

Lessons from Pennyvenie

Fatal Accident Focus

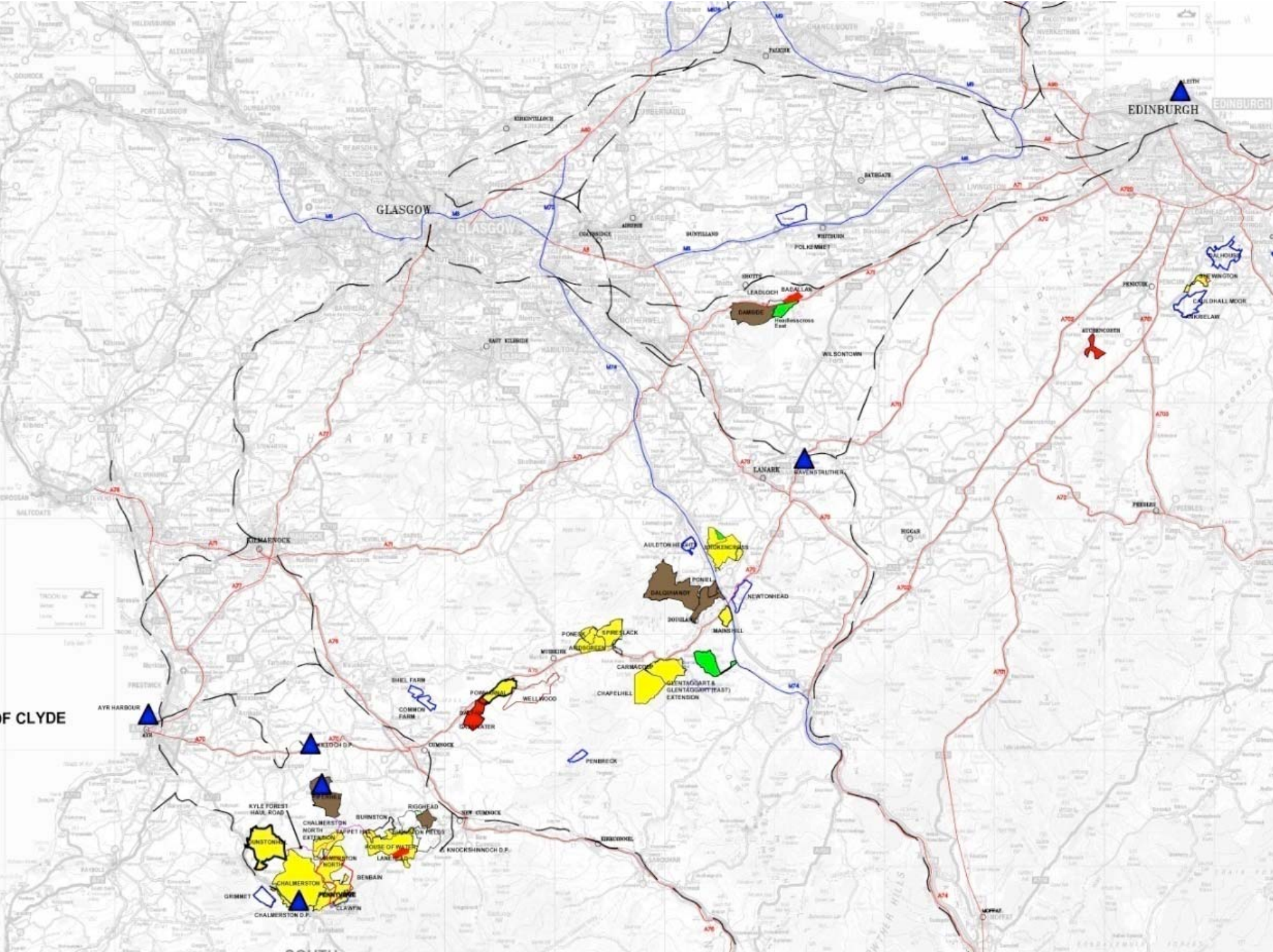
MPA Midlands - 'Safer by Sharing'
Lichfield - 9 February 2012

