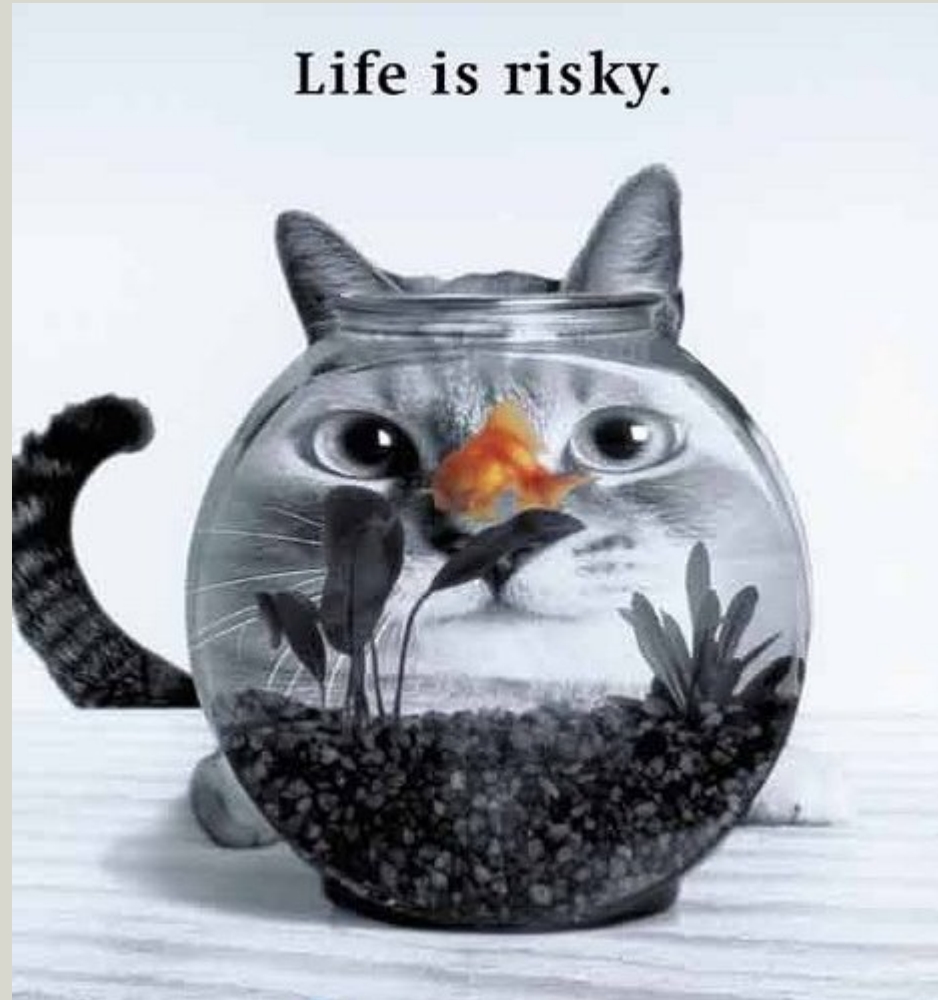


Speaker Names: Paul Raftery and Mark Freeman  
and  
Organisation: NSW Department of Primary Industries  
Investigation Unit

Title of  
Presentation Risky Positioning – Observations  
from Recent Investigations



# What is Risky Positioning?



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# What is Risky Positioning?

