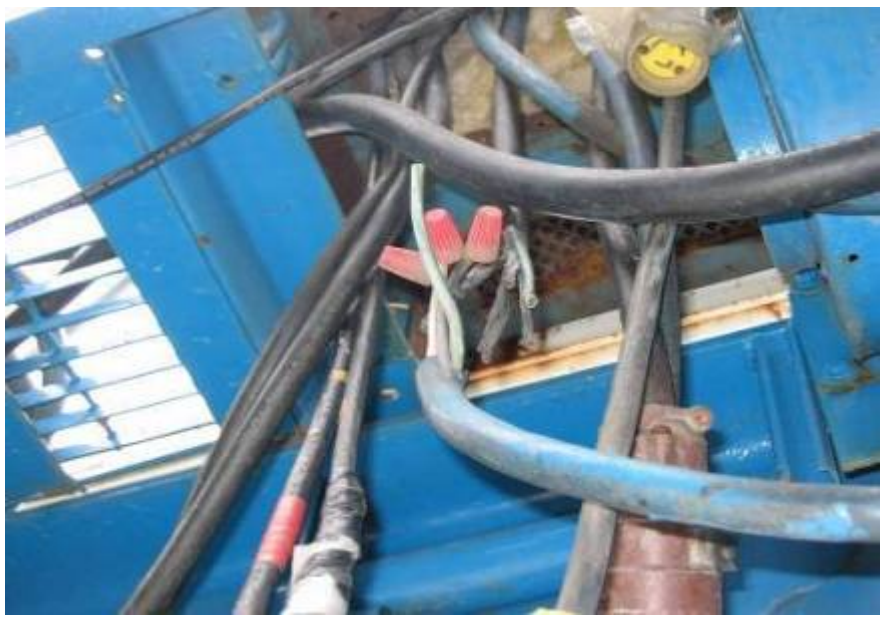
Crane Cables Problems.

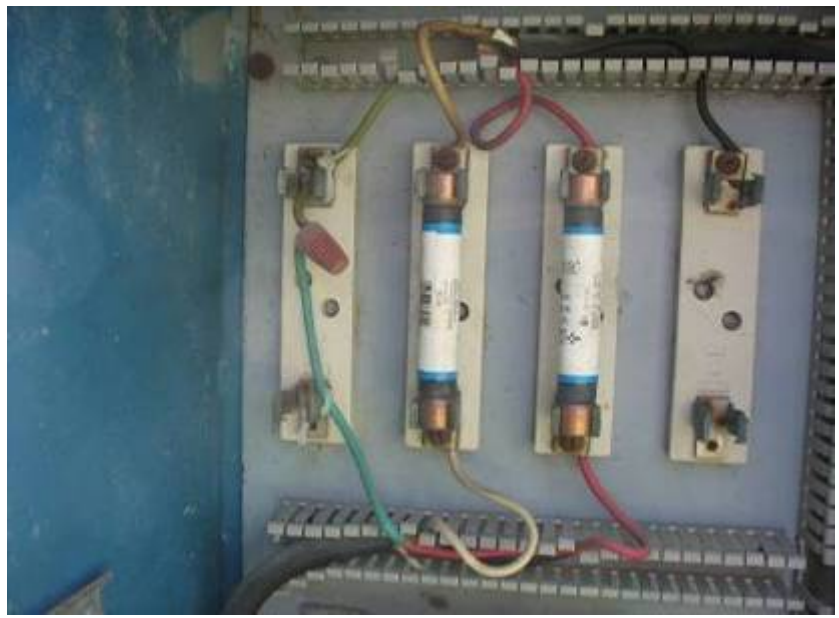
Electrical hazards.

Previous fire damage, and a “watertight” connection jury rigged with a Tupperware type container

Electrical Hazards

- All electrical connectors 3S or 4 type (must be sealed against rain Open Shock Hazards - 600 volts)
- All electrical boxes must be sealed with gaskets
- Panel covers missing, or defective
- Bypassed fuse





