

# Deputy of underground coal mines

Examiner's report November 2017

## Written examination

### Summary of results and general comments

Examination date:	1 September 2017
Number who passed:	32
Highest overall mark:	83/100
Average overall mark:	67/100
Lowest overall mark:	40.5/100

#### Question 1 (total 20 marks)

Highest mark:	18/20
Average mark:	13.5/20
Lowest mark:	5/20

#### 1a)

- greatest risk is to the crew on belt road continuous miner
- gas and/or water build-up
- ventilation of stub
- strata issues, tell-tale/clock it reading
- horizon/alignment issues

#### 1b)

- "Holing procedure". Take crew through this. Make sure all know their role.
- Exclusion zone. What is it in metres?
- Cut through continuous miner drive to inspect holing point with deputy after isolating cut through continuous miner and heading continuous miner
- Pull continuous miner back and isolate. Barricade.
- Set up ventilation for stub off side of holing point.
- Set up ventilation stopping across heading to reduce dust.

- Remove any other gear.

### Comment

Answered reasonably well but:

- Risk to second crew was rarely mentioned. Candidates may have assumed this was a given however assumptions must be stated.
- The exclusion zone distance was rarely mentioned.

### Question 2 (total 20 marks)

Highest mark: 20/20

Average mark: 11.5/20

Lowest mark: 4/20

### 2a)

Clause 178 Serious injury or illness

For the purposes of section 14 (b) of the *WHS (Mines and Petroleum Sites) Act*, each of the following is prescribed as a serious injury or illness of a person:

- (a) an injury or illness requiring the person to have immediate treatment as an in-patient in a hospital,
- (b) an injury or illness requiring the person to have immediate treatment for any of the following:
  - (i) the amputation of any part of his or her body,
  - (ii) a serious head injury,
  - (iii) a serious eye injury,
  - (iv) a serious burn,
  - (v) the separation of his or her skin from an underlying tissue (such as degloving or scalping),
  - (vi) a spinal injury,
  - (vii) the loss of a bodily function,
  - (viii) serious lacerations,
- (c) an injury or illness requiring the person to have medical treatment within 48 hours of exposure to a substance,
- (d) a fracture to a person's bone other than a bone in the person's hand (including a finger) or foot (including a toe),
- (e) a condition prescribed as a serious illness for the purposes of section 36 of the *WHS Act*.

### Comment

This question was answered reasonably well. This was raised at the briefing sessions.

2b)

Answer:

Clause 179 Dangerous incidents

For the purposes of section 14 (c) of the WHS (Mines and Petroleum Sites) Act, each of the following is prescribed as a dangerous incident:

- (a) an incident in relation to a workplace that exposes a worker or any other person to a serious risk to a person's health or safety emanating from an immediate or imminent exposure to:
  - (i) an uncontrolled escape, spillage or leakage of a substance, or
  - (ii) an uncontrolled implosion, explosion or fire, or
  - (iii) an uncontrolled escape of gas or steam, or
  - (iv) an uncontrolled escape of a pressurised substance, or
  - (v) the fall or release from a height of any plant, substance or thing, or
  - (vi) the collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be authorised within the meaning of Part 4 of the WHS Act, or
  - (vii) the collapse or partial collapse of a structure, or
  - (viii) the collapse or failure of an excavation or of any shoring supporting an excavation, or
  - (ix) the inrush of water, mud or gas in workings at an underground excavation or tunnel, or
  - (x) the unintended interruption of the main system of ventilation at an underground excavation or tunnel, or
  - (xi) the loss of control of heavy earthmoving machinery (including any failure of braking or steering), or
  - (xii) the unintended activation, movement, or failure to stop of vehicles or machinery, or
  - (xiii) a collision involving a vehicle or mobile plant, or
  - (xiv) damage to, or failure of, any part of a powered winding system or a shaft or shaft equipment, or
  - (xv) damage to any plant or structure, or
  - (xvi) a failure of ground, or of slope stability control measures, or
  - (xvii) rock falls, instability of cliffs, steep slopes or natural dams, occurrence of sinkholes, development of surface cracking or deformations or release of gas at the surface, due to subsidence, or
  - (xviii) a vehicle or plant making contact with an energised source having a voltage greater than 1,200 volts (other than testing equipment applied to energised equipment in accordance with the WHS Regulations),
- (b) a fire in the underground parts of a mine, including where the fire is in the form of an oxidation that releases heat and light,
- (c) an electric shock to a person (other than a shock from an extra low voltage source),

- (d) any initial indication that any underground part of a coal mine is subject to windblast, outbursts or spontaneous combustion,
- (e) the unintended overturning of any vehicle or of plant weighing more than 1,000 kilograms,
- (f) ejection of rock from blasting that falls outside the blast exclusion zone (being the area from which persons are excluded during the blasting),
- (g) any initial indication that there may be a fault in the cementing of a casing string forming part of the cement casing of a well.

### Comment

This question was poorly answered. This was raised at the briefing sessions. Knowledge of clause 178 and 179 is important knowledge for a Deputy and should have been answered better.