Martin Isles Director, Health & Safety, MPA

See also 'Quarry Management', February 2012, pages 9-12



- Largest surface mining company in UK
- 3.5 million tonnes per year of coal
- 9 production sites
- 900 employees
- Plant fleet: -
 - 29 prime mover excavators
 - 122 dump trucks
 - 172 other main plant items
- Other interests – Land, Renewable Energy



F CLYDE

EDINBURGH

GLASGOW

AYR HARBOUR

KYLE FOREST

CHALMERSTON NORTH

BURNSTON

RIGGLEAD

CHALMERSTON

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

GRIMMET

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

CHALMERSTON D.F.

CHALMERSTON NORTH

CHALMERSTON SOUTH

Pennyvenie Site

- Dalmellington, East Ayrshire
- Operations commenced 1987
- 24 hour operation
- 700,000 tonnes coal per year
 - Overburden:Coal ratio 20:1, so up to 14 million tonnes/yr shifted
- 130 employees
- Main plant – 6 x RH120
Terex TR100
Cat 777D

The Incident

- 26th February 2007 at 1pm
- 2 deaths
 - Brian French (48) Foreman Fitter
 - Colin Ferguson (37) Fitter
- Multiple crush injuries caused by Terex TR100 dump truck colliding with Land Rover in dig area

What happened?

- Fitters were clearing loading zone for non-critical inspection on RH120
- Fitters had no radio and were using hand signals
- Land Rover drove past stationary dump trucks on off-side
- Land Rover parked in Terex TR100 blind zone
- Terex TR100 turned on full right lock
- Operator continued to attempt to drive over obstacle following initial collision

