



EXAMINATION PANEL REPORT

Certificate of Competency - Deputy

September - November round 2013

Summary of results and general comments

The examiners were disappointed with the results in the exams, both written and oral. There were similar failures as with previous exams with the most noticeable being ventilation understanding in the oral exam.

Candidates are advised to review this report alongside the written exam paper to help understand how the examiners assess their competence. This, and the briefing sessions held prior to each written exam will assist candidates in preparing adequately for the assessment process.

There were many qualified candidates (30% of the candidature) that declined to sit the oral exam. The examiners recommend that those candidates qualified to sit do so – postponement can introduce difficulties in recommencing studies and going through the process of a proper oral exam can assist in the future in the event of not being assessed as competent.

Written examination results

Date:	6 September 2013
Number of candidates:	72 (106 approved to sit)
Number who passed:	40 = (56% success rate) (20 candidates passed from 35 candidates on 1 st attempt = 57%)
Average overall mark:	59.5% = (minimum pass mark 60%)
Highest mark obtained:	84.5%



Highest mark question 1: 20/20

Average mark question 1: 10/20

Required candidates to demonstrate a working knowledge of legislation in respect to explosion suppression.

Questions regarding the requirements of management plans have been regularly asked in the written exam. Candidates still struggle with these questions.

Q1 (a) Very poorly answered

Q1 (b) Poor understanding of the various locations and the specified levels of incombustibles in the mine.

Q1 (c) Many candidates confused face zones with hazardous zones or production districts.

Q1 (d) Generally well answered.

Highest mark question 2: 20/20

Average mark question 2: 12.5/20

Required candidates to demonstrate a working knowledge of strata control.

This question had disappointing results. It was focused on common monitoring devices and understanding of TARPs.

Q2 (a) For full marks in this section it was necessary to give an unambiguous answer that indicated that there was 75 mm movement between the roof horizon and the lower anchor and 5 mm movement between the two anchors.

Q2 (b) This section required a clear understanding that the extensometer was not working correctly. Issues with these types of monitoring devices have been the subject of a recent Safety Alert. Possible causes were the anchor slipping, the top anchor not fixed to instrument, anchors reversed, broken anchor wire, incorrect initial settings. Checks include inspecting the connection at the readout, pulling on the anchor wire, checking previous readings.

Q2 (c) Triggers are clear, unambiguous signs that can be objectively measured. They may include guttering, falls and slabbing including dimensional parameters. They may also include leg pressures, chocks going into yield, faulty leg circuits, geological anomalies, monitoring results and floor heave. Each trigger may have different parameters to allow for a progressive response (e.g from green to yellow to red).



Q2 (d) The actions that may be taken are increased inspections, additional passive supports, additional roof support, change of chock sequence, use of void fillers, injection of PUR, geotechnical review, ceasing mining and a hierarchy of reporting. TARPs will not include the fundamental actions, such as initial training etc, that are found in the hazard management plan.

Highest mark question 3: 17/20
Average mark question 3: 11.5/20

Candidates were required to demonstrate a working knowledge of panel ventilation.

This question also had disappointing results.

Q3 (a) (i) The question stated that flood ventilation was used for the panel. This means that all headings are intakes and the panel returns through the goaf to a bleeder system. Very few candidates recognised this layout.

Q3 (a) (ii) The plan was not large enough to position the hazardous zone correctly on the plan. The last open line of cut throughs was the line outbye of the line being worked. Candidates were not disadvantaged by this.

Q3 (a) (iii) Generally well answered. For this type of extraction the bootend is normally in an intersection and at least one pillar outbye the line being worked. Consideration should be given to the car wheeling routes.

Q3 (a) (iv) Generally well answered. For this layout there was no requirement for backspooling or shunting in a well-designed layout.

Q3 (a) (v) Generally not well answered. Few candidates appeared to give consideration to the sequences following the one the CM was working. The DCB should be on the right hand side of the panel with the cable running along the inbye side of the cut through to reduce SC/CM cable interaction and to allow for the following sequences.

Q3 (a) (vi) Candidates were marked on the quantities for the ventilation design they submitted – i.e. there was no deduction for not having flood ventilation. There was a wide variation of quantities with no marks being given for quantities of 15 m³/s or 150 m³/s. An appropriate quantity would fall in the 25 – 40 m³/s. Some candidates did not balance return with intake quantities.

Q3 (b) The importance of the standard plan symbols was mentioned in the previous examiners' report and at the candidates briefing session. Candidates struggled with the symbols for the fire sub-station and the telephone.



Highest mark question 4: 19.5/20
Average mark question 4: 13.5/20

Required candidates to demonstrate a good working knowledge of requirements and considerations for the installation of air fans and of the hazards and controls associated with windblast.

Q4 (a) (i) the set up requires a fan, earth strap, and the equipment (either tubes or brattice) that will be needed to direct the air.

Q4 (a) (ii) Some of the issues associated with air fans is that there is no interlock for power, generally too small for diesels, recirculation and earthing requirements.