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Electrical Hazards

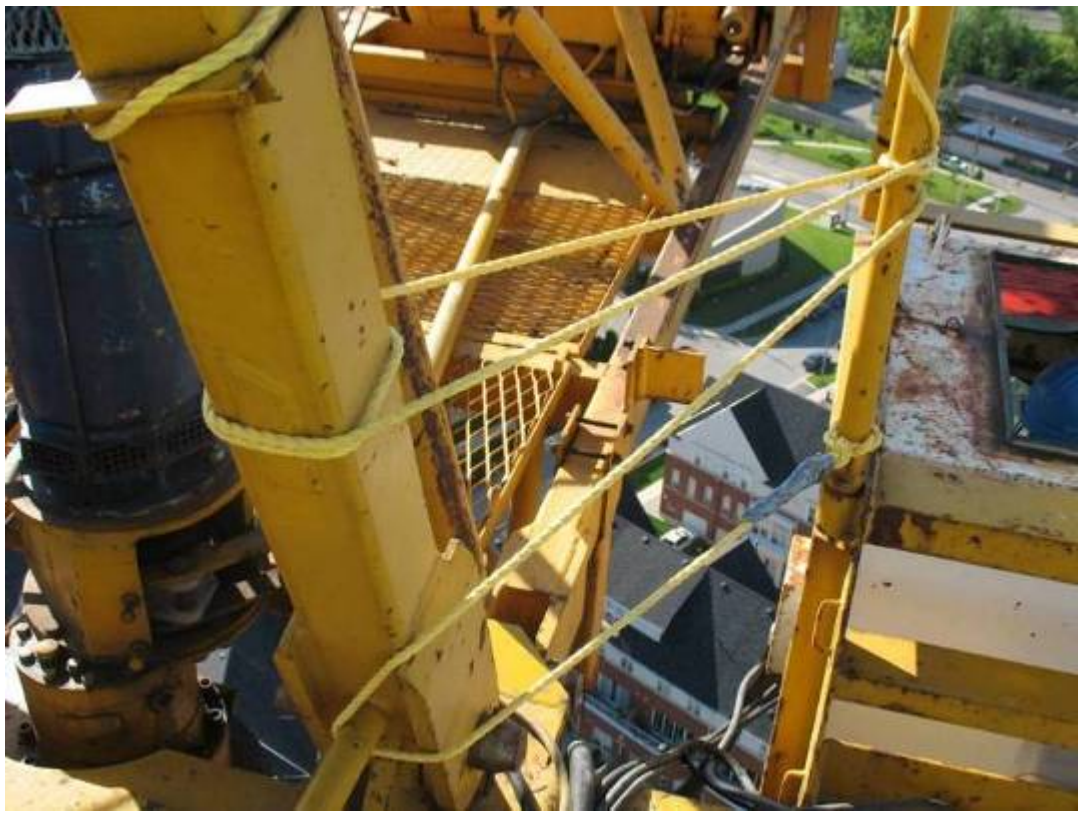
Electrical Hazards

Electrical Hazards

Electrical hazards

Indoor switch panels being used outdoors.

Fall Protection Hazards



Fall protection

Fall Protection

Fall Protection

Hazards with New Hybrid Equipment

Merlo Equipment Roto 40.25

Unsafe use of Mobile Hydraulic cranes

- Often the issue with mobile cranes is receiving the load in an unsafe manner
- Note* Some Grove cranes such as the one shown in the photo have experienced stress cracks in the upper section of the boom

Conventional Lattice Boom Cranes

- Increasing problems with repairs to conventional track mounted lattice boom cranes (not properly done or inspected)
- Becoming more difficult to find operators who are experienced with this type of crane, as older operators retire

End user modifications

- Hybrid, non-standard devices being used as elevated work platforms
- Questions about design, factor of safety and redundancy to protect worker safety

Concrete pump Devices

- Concrete Pumps, have similar hazards, to cranes yet often escape the vigilance given to the use of cranes
- Common accidents include overturning and electrical contacts

Moving Crane Safety Forward

- Pre-start check sheet documents have improved
- Unsafe Electrical Connections were originally found on all cranes; they are now found on less than 1/3 of cranes inspected.
- Operator log books, proper documentation have improved.
- Compliance with regulations for access climbing has improved - offset rest platforms, guardrails, cages on vertical access ladders.