- It is exposure of a person to **risk** due to proximity to a hazard in the workplace
- It usually involves a person's decision on where to place themselves
- It may be a violation or may comply with workplace rules
- It usually involves a conscious or unconscious decision to accept the risk



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# What is Risky Positioning

- It is often making a complex choice involving other non-risk input factors eg
  - A wish to be helpful
  - A desire to meet production targets
  - A wish to make a task simpler or easier
  - Monetary considerations eg bonus
  - Time pressures to finish a task
  - A sense of urgency due to equipment out of service



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# Examples of Risky Positioning

- Running the traffic lights
- Driving less than 2 seconds behind another vehicle



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# More Examples of Risky Positioning

- Getting on the roof without any fall protection
- Driving vehicles without wearing the seat belt or having one fitted



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# Examples of Risky Positioning at mines

- Approaching unguarded machinery
- Allowing mobile machinery to travel past you in a drive /drift / roadway
- Entry into “no go” zones
- Working around or on remote control machinery such as a Continuous Miner



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# How to Control Risky Positioning

The OHS law specifies use of the hierarchy of controls, that is:

- Eliminate the risk
- Substitution with a hazard of lesser risk
- Isolate the hazard from persons
- Engineering controls to minimise risk
- Administrative measures eg SWP, SWMS
- PPE



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# Other Risky Positioning Controls

All aspects of your OHS system can be used to prevent risky positioning eg

- Behavioural based safety
- Whole of life safety/wellness programs
- Human error information
- Human factors education
- Safety leadership and culture



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# Risky Positioning Is Common!

The following incidents were investigated by the Investigation Unit and are highlighted because they had serious outcomes.

- Cable hand **crushed** against rib by Continuous Miner
- Worker **crushed** between handrail and fixed plant by sliding backhoe
- **Severe head injuries** when struck by a tree being moved by a backhoe
- **Crushed** and broken leg when caught between two longwall material pods



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# Risky Positioning is Common

- **Paraplegia** when **crushed** between drill boom feed arm and wall of drive (maintenance)
- **Paraplegia** when pushed into roof while riding on boom of CM
- Miner received **severe head injuries** by part of failed chain assembly
- Miner **killed** by unsupported roof
- Worker **killed** by tyre handler
- Dogman **killed** by falling load



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# Case Study 1

## crushed between material sleds

- Incident on the surface of an underground coal mine
- Coupling together longwall service sleds
- Man-machine interaction required

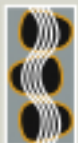


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# Case Study 1



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# Case Study 1

- One cassette stationary, other being pushed into place by Juganaut to allow coupling together
- Person lent down to pickup the coupling as they appeared to be aligning perfectly
- As he did so, placed right foot on the ground near the stationary coupling



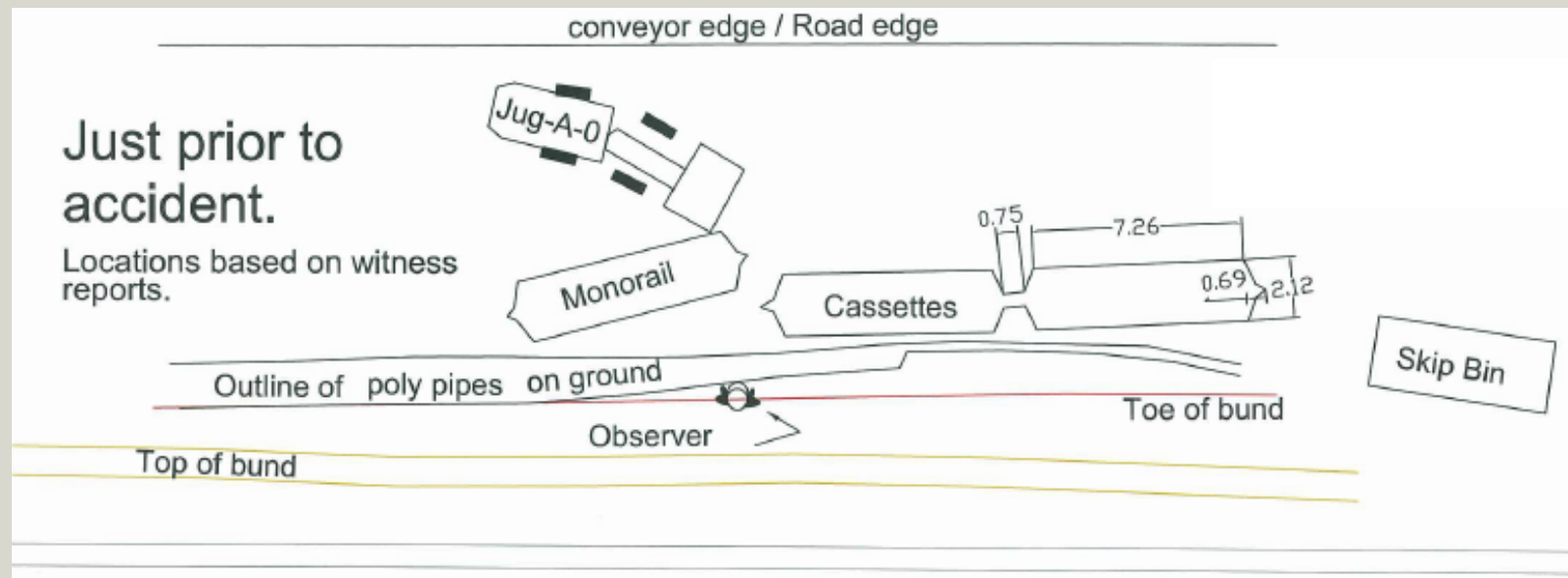
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# Case Study 1