### Question 3 (total 20 marks)

Highest mark:	19/20
Average mark:	14.5/20
Lowest mark:	5/20

### 3a)

Clause 39 Ensuring exposure standards for dust not exceeded

(cl 636 model WHS Regs)

(1) The operator of a mine or petroleum site must, so far as is reasonably practicable, minimise the exposure of persons at the mine or petroleum site to dust and must ensure that no person at the mine or petroleum site is exposed to 8-hour time-weighted average atmospheric concentrations of airborne dust that exceed:

- (a) for respirable dust—3 milligrams per cubic metre of air, or in the case of a coal mine, 2.5 milligrams per cubic metre of air, or
- (b) for inhalable dust—10 milligrams per cubic metre of air.

Maximum penalty:

- (a) in the case of an individual—\$6,000, or
- (b) in the case of a body corporate—\$30,000.

(2) The Workplace Exposure Standards for Airborne Contaminants apply in relation to a concentration referred to in subclause (1) as if that concentration were an exposure standard referred to in that document.

(3) In this clause:

8-hour time-weighted average has the same meaning as in the Workplace Exposure Standards for Airborne Contaminants

### Comment

This was raised at the briefing sessions. Knowledge of limits under the legislation is fundamental knowledge for Deputies. Some candidates still quoted the old regulations for quartz.

### 3b)

- Most answers were too vague.
- Example: Dev - ventilation – this needed to be explained/expanded - vent tubes to roof, vent rubbers in place, auxiliary fan setting, slider tube to face, venturi, recirculation, baffle at fan, last permanent stopping, minimum quantity into panel.

### Question 4 (total 20 marks)

Highest mark:	20/20
Average mark:	13/20
Lowest mark:	7.5/20

### 4a)

- look for change in conditions
- increase/decrease in water make, gas make, hardness of coal.
- structures. (faults / dykes / cutters)
- bumping
- cindered coal.
- mylonite
- conical cavity in face / rib

### Comment

Most candidates answered this question well.

### 4b)

- ATM
- training in outburst management plan
- gas drainage
- reduction of advancement rate
- reduction of number of persons at face
- remote mining/automation
- shotfiring/grunching

Comment

Candidates need to remember hierarchy of controls.

- remove people from hazard
- remote mining/grunching

**4c)**

- Increased carbon monoxide – rarely mentioned
- sweating on steel
- increased heat
- haze along roof
- benzene smell
- smoke
- fire

Comment

The question was poorly answered.

**4d)**

- further investigation, bag samples, trace carbon monoxide
- seal goaf, seal panel, seal mine. – remove oxygen
- balanced stoppings
- Spontaneous combustion trigger action response plan (TARP) – increased monitoring
- inertisation
- reduction of pressure between intake and return
- remove stowage.

Comment

The question was poorly answered.

**Question 5 (total 20 marks)**

Highest mark:	18.5/20
Average mark:	14.5/20
Lowest mark:	7/20

**5a)**

- crew safety
- assess and fight fire from intake side only
- delegate tasks:
  - elec and another contact CRO from belt starter
  - notify anyone inbye to proceed outbye
  - fitter and another get fire depot just outbye d/head
  - you and another take extinguishers and assess fire, while hoses are set up
  - fight the fire

**Comment**

This question was answered reasonably well. All candidates should be aware of the mine's first response to a fire. This information is posted all over the mine. Some candidates did not delegate or identify the need to fight the fire from the free air side.

**5b)**

- this is a notifiable incident
- barricade area to preserve the scene
- notify CRO when fire is out
- set up fire watch.
- complete statutory report
- complete incident report
- complete debrief with crew, including witness statements
- consider/offer counselling for crew
- have firefighting equipment replaced
- do a handover with oncoming deputy
- have rest of belt inspected

**Comment**

The question was poorly answered.

## Oral examination

Date:	8 November 2017
Number of candidates:	35
Number deemed competent:	16

## General comments

Candidates should consider the following:

- Review questions from the written or previous orals that you answered poorly.
- When answering a question always remember: “I am the deputy”. Not the CM driver, electrician, fitter or mining engineer. Answer the question as the deputy.
- When visiting another mine to learn about how a hazard is controlled or another type of mining method, remember you need to know what the deputy’s role is.
- Keep a record of what you have done to prepare for your oral and bring a copy with you.
- There will always be a ventilation question in the oral.
- There will always be an emergency management question in the oral.
- Have a read of the signage at your mine for “In the event of discovering a fire” information for one person, two people or three or more people.
- Your “associated non-technical skills” (ANTS) will be assessed. Leadership, decision making and delegation.
- Get a copy of all deputy statutory reports at your mine and complete them. Learn what information is required.
- Know what TARPs stands for, how they are developed and why they are developed.
- You are allowed to be nervous, but must be able to demonstrate that you are competent and confident.
- A deputy is a supervisor. Your role is for you and your crew to know the hazards associated with a task or mining method and the controls/procedures that have been developed through consultation.
- A deputy must monitor for change and react to the rate of change.
- A deputy must achieve, the mine won’t stay open otherwise however, this must never come before your crew, the mine and its machinery.

## More information

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## Acknowledgments

Deputy Examination Panel

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