NSW Resources
Resources Regulator

Consolidated report

Roads or other vehicle operating areas – METEX underground – unplanned vehicle interaction

June 2023 to August 2024

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Executive summary

A crucial part of the Resources Regulator's incident prevention strategy for mines and petroleum sites involves:

- targeted assessments and planned inspection programs – focusing on assessing an operation's control of critical risks by evaluating the effectiveness of control measures in the mine's safety management system
- priority programs – proactively assessing a topic that is an emerging risk throughout the industry, which is determined primarily from incident data as well as evolving industry trends. Although these topics may also be contained within the Regulator's planned inspection programs, the aim of compliance priority programs is to gather further information and knowledge about how the industry is managing and controlling a specific issue.

The planned inspection program for roads or other vehicle operating areas (ROVOA) - unplanned vehicle interaction targeted metalliferous underground mines between June 2023 and August 2024.

Unplanned vehicle interactions continue to be a significant and increasing type of incident reported in metalliferous underground mines.

As part of the planned assessment activities, Regulator inspectors attended metalliferous underground mines with a focus on the critical controls including supervision, competent operators and fit-for-work operators.

This planned inspection program was part of an ongoing effort by the Regulator to decrease the number of incidents of unplanned vehicle interaction across all sectors.

This report provides information on assessment findings and recommendations for metalliferous underground mine operators.

In summary of the 16 metalliferous underground mines assessed resulted in 34 compliance notices issued to 15 of the 16 underground mines.

Explanatory notes on the assessment system are listed in Appendix A.

Assessment criteria for all assessments

Assessment threats, critical controls and control supports were identified by the Regulator in a bowtie to review how mine operators manage the material unwanted event (MUE) of unplanned vehicle interaction.

A tabulation of the assessment criteria for unplanned vehicle interaction at metalliferous underground mines is provided in Table 1.

Table 1. Threats, critical control & control supports for unplanned vehicle interaction at metalliferous underground mines

Threat	Critical control	Control support number	Control support
1. Operator error 2. Rule violation 3. Human and organisational factors	PC 1.1 – Supervision	01	Supervisors lead activities aligned with promoting compliance with roads and other vehicle operating area rules and procedures.
		02	Supervisors complete inspections of the workplace that include verifying compliance with standards, rules, and procedures.
		03	Supervisors take action to correct non-compliant vehicle operating standards and behaviour.
1. Operator error 2. Rule violation 4. Vehicle operating areas 5. Safety critical component failure	PC 1.2 – Competent operators	01	Operators have the appropriate competency to operate specific vehicles.
		02	Vehicle operators can explain the controls required for managing unplanned vehicle interaction.
		03	Vehicle operators can explain emergency response actions.
		04	Vehicle operators can explain safe parking methods.
		05	Vehicle operators can explain the correct use of positive communication.
		06	Vehicle operators can explain lessons learnt from previous incidents and how systems have been updated.
		07	The vehicle operator has conducted the required hazard identification process.

Threat	Critical control	Control support number	Control support
		08	The operator has completed the required pre-start inspections.
		09	Tasks are performed safely, within the vehicle operating limits and site requirements.
3. Human and organisational factors	PC 3.1 – Fit for work	01	An alcohol and other drugs policy is implemented.
		02	Alcohol and other drugs limits have been set.
		03	An alcohol and other drugs screening program is in place that provides for self, random, routine, challenge, and post incident testing.
		04	A system is in place for workers to notify they are taking over the counter or prescription medication that could impact fitness for work.
		05	Fatigue management controls have been implemented.
		06	Roster pattern design includes the following characteristics: • Avoiding shift starts between 12pm and 6am. • Forward rotating roster patterns. (day, afternoon, night.) • Limiting shift length. • Mandating breaks. • Limiting the number of consecutive shifts.
		07	Fatigue identification and warning systems such as eye