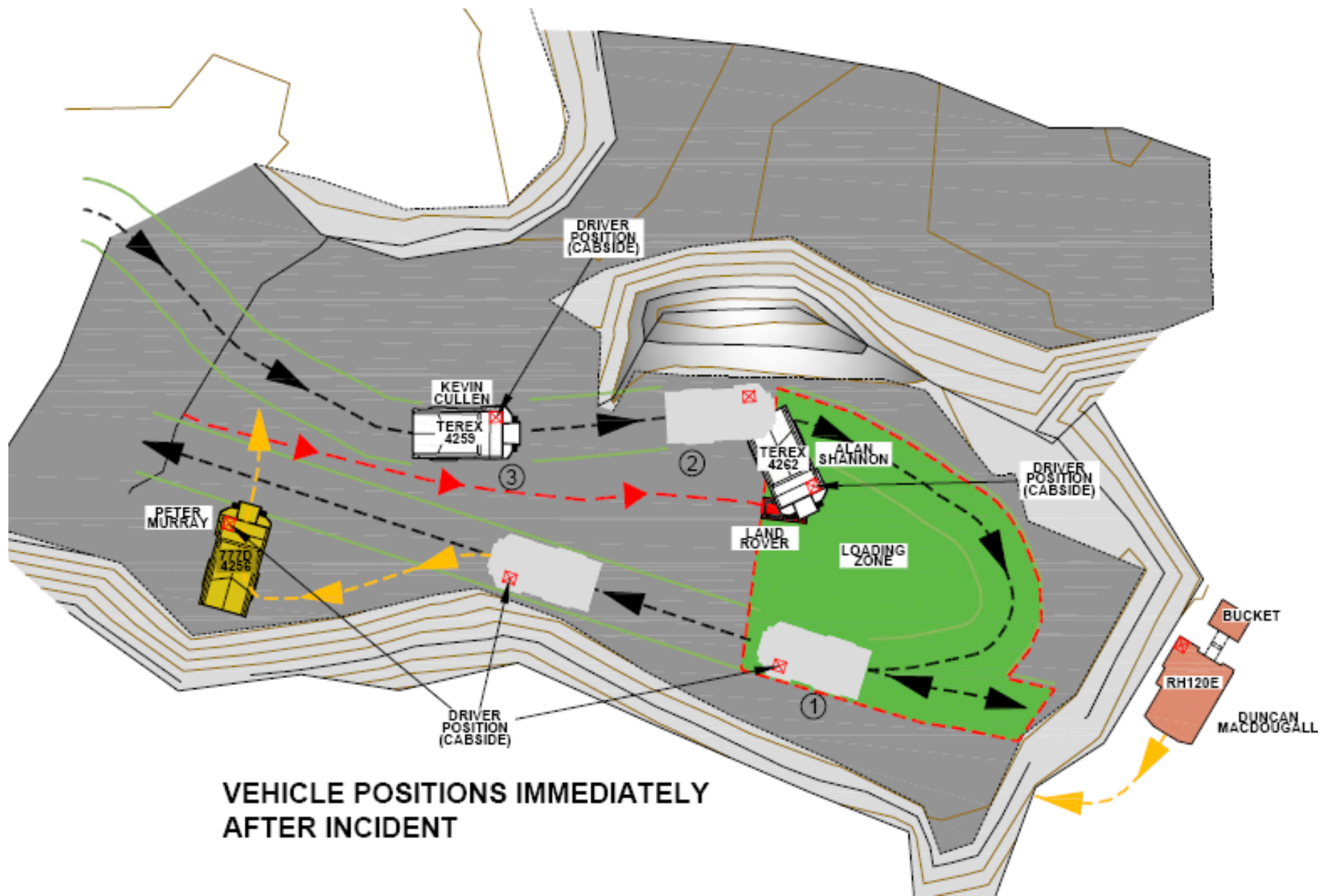








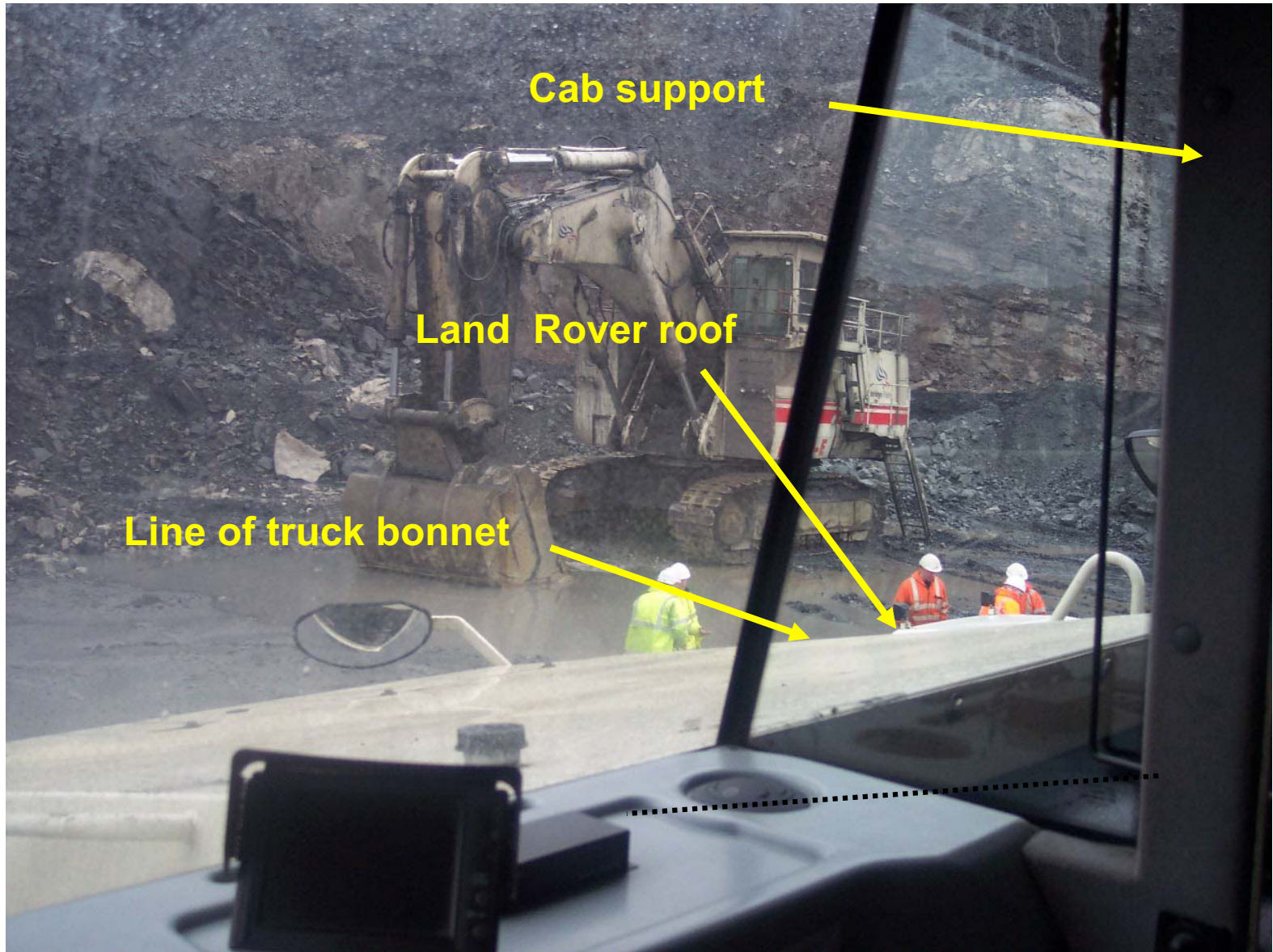




TABLE OF RCPS & FCPS CERTIFICATION
THIS STRUCTURE, P/N [] MEETS THE FOLLOWING REQUIREMENTS