## crushed between material sleds



- As the other sled was pushed closer it swung toward and past the joining point



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# Case Study 1

## Outcome – serious injury

- Lower right leg crushed between the two couplings resulting in compound fractures
- Flown by helicopter to hospital where he underwent a series of operations that day to clean the wound and attend fractures
- Further plastic surgery required to repair leg wounds, including skin grafts
- Unlikely to be able to return to working underground



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# Issues

- Coupling devices require manual handling
- Availability of a safe work method
- Risk of injury not recognised
- Positioning within risk zone



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# Best Practice

Minimal man-machine interaction:

- Automatic coupling devices
- Appropriate safe work procedures



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# Case Study 2 – Fatal Incident Remote Control Loader

- Large underground metalliferous mine
- Production area – stope drawpoint
- 30 year old mine worker
- 4 years experience at the mine



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# Case study 2 - Overview

- Mine worker using a remote controlled loader to empty a long hole stope.
- He was attempting to clean around a large boulder in the stope so that it could be fired.
- He was working alone and unobserved
- He was found trapped between the loader and the wall of the drive.



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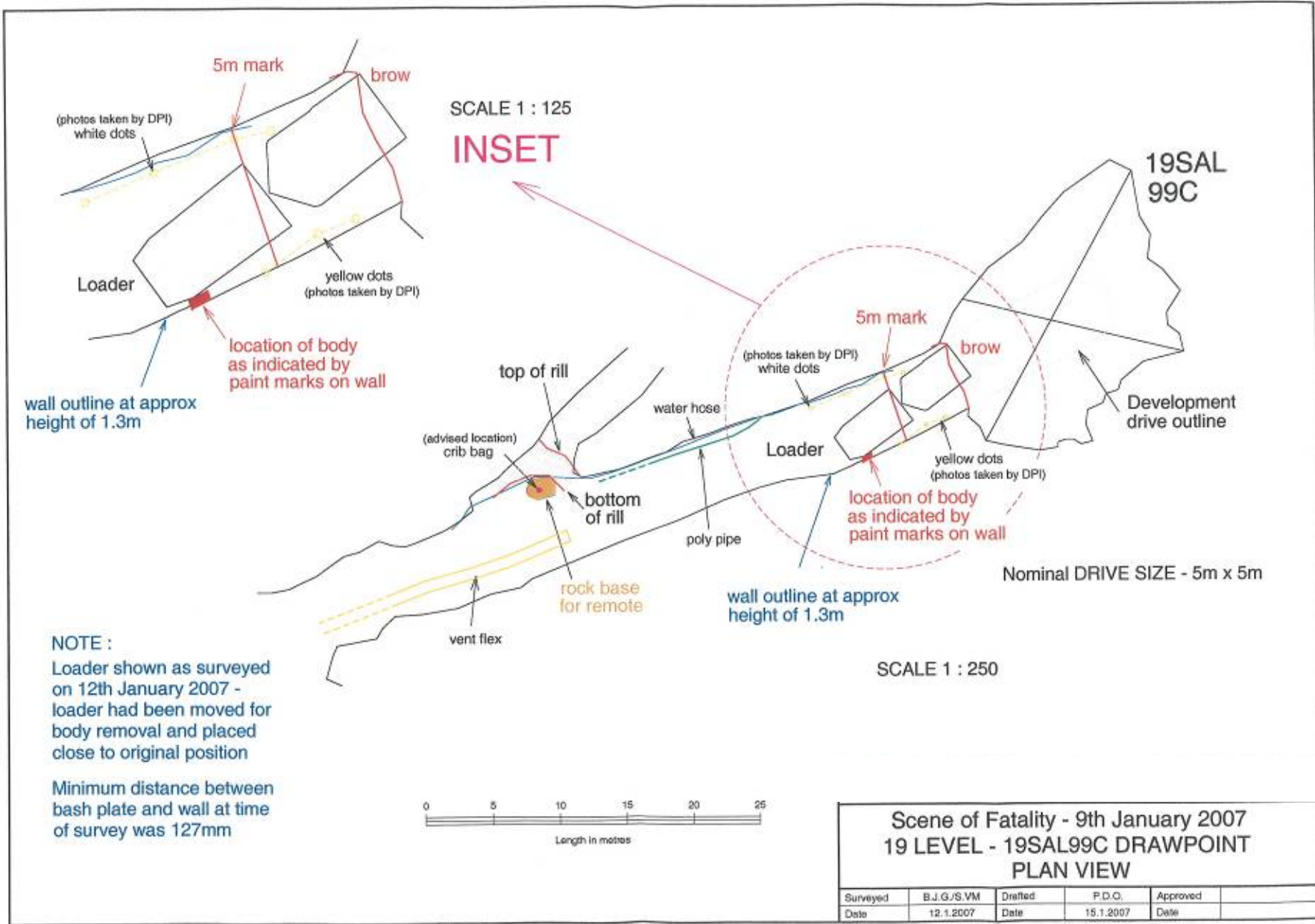
Safe point



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# Issues

- Absence of any engineered controls to prevent the operator from approaching the loader while operating.
- Insufficient measures to ensure that documented procedures were being followed in practice.
- Reliance on procedural risk controls over higher order controls.



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# Case Study 2 - Best Practice

Where line of sight operations are unavoidable...

- Physical means to ensure operator cannot operate the machine when out of the safe area. (*eg tether transmitter to safe location.*)
- Laser beam barriers or similar to detect intrusion into unsafe area and automatic shutdown.
- Training and supervision levels to ensure safe procedures are entrenched in the workplace.



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# A Study of the Risky Positioning Behaviour

of Operators of Remote Control Mining Equipment - CJ Pitzer (MDG 5004)

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Examined remote controlled machinery at eight underground coal mines. **Conclusions:**

- Compliance for straight ahead cutting was reasonable
- Compliance was poor for most other activities
- SWP's play a limited role in employee's decision making