Threat	Critical control	Control support number	Control support
			watching technology are employed.
		08	A process for assessing fatigue and authorising any required work that would exceed established fatigue management control limits are in place.
		09	Fatigue self-reporting processes are in place along with the ability for fatigued operators to manage fatigue at work.
		10	Mental wellness awareness training is delivered.
		11	Mental wellness support is available such as people trained to keep someone in crisis safe and connect them with professional help.
		12	Workers are provided with fitness for work related information, training, and instruction including: • medical assessment program and physical capacity requirements • return to work program for workers recovering from an injury • the impact of alcohol and other drugs on fitness for work including illicit, over the counter and prescription medication • the alcohol and other drugs policy, notifying over the counter and prescription medication process, drug limits and testing regime

Threat	Critical control	Control support number	Control support
			• the impact of fatigue on fitness for work and managing fatigue • the site processes for identifying and managing fatigue • mental wellness and the availability of support.
		13	Workers have access to a return to work program and an employee assistance scheme.

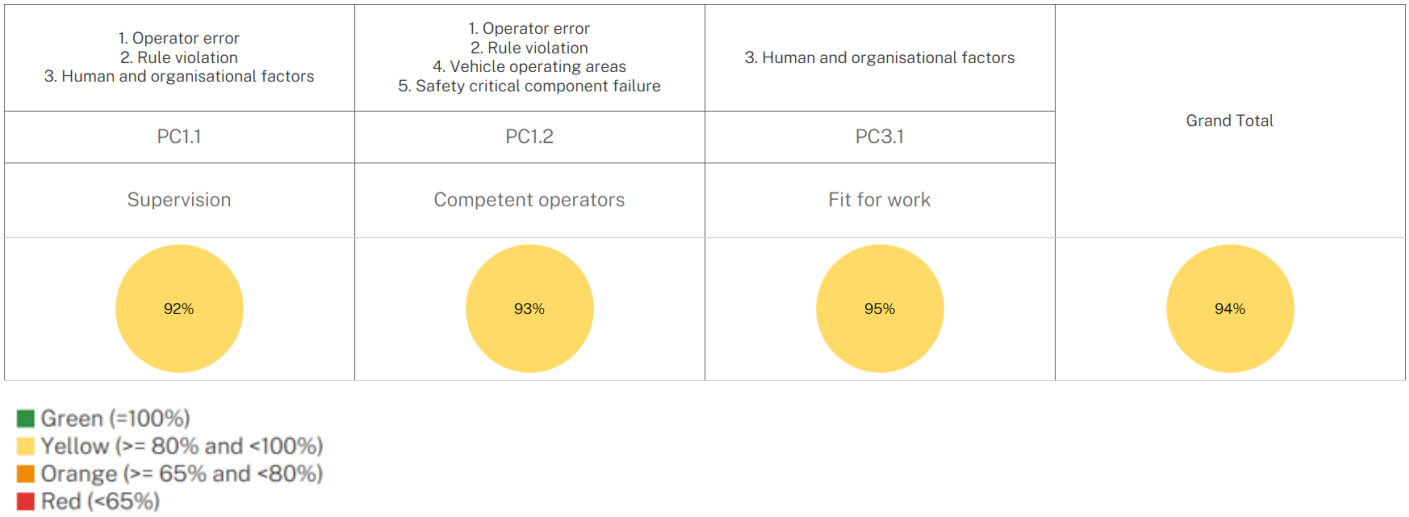
Assessment findings for metalliferous underground mines

Overall, the assessment findings for metalliferous underground mines were:

- 16 metalliferous underground mines were assessed
- 300 individual findings for the assessed criteria,
- 32 assessment findings with enforcement action recorded,
- 34 compliance notices were issued to 15 of the 16 metalliferous underground mines

Figure 1 provides a summary assessment of the overall results by critical control.

Figure 1. Summary assessment findings of overall results by critical control



In summary, the overall assessment findings by critical control were assessed in total as 94%.

The lowest assessment finding for critical control was 92% (yellow colour category) for PC1.2 competent operators.