(OR THE MACHINE, AS APPLICABLE)

RCPS	FCPS	MAX. WEIGHT	POWER
SAF	200	1000	100
200	1000	100	100
100	100	100	100

MANUFACTURED FOR BY: []



Cab support

Land Rover roof

Line of truck bonnet

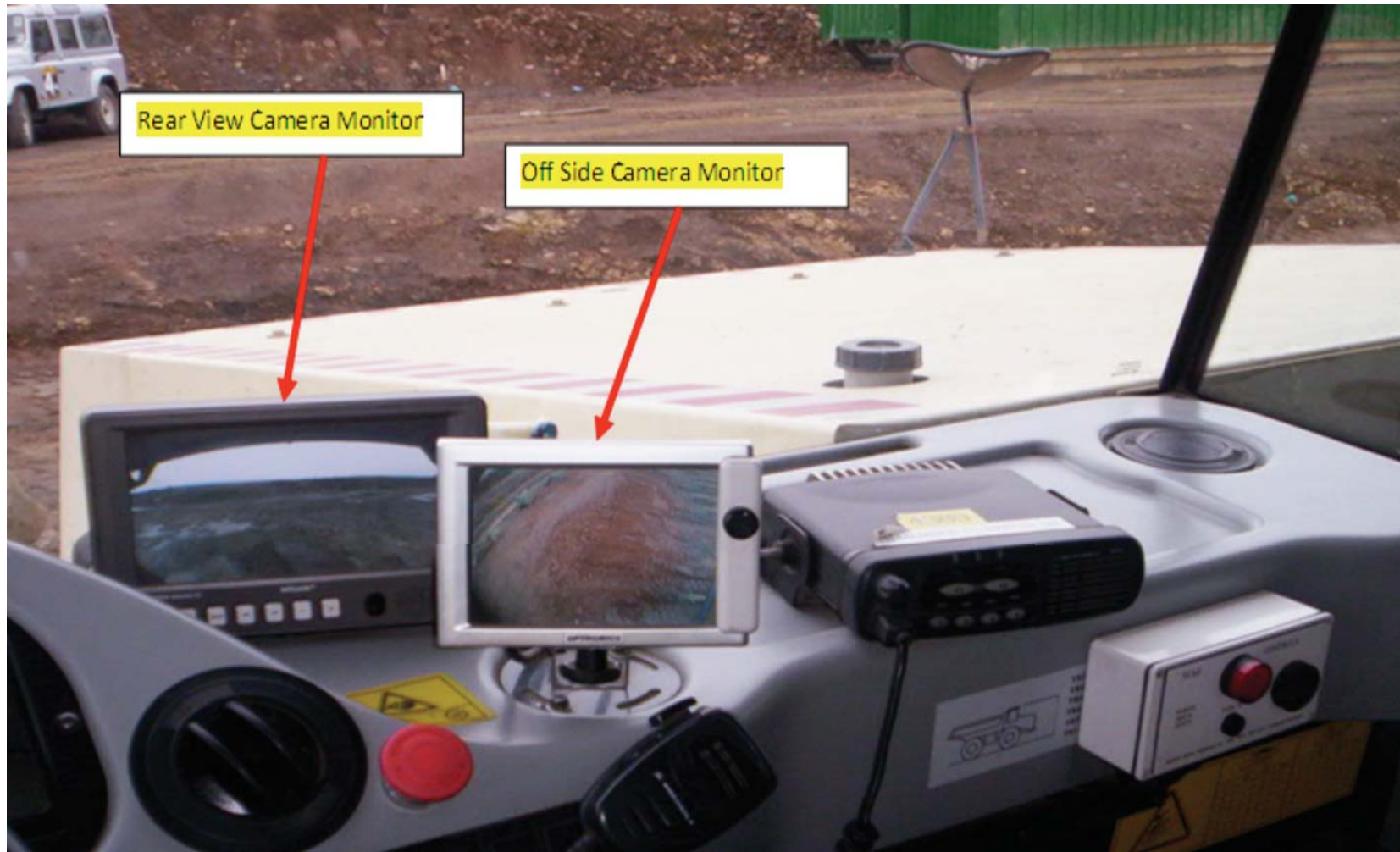
Click [here](#) to view Incident Reconstruction video – voiceover starts after 6 seconds



