



EXAMINATION PANEL REPORT FOR MINE MECHANICAL ENGINEERS May 2013

APPLICATIONS

Number applied: 10 7 underground candidates 3 surface operations candidates	Number approved: 10 7 underground candidates 3 surface operations candidates
Overall comments:	
<ul style="list-style-type: none">Candidates need to ensure their applications are completed correctly and contain all required documentation	

WRITTEN EXAMINATION

Dates:	Thursday 7 th March 2013
Location	Kurri Kurri TAFE
Total number of candidates	7
Number of Candidates: Underground	5
Number of Candidates: Surface Ops	2
Passed: CME 1	2
Passed CME 2	3
Passed: CME 3 Surface Ops	2
Highest Mark: CME 1	214.5 out of 300
Highest Mark: CME 2	87 out of 100
Highest Mark: CME 3 Surface Ops	158.5 out of 200
Average Mark: CME 1	184.6 out of 300
Average Mark: CME 2	79 out of 100
Average Mark: CME 3 Surface Ops	152.5 out of 200
Examination Papers	
<ul style="list-style-type: none">CME 1 Underground Mechanical practicesCME 2 Underground legislationCME 3 Surface Coal Mechanical practices	

Overall comments:

- The panel have seen a decrease in the number of applications this year with a total of 7 sitting in February 2013 down from 19 for the same period in 2011
- Study groups were provided by both BHP Billiton and Xstrata for both Surface and Underground candidates
- Some candidates took the advantage and attended both study groups where possible
- Future candidates are encouraged become involved in these study groups as they offer a structured approach to the examination process
- The aim of the study groups is to help candidates develop a structured approach when confronted with different scenarios through a group discussion and self development process
- Due to the vastness of the scope for Manager of Mechanical Engineering role it is impossible for the study groups to cover every possible situation and it is therefore recommended that candidates seek out an industry mentor or mentors to assist them through their study program

Analysis of Questions: CME 1 Underground Mechanical practices

Required 5 out of 8 questions to be answered. Q1 to Q4 were compulsory with the remaining question to be selected from Q5 to Q8.

Q1. Total Marks = 60**Compulsory question****Incident investigation:**

Candidates were provided with an incident scenario involving people and plant. The scenario was around an RTV colliding with a stationary LHD, with the driver reporting brake issues.

Recommendations:

The question was broken down into 5 areas; each area was a progression from the first. Examiners were looking for a systematic approach in determining the causal factors around this incident

Highest mark = 44

Lowest mark = 30.5

Average mark = 37

Q2. Total Mark = 60**Compulsory question****Tender specification:**

Candidates were asked to list the requirements for a section within a tender document called "Marking and Identification" with a list of specific areas included.

Recommendations:

The answer to this question is contained within MDG 41. It is expected a candidate would have good knowledge and understanding of relevant MDG's

Highest mark = 43

Lowest mark = 19

Average mark = 27.5

Q3. Total marks = 60**Compulsory question****Multiple choice:**

This question is designed to test the candidate's general knowledge on topics and subjects within the mining industry.

Recommendations:

Part of the candidate's preparation should be to review MGD's, Guidelines and relevant standards commonly used by the mining industry to help develop their basic knowledge.

Highest mark = 44**Lowest mark= 28****Average mark = 40****Q4 Total marks = 60****Compulsory question****Contractor management:**

A scenario was give where by the mine is about to reintroduce a program of conveyor belt vulcanising, with a list of specific areas to be addressed.

Recommendations:

It is expected the Manager of Mechanical Engineering would have in place a process for the management of contractors. This would include competency assessment, plant and equipment inspections, as well as ongoing site assessments to ensure compliance to mines standards.

Highest mark = 50**Lowest mark= 34****Average mark = 39****Q5 Total marks = 60****Elective question: attempted by 2 candidates****Infrastructure expansion:**

This scenario is around an MME inheriting an expansion to the CHPP. The expansion works are to be carried out by contractors as well as sub-contractors and include specialised plant/equipment.