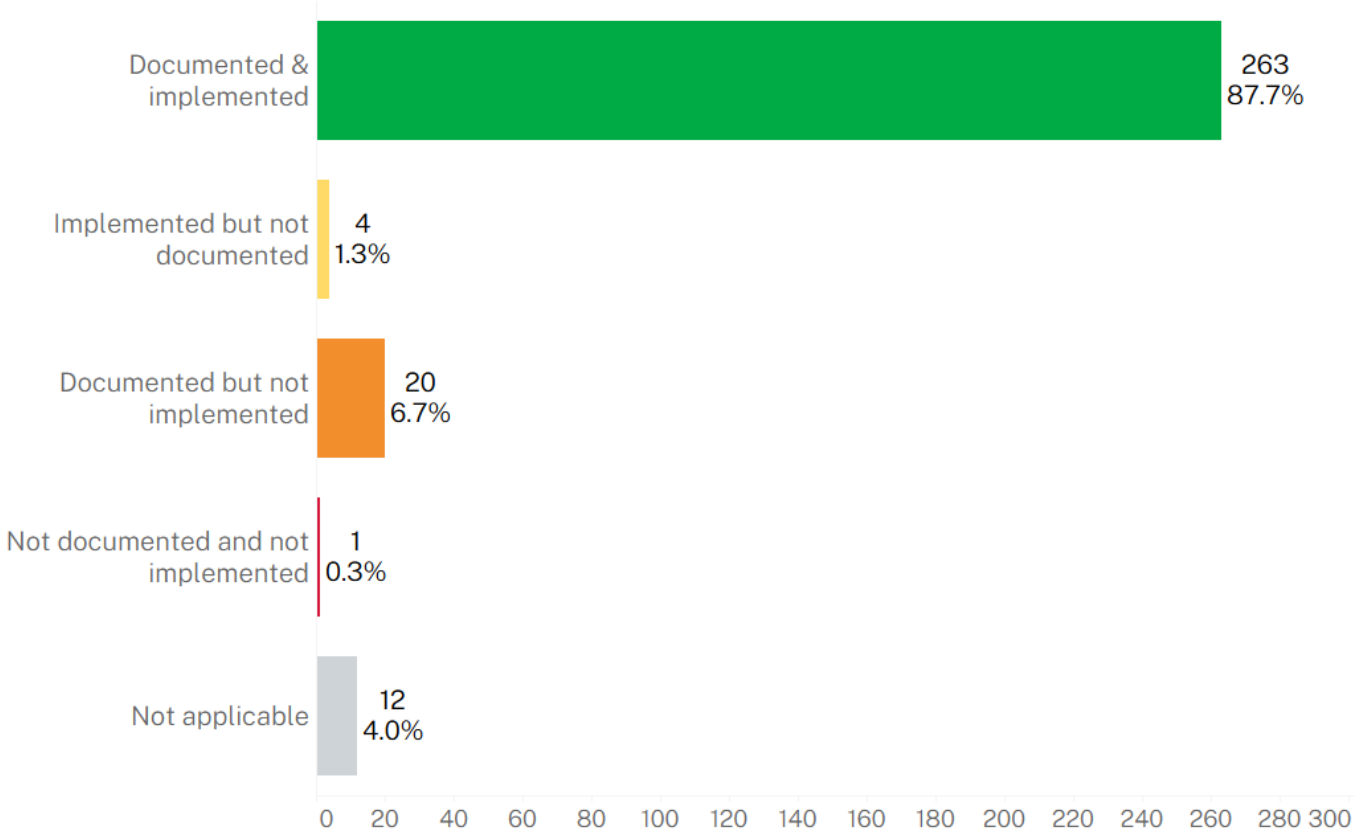
Assessment overall ratings for metalliferous underground mines

In summary the overall assessment ratings for metalliferous underground mines were:

- 88% rating for documented and implemented finding
- 1% rating for implemented but not documented finding
- 7% rating for documented but not implemented finding
- 0.3% rating for not documented and not implemented finding
- 4% rating for not applicable finding

The overall assessment findings ratings for metalliferous underground mines is shown in Figure 2.

Figure 2. Overall assessment findings ratings for metalliferous underground mines



The overall assessment findings ratings by critical control and control supports for metalliferous underground mines is shown in Figure 3.

Figure 3. Overall assessment findings ratings by critical control and control supports for metalliferous underground mines

Notices issued to METEX surface and underground mines

In total, there were 16 assessments conducted at metalliferous underground mines.

There were 300 individual assessment findings and, of those, 32 assessment findings required enforcement action to be taken at metalliferous underground mines.