Terex TR100



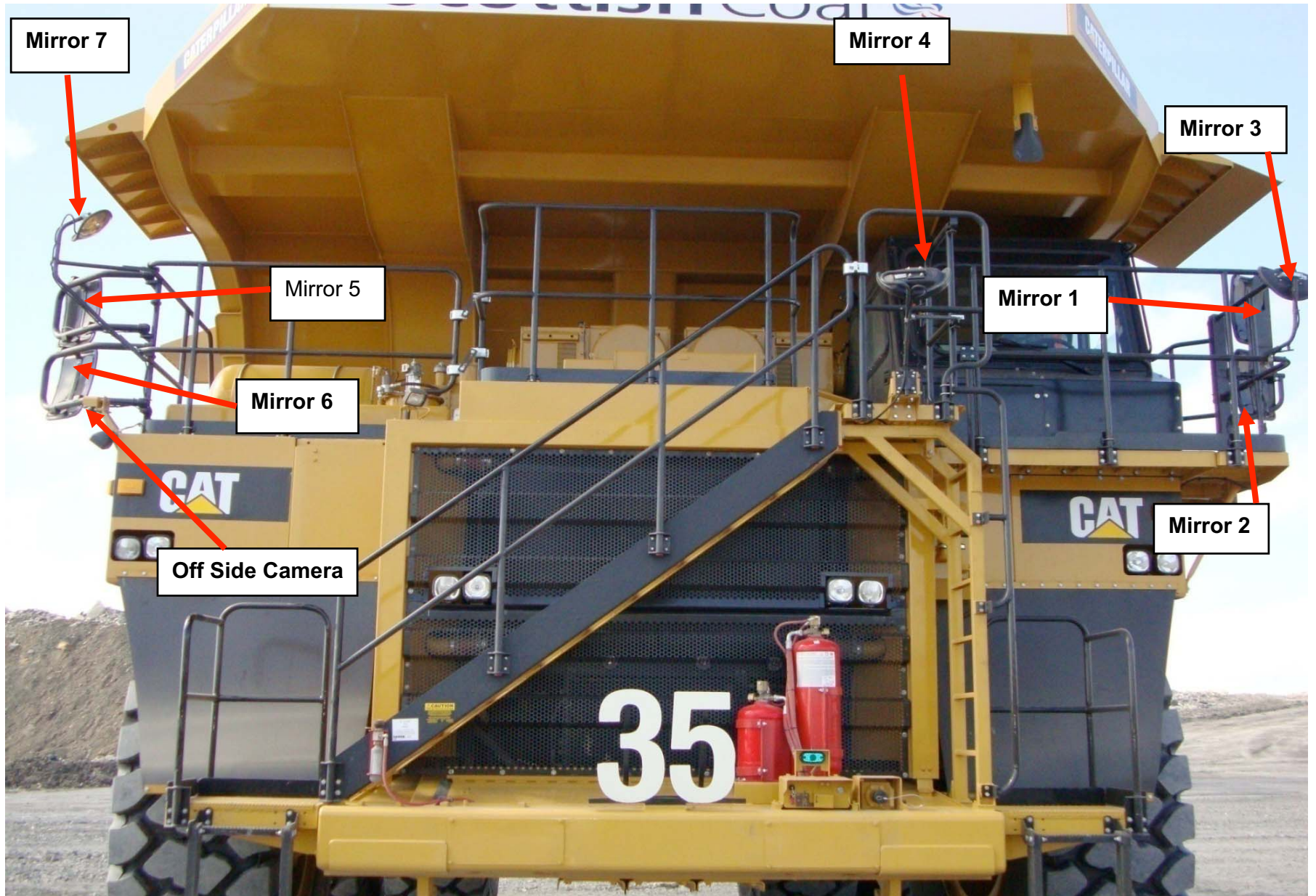
Terex TR100



Investigation

Significant Factors Considered

- Land Rover entered dig area before trucks were removed – supervisors not aware
- No radio communication
- Land Rover parked in blind zone
- Truck driver not concentrating and reading newspaper
- Truck moved away into blind zone on full right hand lock
- Land Rover and truck same colour – no contrast
- Truck driver trained but relatively inexperienced



