

Consolidated report

Pressure vessels – coal mines

April 2023 to October 2024



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Table of Contents

Executive summary	4
Assessment criteria for all assessments	4
Assessment findings for coal mines.....	5
Assessment overall ratings for coal mines	5
Notices issued to coal mines.....	7
Recommendations for coal mines	7
Further information	8
Appendix A – Assessment criteria rating.....	9

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.

The planned inspection program at surface and underground coal mines for the mechanical engineering control plan – pressure vessels was conducted between April 2023 and October 2024.

A bowtie identified for the threat of pressure vessel failure identified four critical control criteria for the material unwanted event (MUE) of human exposure to pressure vessel failure.

As part of the planned assessment activities, Regulator inspectors attended a total of 51 coal mines (33 surface coal mines and 18 underground coal mines) with a focus on the assessment of the identified critical control criteria.

This planned inspection program was part of an ongoing effort by the Regulator to reduce the potential risks associated with human exposure to pressure vessel failure.

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

In summary, of the 51 coal mines assessed, 4 compliance notices were issued to 4 of the 51 coal mines.

Four of the 4 compliance notices issued related specifically to the assessment of human exposure to pressure vessel failure.

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

Assessment criteria for all assessments

The Regulator’s bowtie identified four critical control criteria for pressure vessel failure that were the criteria to assess how coal mine operators manage the material unwanted events (MUE) of human exposure to pressure vessel failure.

A tabulation of the critical control criteria for the MUE is provided in Table 1.

Table 1. Critical control criteria for the MUE human exposure to pressure vessel failure

Criteria number	Criteria
1	Does the mine have a procedure on how they manage pressure vessels onsite?
2	Does the mine have a list of all pressure vessels onsite, their category and last inspection date?
3	Are all pressure vessels designed registered in accordance with WHSR?
4	Are all pressure vessels item registered in accordance with WHSR?

Assessment findings for coal mines

Overall, the assessment findings for coal mines were:

- 33 surface coal mines were assessed
- 18 underground coal mines were assessed
- 204 individual findings for the assessed criteria,
- 8 assessment findings with enforcement action recorded,
- 4 compliance notices were issued to 4 of the 51 surface coal mines assessed

Assessment overall ratings for coal mines

In summary the overall assessment ratings for coal mines were:

- 93.0% rating for documented and implemented finding
- 3.0% rating of implemented but not documented
- 3.0% rating of documented but not implemented

Figure 1 provides a summary assessment of the overall finding ratings for coal mines.

