

# Undermanager examiner's report

## Written examination

### UB1 – Mining legislation

#### Summary of results and general comments

Exam Date:	21 September 2017
Number of Candidates:	26
Number who passed:	19
Highest mark:	97%
Average mark:	64%
Lowest mark:	34%

#### Question 1 (total of 20 marks)

Highest mark:	20/20
Average mark:	13.5/20
Lowest mark:	5/20

#### Examiner comments

Clause 85 of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 prescribes requirements for coal mine inspection plans.

Understanding of inspection zones was well understood, as was the inspection frequencies.

#### Question 2 (total of 20 marks)

Highest mark:	18/20
Average mark:	9.5/20
Lowest mark:	0/20

#### Examiner comments

Clause 88 of the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 requires the Operator to prepare an emergency plan.

Most candidates identified aspects of the emergency plan that are required to be addressed.

Some did not answer that a statement of potential triggers for activation is required or the testing frequency.

### Question 3 (total of 20 marks)

Highest mark: 20/20  
Average mark: 15.5/20  
Lowest mark: 5.5/20

#### Examiner comments

Clause 52 – Ground and Strata support.

Question generally answered well. Only one candidate missed the clause under question.

Some candidates missed:

- Requirement for temporary support, and/or
- Display of support plans in locations readily accessible to workers

### Question 4 (total of 20 marks)

Highest mark: 20/20  
Average mark: 12/20  
Lowest mark: 0/20

#### Examiner comments

Clause 46 – Connecting Workings

Some candidates received relatively low marks as they only considered inrush hazards of connecting workings or alternatively stated information from alternate clauses related to inrush hazards rather than the specifics of the clause related to connecting workings.

### Question 5 (total of 20 marks)

Highest mark: 19/20  
Average mark: 14/20  
Lowest mark: 6/20

#### Examiner comments

Consultation is a critical part of the legislative framework. The requirement to consult all employees has a number of general and prescriptive requirements included in this clause.

Many candidates had a basic understanding of the general requirements for consultation but were unable to provide the details of this section of legislation and received lower marks. Those who were able to provide the general and prescriptive requirements scored the highest marks.

## UB2 – Mining ventilation

### Summary of results and general comments

Exam Date:	21 September 2017
Number of Candidates:	21
Number who passed:	10
Highest mark:	72.5%
Average mark:	55.5%
Lowest mark:	40%

### Question 1 (total 100 marks)

Highest mark:	78/100
Average mark:	55.5/100
Lowest mark:	37/100

### Examiner comments

- A number of candidates in Q1A, were unable to provide appropriate production rates for Bord and Pillar units instead relying on longwall development rate assumptions. These inappropriate production rates then have an adverse effect on their answers for Q1E gas calculations and thus flow into Q1C Panel quantities and Q1F, total air quantities for fan calculations
- Question 1B was generally answered well, which indicates, candidates are putting an appropriate amount of effort into preparation for this part of the paper.
- A number of candidates displayed limited knowledge of bord and pillar ventilation principles, which led to limited answers regarding Hazards and appropriate controls.
- A number of candidates continued to rely heavily on 'rules of thumb' or use assumptions that are not explained or justified. It is important that each candidate should briefly explain why their assumptions are appropriate for the ventilation question. Providing an explanation for each assumption allows the candidate to demonstrate their knowledge of ventilation principles and concepts
- Unfortunately, many candidates provided limited information in their answers making it difficult to determine the level of knowledge. This is reflected on some candidate's marks.
- The candidates who obtained good marks in the ventilation paper provided answers from the perspective of an undermanager, who could identify the potential hazards associated with the ventilation arrangements and provide specific measures to control the risks from those hazards. Answers need to reflect the hazards, risks and control measures specific to the mine plan and mine operation description provided in Question 1.
- The current format of the ventilation paper Question 1 is consistent with previous papers. Candidates are required to provide an explanation of their understanding of ventilation principles in relation to the data and other details provided in the exam either written into the question or through observation of the mine plan.

A number of candidates in Q1E, did not provide gas calculations or were unable to implement the appropriate methodology to calculate gas quantities. This flows into their answers for Q1C Panel quantities and Q1F, total air quantities for fan calculations

## Question 2 (total 100 marks)

Highest mark: 69/100  
Average mark: 55.5/100  
Lowest mark: 21/100

### Examiner comments

- Fewer candidates achieved good results from answering Question 2.
- A number of candidates displayed limited knowledge of bord and pillar ventilation principles, which led to limited answers regarding Hazards and appropriate controls.
- Question 2A clearly request the candidate to identify hazards and ventilation requirements relative to the information supplied in Question 1. Many candidates provided very generic schedule of hazards without providing an explanation of how the hazard and subsequent controls specifically impacts on the mine design and arrangements provided in Question one. Ventilation limitations specific to the provided mine plan were not always recognised. For example; despite the reference to a recent Spontaneous Combustion incident at the Williams Colliery, the mine was obviously not designed to allow ready control of Spontaneous Combustion or sealing of individual districts. A number of candidates did not identify this as posing a risk or sufficiently described means of controlling this risk.
- Question 2B requires an understanding of the ventilation principles and concepts for Bord and Pillar methods of mining. Being able to demonstrate knowledge of general ventilation principles and how these principles are applied, allowed some candidates to receive good marks without a detailed knowledge of Bord and Pillar methods.
- Question 2C was generally answered well across the group. Knowledge of generic airborne dust management controls appears to be good with most candidates
- Question 2D requires the candidate to discuss spontaneous combustion hazards identified from the mine information provided. Although most candidates were able to refer to generic spontaneous combustions hazards, many struggled to identify the hazards / risks specifically associated with the Williams Colliery mine plan from Question 1.
- Question 2E, many candidates had a good working knowledge of monitoring arrangements
- The current format of the ventilation paper is consistent with previous papers. Candidates are required to provide an explanation of their understanding of ventilation principles in relation to the data and other details provided in the exam. Candidates are encouraged to approach questions such as these from the perspective of, what hazards are presented in the mine plan and details provided, and also what aspects will need to be included in the relevant management systems.