Q4 (a) (iii) and (iv) This was not well answered and was seen as fundamental to a deputy's duties. It was important that the fan be positioned to minimise any chance of recirculation. The position was dependent on where the candidate determined the return was and whether forcing or exhausting ventilation was used. Generally the fan should have been positioned in the cut through or in B hdg outbye the cut through. Many candidates had the fan in the intersection or just inbye the intersection increasing the likelihood of recirculation.

Q4 (b) The hazards associated with windblast include injuries from flying debris or being knocked down, damage to ventilation devices leading to ventilation disruption, the forcing of goaf gases into the working area and machinery damage.

Q4 (c) The controls for windblast include pillar/panel design, extraction layout, roof coring for mapping, leg pressure monitoring (on BLS or chocks), production cycle and rates, fraccing, TARPs, PPE including lanyards and flapper (or pressure) switch to turn power off.

Highest mark question 5: 18/20
Average mark question 5: 12/20

Required candidates to demonstrate a working knowledge of emergency response and the mine's emergency escape system.

Q5 (a) This was not well answered. The priorities were immediate safety of other people, free the person, treat the person, communicate and request high level medical assistance. Many of these should be carried out concurrently. Freeing the person is the critical issue in this question with appropriate consideration given to the cause of the pinning and the best way to free the person. Few candidates provided any information to this element of the scenario. Some potential causes of the pinning were rib failure, machine malfunction or operator error. In each case there may be a different approach

to the recovery of the victim – use of airbags, move the rib, move the miner or use equipment to move the conveyor boom of the miner. A risk-based approach was required – this should not require a sit-down full crew documented risk assessment when the crew member requires treatment. The transport out of the panel should also consider the appropriate number of people and their skills. It was not appropriate to leave the crew member pinned until someone else came in to take charge.

Q5 (b) Generally well answered. There are 10 different SCSR used in NSW and two types of FSR. Some candidates did not know the correct rated duration for the equipment at their mine. FSR rescuers are rated for 60 minutes – W95-2 may last a lot longer than 60 minutes but the rating is still 60 minutes.

Few candidates demonstrated any knowledge of the duration of CABA units. A 9 litre cylinder at 300 bar has 2700 litres of air. At a breathing rate of 40 litres/minute (which is considered hard work) it will last 67.5 minutes.

FSR are not affected by weight or fitness of the user. They are limited by the oxygen and carbon monoxide levels in the atmosphere.

The biggest impact on a SCSR is the rate of work (it is relatively easy to outstrip the generating capacity of the unit) and the weight of the user. It should be noted that a large muscly person will most likely have a shorter duration than a large unfit person.

Limitations on CABA include the availability of the unit outbye of panels and time taken to refill, particularly at large refill stations with many people present.

The description of the equipment needed to include any cached equipment or refill stations.

Maintenance requirements include pre-shift inspections of belt worn equipment, shift inspection in production districts of stored equipment and routine inspections (daily or weekly) of stored equipment in outbye areas. The longer term inspections (weighing of FSR, shake tests of SCSR, destructive testing of SCSR and FSR, servicing of the CABA including of the cylinder) were generally not discussed by the candidates, however the focus of the examiners was on the deputy based maintenance checks.

Oral examination

The main stumbling block in the oral exams continues to be ventilation. In every oral exam there is a question regarding ventilation – this may take many forms. The examiners are looking for the candidate's competence in being able to determine the state of ventilation, being able to diagnose problems,



being able to remedy those problems and the understanding of the basic principles of ventilation.

One particular area of concern was the use of brattice ventilation. Many candidates introduce elements of wide side return into a narrow side return system with little or no understanding of the fundamental requirement for wide side return (such as minimum velocities).

Emergency response is also a matter for concern. Candidates must understand that they are responsible for their crew and take appropriate actions, based on the risk, to ensure their safety.

There was also concern with candidates' understanding of the physiological effects of gases that may be encountered in underground coal mines such as carbon dioxide and carbon monoxide as well as the effect of oxygen deficiency.

Candidates appear to be preparing with template answers to problems such as recirculation and fires and are ill prepared to discuss the logic of their answer or deal with changing parameters in a question. It is important that candidates focus on understanding the underlying principles in ventilation, hazard management and emergency response so that they can assess an issue and determine from those principles the appropriate response.

Dates: 12, 13 & 14 November 2013

Number of candidates: 114 (163 were eligible to sit)

Number who passed: 53 (46.5% success rate)

Note:

Of the 163 eligible candidates for the oral examination, the Mining Industry Competency Unit received 49 notifications from candidates advising that they would not be sitting the November 2013 oral examination. (46 post oral candidates and three first attempters).

This is a quite a high number of candidates withdrawing from the examinations. Candidates are urged to consider sitting each attempt of the examination process, as statistically there is benefit from sitting in close succession, with the pass rate increasing with each attempt.

For those candidates found NYC, the oral examination process in itself, and the feedback drawn from it, identifies the skills gaps, targeting areas for each candidate to study further, and engage in training to consolidate their knowledge and skills.