Moving forward

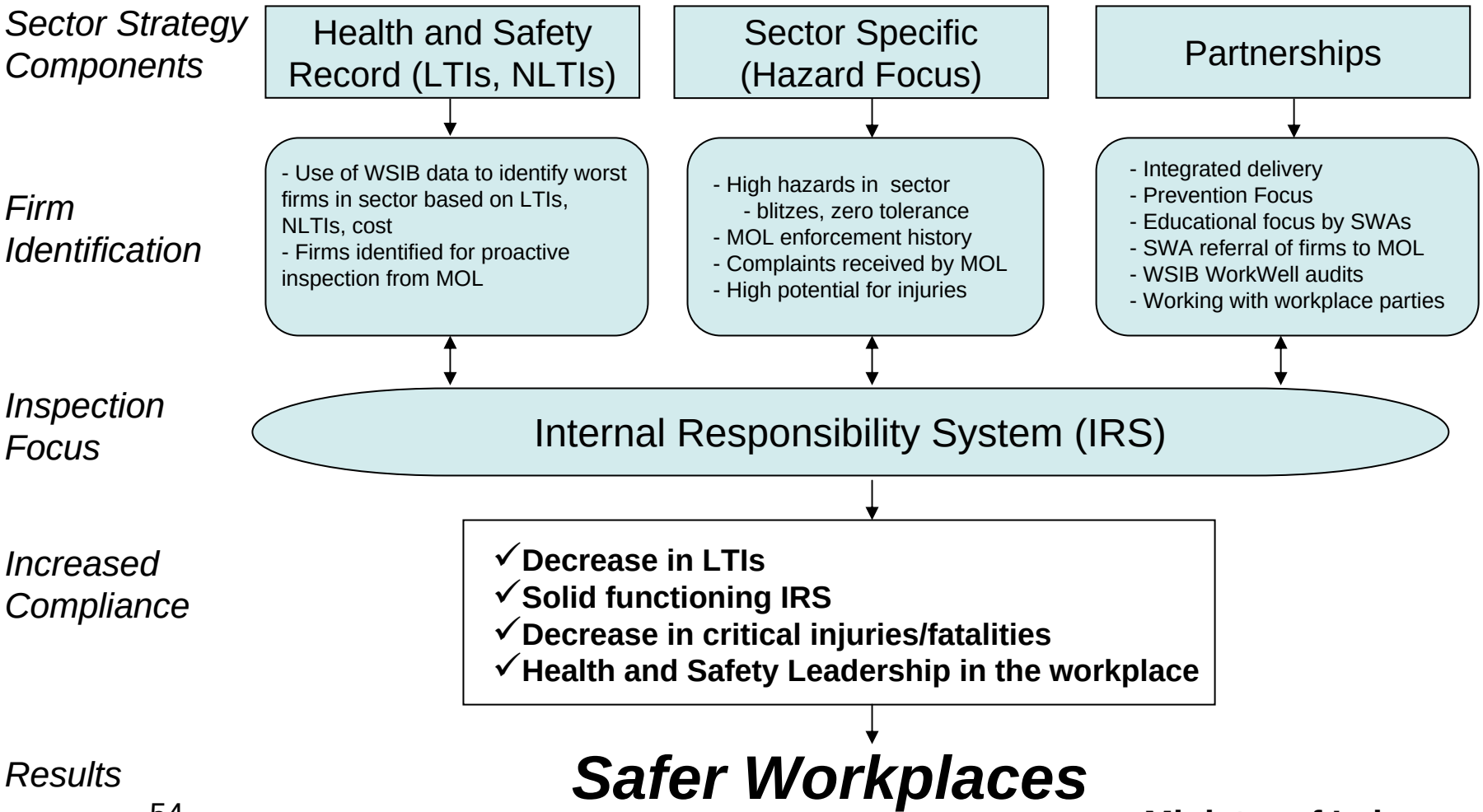
- Stakeholders including owners, operators, engineers and related trades are working together as a special committee to make recommendations to improve safety directly to the Minister of Labour.
- MOL plans to inspect all cranes after initial setup on project.
- ESA involved in inspections.
- Partnership with PEO to encourage development of a best practice for engineers when they are doing a tower crane inspection.

Safe at Work Ontario (overall approach)

- The ministry identifies and engages workplaces based on a variety of factors such as:
  - their health and safety record,
  - history of non-compliance,
  - the presence of health and safety hazards inherent to the activities of the business.

- Our new vision focuses on improving the health and safety culture of our workplaces.

Safe At Work Ontario - Program Design



Safe At Work Ontario – Sector Strategies

- **Sector Strategies focusing on**:
  - Hazards:
    - Development of strategies to reduce injuries related to specific hazards
    - Proactive inspections in firms, regardless of injuries, based on the hazardous nature of the operation
    - Use of field intelligence and compliance history
    - Provides flexibility to address specific issues
  - Health and Safety Record:
    - WSIB firms ranked according to the number and frequency of LTIs and NLTIs, and claim costs

Ultimately it is the Industry Themselves that Must Improve Safety

- MOL audits workplace safety in all sectors
- Real safety is driven internally by the workplace parties
- Everyone has a role to play in ensuring safety at work
- It is only by co-operative dialogue among all levels including the government that the safety culture, and safety climate in construction and other workplaces will improve.
- MOL is prepared to work with our partners and stakeholders to move crane safety and other issues forward, but before that will work you must be engaged with safety in your workplace
- If you aren't engaged, then ask yourself, why not?

Thank You!

Any Questions?