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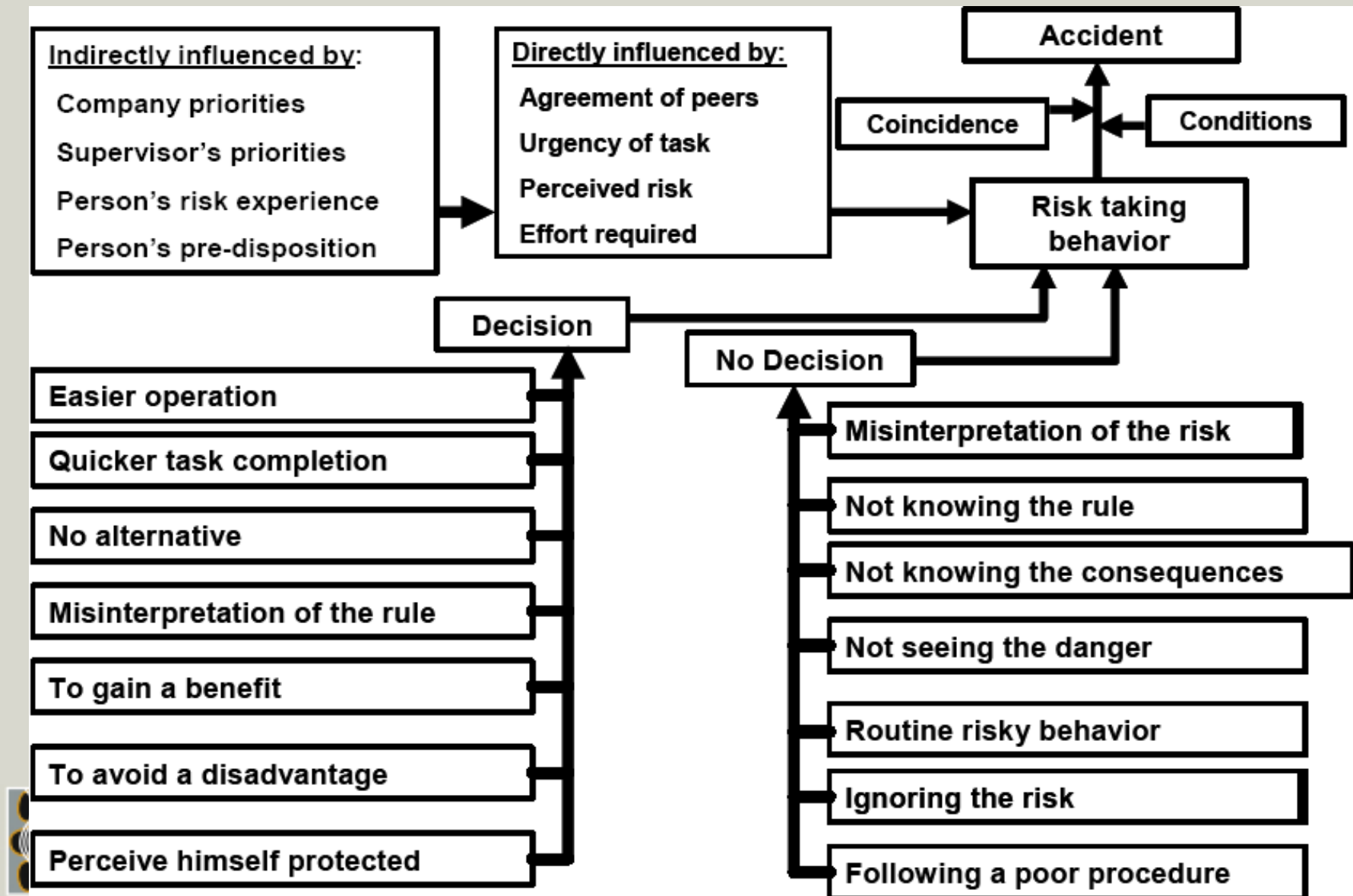
# Pitzer's Conclusions

- Many believe safety rules may be “irrelevant, superfluous, non-essential or excessive”
- Risk-taking - played a significant role
- Safety was only a tertiary consideration

Reason for position selected	Percent
Optimal line of sight	100
Comfort	78
Used to do it	57
Least dangerous position	42
Because it is a standing zone	7

Risk ranking by them	Rank
Rib spall	1
Roof fall	2
Hit by shuttle car	3
Struck by miner	4
Hit by loose rock	5

# A model for Risk-Taking Behaviour



# Summary / Conclusions

- Can't rely on procedures or people to ensure safety
- Future – at least engineered protection
- Proximity control – now approved in US
- Challenge assumptions on what can be done – we always do better after the incident!

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