Mirror 7

Mirror 4

Mirror 3

Mirror 5

Mirror 1

Mirror 6

Mirror 2

Off Side Camera

35



Mirror 5

Off Side
Camera

Mirror 4

Mirror 1

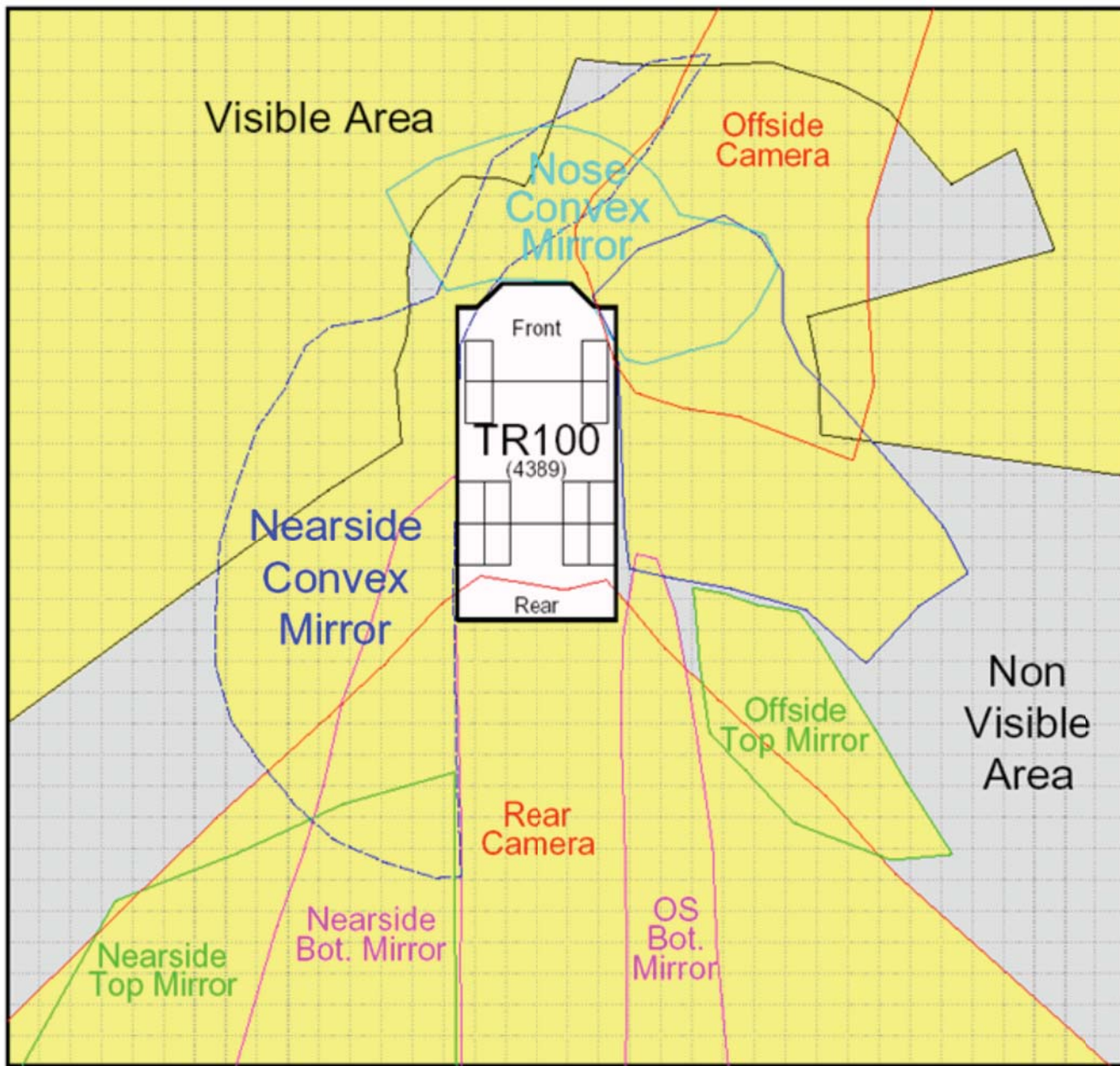
Mirror 6

Mirror 2

Mirror 7

Mirror 3

TEREX TR100



Timetable of Events

Date	Event
26/02/07	Accident
16/07/08	Scottish Coal charged Section 3 and 33 HSWA
26/08/08	Scottish Coal plead guilty – Fine £400,000
17/08/10	Fatal Accident Inquiry commences
15/03/11	Fatal Accident Inquiry completed – Total 35 days
24/06/11	Sheriff's determination published
18/10/11	Civil claims – last claim settled October 2011

Consequences for SRG

- 2 prohibition notices
 - No entry of non-production vehicles into dig area
 - No use of dump trucks without radios
- Prosecution
 - Sections 3 and 33 HSWA
 - Court Fine - £400,000
- Fatal Accident Inquiry – 35 days in court
- Civil claims, when added to fine, “well into 7 figures”
- Substantial production, management and legal costs
- Loss of reputation