In summary, there were 34 compliance notices issued to 15 of the 16 metalliferous underground mines. comprising:

- 1 x section 195 prohibition notice
- 17 x section 191 improvement notices
- 16 x section 23 cause for concern notices

Note some notices issued were related to other identified non-compliance issues.

The compliance notices issued for metalliferous underground mines were reviewed and Table 2 lists the notices issued by type and number.

Table 2: Notices issued for metalliferous underground mines

NOTICE TYPE	TOTAL ISSUED	NUMBER OF SITES
s.195 improvement notice	1	1
s.191 improvement notice	17	8
s.23 notice of concern	16	15
Total	**34**	**15** **Note: some mine sites were issued multiple notices**

Resources Regulator notification findings

Over the past 6 months (prior to November 2024) there has been an increasing trend of vehicle interaction notifications reported to the Regulator with 46 vehicle interaction incident notifications across all NSW mining industry sectors.

Of the notifications made, 45% were from surface coal mines, 26% from surface metalliferous and quarry operations and 32% from both underground coal and metalliferous mines.

A review of these recent incidents indicated that the predominant causes have been:

- lack of, or inadequate, communication between people involved in the incidents
- lack of situational awareness on the part of operators of equipment involved in the incidents
- instances noted where procedures were not followed, and equipment had malfunctioned.

The Regulator published a safety bulletin ‘Recent increase in vehicle interactions’ (SB24-08) on 29 October 2024 providing information and recommendations to mine operators.

The Regulators safety bulletin can be viewed on the Regulators web page at: www.resourcesregulator.nsw.gov.au/sites/default/files/2024-10/safety-bulletin-sb24-08-recent-increase-in-vehicle-interactions.pdf

Recommendations for metalliferous underground mines

Based on the findings outlined in this report and with respect to the numbers and types of compliance notices issued during the assessment of unplanned vehicle interaction it is recommended that the following topics should be reviewed by operators of metalliferous underground mines:

Review of the site principal hazard management plan roads or other vehicle operating areas, in particular:

- Supervision
  - Positive communications by vehicle operators are monitored by mine supervisors for compliance with site rules and procedures
  - 'Fit for work' fatigue management systems are monitored by supervisors for compliance with site rules and procedures
  - Underground ventilation monitoring by supervisors of diesel exhaust and diesel engine tag board compliance with site rules and procedures
  - ROVOA incident reporting awareness by supervisors
- Competent operators
  - Vehicle operator training and assessment with site rules and procedures
  - Vehicle operators comply with site speed and vehicle operation rules and procedures
  - Emergency brake testing assessment for the vehicle
- Human organisational factors
  - Vehicle pre-start inspections undertaken as per site rules and procedures
  - Adequate signage to warn operators of speed restrictions and pedestrian activity
  - Vehicles maintained 'fit for purpose' for:
    - emergency braking systems
    - vehicle operator fall from height protection systems
- Regulator guidance information
  - Review the recommendations published in the Regulator's safety bulletin – Recent increase in vehicle interactions (SB24-08 published on 29 October 2024)

Further information

For more information on safety assessment programs, the findings outlined in this report, or other mine safety information, please contact the Regulator.

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Address	NSW Resources Regulator 516 High Street Maitland NSW 2320

Appendix A – Assessment criteria rating

Each assessed criteria is rated from one to 4 based on evidence supporting the expected control supports identified at the mine site.

Evidence supporting expected control supports

Expected control supports	Rating	Evidence supporting rating / comments
	4 3 2 1	

Assessment findings results are calculated based on the total points allocated to the assessed ratings as a percentage of the maximum possible points for each criteria group, and any findings rated as 'Not applicable' were excluded from the calculation.

Criteria assessed ratings and points

Assessed as	Rating	Points
Documented & implemented **Compliant**	4	4
Implemented but not documented **Improvement needed**	3	2
Documented but not implemented **Significant improvement needed**	2	1
Not documented and not implemented **Non compliant**	1	0
Not applicable (N/A)		

Findings results (points) with colours assigned as follows:

- Green (=100%)
- Yellow (>= 80% and <100%)
- Orange (>= 65% and <80%)
- Red (<65%)
- Not applicable