Figure 1. Overall assessment findings ratings for coal mines

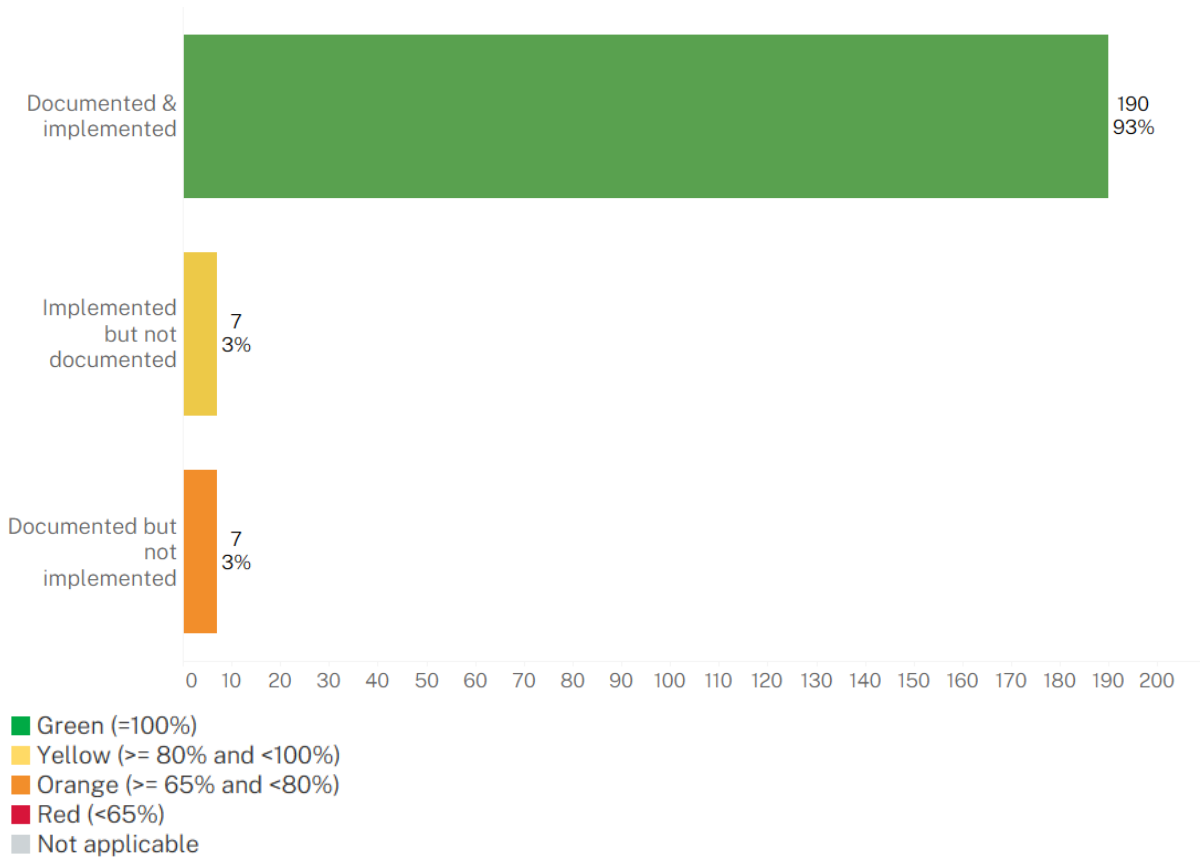
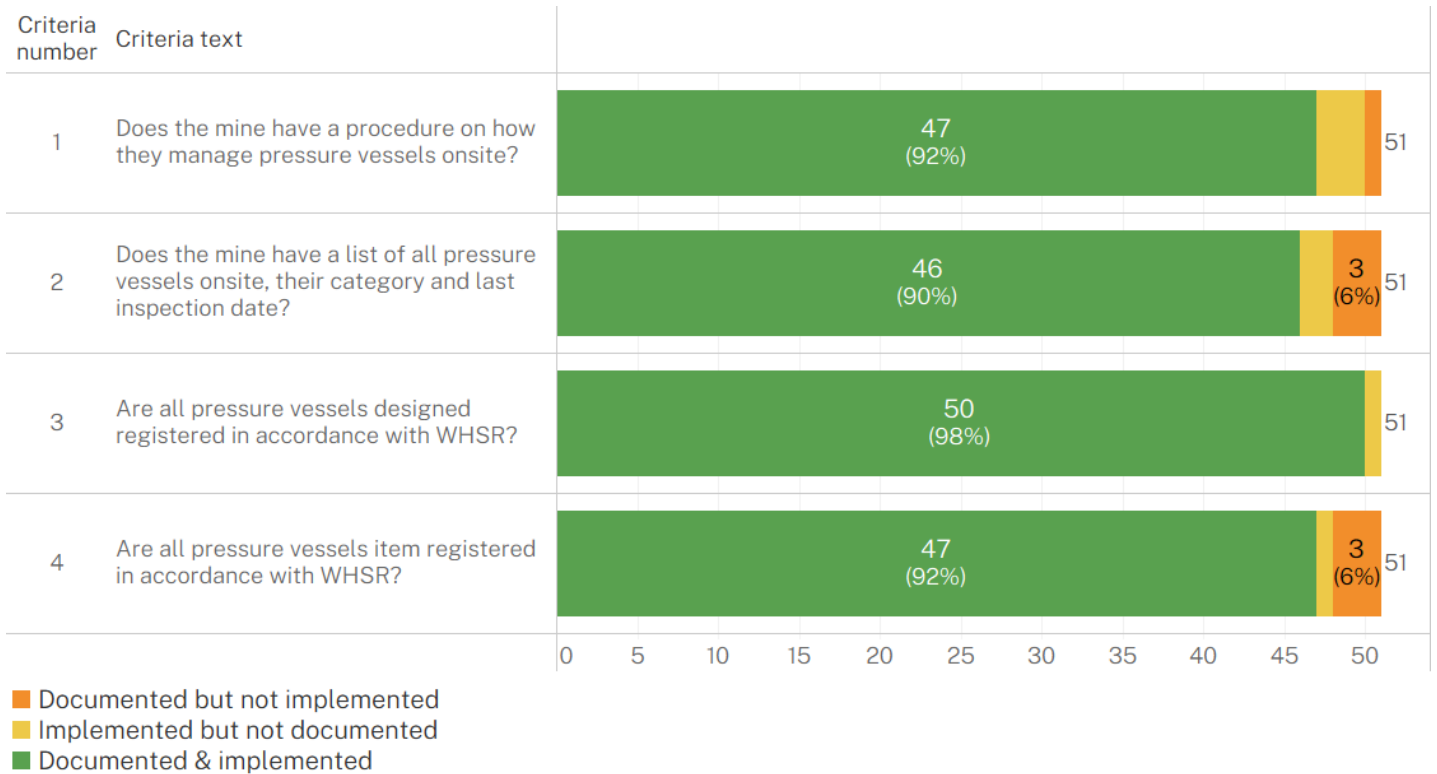


Figure 2 provides a summary assessment of the overall finding ratings by criteria for coal mines.

Figure 2. Overall assessment findings ratings by criteria for coal mines



Notices issued to coal mines

In total, 51 assessments were conducted at coal mines.

In summary, there were 4 compliance notices issued to 4 of the 51 coal mines assessed comprising:

- 2 x section 191 improvement notices
- 2 x section 23 cause for concern notices.

Note: 4 of the 4 compliance notices issued related specifically to human exposure to pressure vessel failure.

The compliance notices issued for a surface coal site (CHPP) at an underground mine and 3 underground coal mines were reviewed and Table 2 lists the notices issued by type and number.

Table 2: Notices issued for surface and underground coal mines

Category	Surface	Underground	Grand Total
WHS(MPS)A s23 notice of concerns		2	2
WHS s191 improvement notice	1	1	2
Grand Total	1	3	4

Recommendations for coal mines

Based on the findings outlined in this report and in relation to the numbers and types of compliance notices issued during the assessment of human exposures to pressure vessel failures in coal mines it is recommended operators of coal mines should review the following topics:

Review of the site mechanical engineering control plan, in particular:

- review Introduction to site system (ITS) with reference to pressure vessels and assessment to guidance provided in AS 4343:2014 - Pressure equipment – hazard levels.
- all pressure vessels on site should be listed on a site plant register
- review labelling of pressure vessels on site to include as a minimum:
 - plant item registration number
 - serial number (if applicable)
 - inspection date
 - inspection interval
 - next inspection date due
- all defects identified on pressure vessels on site must be recorded in the site defect management system.

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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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				
	<table border="1"> <tr> <td>4</td> <td>3</td> </tr> <tr> <td>2</td> <td>1</td> </tr> </table>	4	3	2	1	
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)		

cc as follows:

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