## UB3 – Coal Mining Practice

### Summary of results and general comments

Exam Date:	22 September 2017
Number of Candidates:	17
Number who passed:	16
Highest mark:	84%
Average mark:	72.5%
Lowest mark:	53%

### Question 1 (total 16 marks)

Highest mark:	15/16
Average mark:	12/16
Lowest mark:	9/16

#### Examiner comments

The question was generally answered quite well. Candidates generally understood the hazards involved with the ventilation disruption and resultant contamination of atmosphere and exhibited a structured and considered approach in addressing the hazards and in taking control of the situation and the resumption of normal operations.

### Question 2 (total 20 marks)

Highest mark:	16.5/20
Average mark:	14/20
Lowest mark:	12/20

#### Examiner comments

Candidates exhibited a good understanding of potential causes of longwall tailgate methane concentration “spikes” and the hazard controls suitable for application.

### Question 3 (total 20 marks)

Highest mark:	18/20
Average mark:	14.5/20
Lowest mark:	11.5/20

**Examiner comments**

Answers were generally to a good standard with respect to exhibiting a satisfactory understanding of the hazards, controls and processes required to be adopted for mining in proximity to flooded workings.

However, some candidates were too generic and not specifically direct in addressing the question asked.

**Question 4 (total 20 marks)**

Highest mark: 17/20

Average mark: 12.5/20

Lowest mark: 7/20

**Examiner comments**

Immediate control of the situation was demonstrated by most candidates, however, some responses initiated a higher than required emergency response.

Investigation of the boot area was expected. Some responses commenced investigation in unrelated areas of concern.

When recommending production, some answers failed to refer to the mine manager as part of the process of investigation and control process.

**Question 5 (total 20 marks)**

Highest mark: 18/20

Average mark: 15/20

Lowest mark: 7/20

**Examiner comments**

The mechanism of periodic weighting was well understood by most. Methods for prevention and prediction of these events were not detailed by some candidates.

**Question 6 (total 20 marks)**

Highest mark: 20/20

Average mark: 14.5/20

Lowest mark: 7/20

**Examiner comments**

The question was generally answered well, particularly with respect to immediate response. Most candidates could articulate a recovery plan/ process.

### Question 7 (total 20 marks)

Highest mark: 18/20

Average mark: 15/20

Lowest mark: 10/20

#### Examiner comments

This question described the failures of a number of controls for a task that included a number of hazards. This was also a dynamic scenario where a number of factors were unknown to the candidate.

A full answer sought to utilise all available information sources and resources to stabilise the energy sources involved in the situation and prevent the possible exposure of employees to uncontrolled energy sources.

A process of recovery and incorporating the details of findings into the mine operational systems was also required for higher marks.

### Question 8 (total 20 marks)

Highest mark: 17/20

Average mark: 16/20

Lowest mark: 14/20

#### Examiner comments

The failure of strata support in an underground mine is most likely an unplanned dynamic event that can place employees at elevated risk.

Candidates who were able to articulate a safe recovery strategy, interpret the geotechnical principles and systems utilised to ensure the situation was recovered to a higher safety standard, scored the highest marks.

## Oral examination

Date: 30 November 2017

Number of candidates: 13

Number deemed competent:

### General comments

- A slightly lower than usual success rate for the oral examination.
- The examiners wish to remind candidates to review their weaknesses from written exams and/or previous oral examinations and ensure they are fully across the detail before their oral examination. Examiners wish to see that an Undermanager candidate would follow up on any weaknesses rather than just accept them.
- Candidates generally understood the legislated obligations with respect to notification of incidents when scenarios were put to them.
- Candidates are reminded that their Associated Non-Technical Skills are being examined in an oral exam, beyond technical knowledge the candidate needs to demonstrate associated skills including; Leadership, Clear communications, A willingness to engage and consult appropriately, Facilitation of team work, Situational awareness, and Decision making which is clear, considered and risk based.
- When confronted with an emergency situation, the candidate must have a good understanding of the emergency response protocols in place, specifically understand the Undermanager's role in the emergency management plans, and under appropriate circumstance the importance of establishing an Incident Management Team.
- Candidates demonstrated a wide range of competency in the management of significant incidents, particularly complex incidents which incorporate several issues at the same time. Candidates are reminded of the need to follow a structured approach in identifying and addressing the hazards also the need to take control of the situation.
- Candidates generally demonstrated sound competency in subjects of spontaneous combustion, legislation framework, windblast and the use of explosives in coal mines.
- The need for benchmarking mines across the state has always been an important aspect of a candidate's preparation for their undermanager's exam. A candidate should approach the task of benchmarking from the perspective of identifying the major coal mining hazards and visiting those operations which provide an opportunity to learn how those hazards are managed.
- It is common for candidates to approach scenario questions in an oral exam from the perspective of a deputy or their current role. Each answer provided needs to be from the perspective of an undermanager. By doing this the candidate can more readily demonstrate his/her knowledge, both technical and practical.
- Candidates are reminded that the undermanager's role is an operational role requiring a structured management approach which incorporates practical mining solutions. The importance of this holistic approach to the role cannot be overstated.

## More information

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## Acknowledgments

Undermanager Examination Panel

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (February 2018). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the NSW Department of Planning and Environment or the user's independent advisor.

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