System Improvements

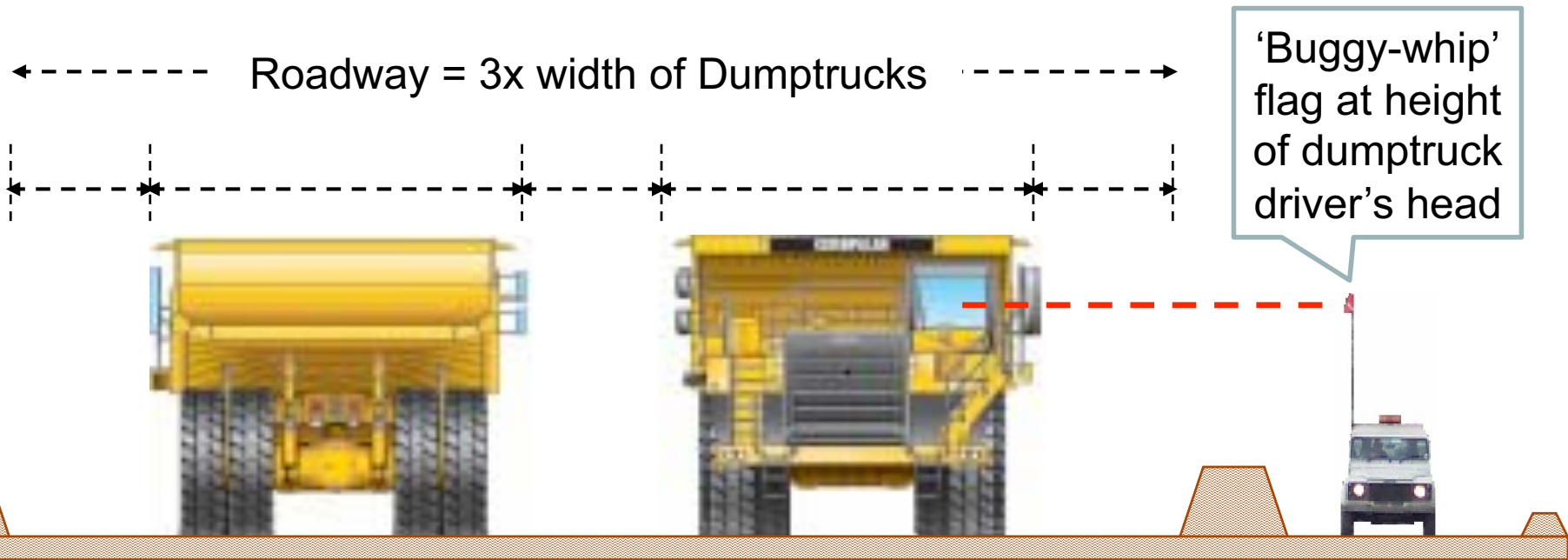
- Radios in all vehicles
- Traffic management - controlled entry to dig areas
- Supervisor's vantage points
- Segregated light vehicle routes
- Buggy whips on all light vehicles
- Off-side CCTV on all rigid dump trucks
- Improvements to TR100 operator visibility
- Clear, large marking (I.D.) for all vehicles
- Training – MPQC Assessors and Instructors

Supervisors Vantage Point + Radio protocol



Light vehicle segregation

(passive safety measure)



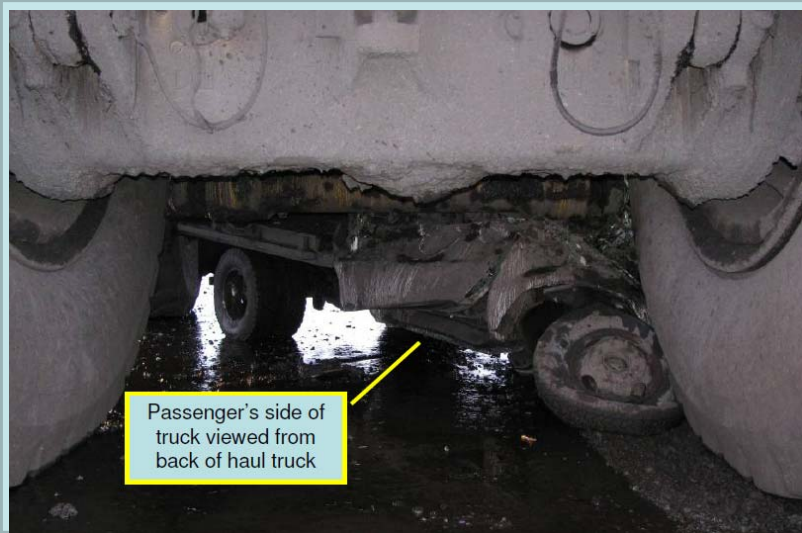
Vehicle Markings



**USA
2010**



1 tonne
pick-up



Passenger's side of
truck viewed from
back of haul truck

USA 2010 - **Fatality**

Soft-skinned vehicle fatalities continue to occur



South Africa 2011 - Fatality

Toyota Hilux with roll-cage and inadequate buggy-whip

NB: Huge restriction to driver's offside vision



MPA Learning Points

- Segregate heavy mobile plant & transport from people & light vehicles, wherever possible
- Ensure conspicuity
- Ensure all-round vision, but *avoid driver sensory overload*
- Site rules to be well communicated and enforced
- Enforce strict radio protocol
- All vehicles to have clear, large, I.D. markings
- Review driver training - never turn into 'blind area'
- Review driver distractions (mobile phones; iPods; newspapers; etc)
- Use the "Safer by Design" web pages on www.Safequarry.com