Recommendation:

Candidates need to understand the additional requirements for construction zones, the use of "Safe work method statements".

How to determine competencies of labour hire personnel, including training on specialised equipment is needed.

Site auditing to ensure compliance with site and mine standards.

Highest mark = 39**Lowest mark= 36****Average mark = 37.5****Q6 Total marks = 60****Elective question: attempted by 1 candidates****Drift coal clearance system/ 2nd means of egress**

As the MME of a mine you have become aware of a pervious incident where by a drift conveyor similar to yours has been involved in an incident causing catastrophic damage to the plant effecting both the output of the mine and impacting on the 2nd means of egress from the mine

Recommendation:

This incident is a real scenario which actually happened.

As part of a candidate's preparation he or she needs to visit sites and review such incidents with the aim of seeing how the incident was managed and the methods employed to prevent reoccurrences.

Highest mark = 36

Lowest mark= 36

Average mark = 36

Q7 Total marks = 60

Elective question: 1 candidate attempted this question

ROM stockpile Plant management

At the request of the purchasing officer you have been asked to review a tender for the supply and operation of a stock pile push dozer.

Recommendation:

The use of push dozers on stock pile sites comes with its own specific hazards and associated risks, these can be found in "**MDG 28 Safety requirements for coal stockpiles and reclaim tunnels**"

Highest mark = 45.5

Lowest mark= 45.5

Average mark = 45.5

Q8 Total marks = 60

Elective question: No candidate attempted this question

Upgrade of Longwall roof supports

Recommendation:

N/A

Highest mark = 0

Lowest mark= 0

Average mark = 0

Analysis of Questions: CME 2 Legislation

This examination saw a change in the format of the legislation paper, for the first time the examination was in the open book format. Candidates were allowed access to WH&S and CH&S legislation. Candidates were required to answer 5 out of 5 questions, with two questions being selected from WH&S Regulations, two questions were selected from CMHSR 2006 and one question related to a Gazettal notice which was also provided as part of the open book format.

Q1. Total marks = 20

Compulsory question

WH&S regulation 2011 "Noise"

This question was based around a piece a plant being delivered to site emitting excess noise. Candidates were asked a series question regarding the management of noise from plant.

Recommendation:

Noise is a health and safety issues and candidates should have some knowledge of the issue and where they need to go to obtain relevant information to assist in the management of noise.

Highest mark = 19

Lowest mark= 12.5

Average mark = 14.83

Q2. Total marks = 20

Compulsory question

WH&S regulation 2011 “Management of risk of fall”

Working at height is a high risk activity and requires proper management.

Candidates were asked a series of questions relating to safe work procedures for the management of risk of fall.

Recommendations:

Working at heights and risk of falls are high risk activities which require proper management. Candidates should have some knowledge in this area to assist them in reviewing, developing and implementing SWP for the management of such risks

Highest mark = 20

Lowest mark= 12

Average mark = 16.33

Q3 Total marks = 20

Compulsory question

Coal mine health & safety regulations 2006, “ Contents of major hazard management plan: Underground transport management plan”

This question required the candidates to interpret the requirements of the major hazard management plan for the “underground transport management plan” and identify which elements required input from the Mine Mechanical Engineer

Recommendation:

Candidates need to be aware of the existence of major hazard management plans (MHMP) as well as the need to address certain elements within the MHMP in the Mechanical Engineering Management Plan

Highest mark = 20

Lowest mark= 11

Average mark = 16

Q4 Total marks = 20

Compulsory question

Coal mine health & safety regulations 2006: “Flammable materials”

Candidates were provided with a scenario whereby they were asked to review a “Standards of Engineering Practice: (SEP) for the safe storage of “Flammable Liquid”, and include certain elements.

Recommendation:

Candidates need to be aware of the definition of a ‘Flammable Liquid’ and the specific requirements for the safe storage.

Highest mark = 18.75

Lowest mark=10

Average mark = 14.58

Q5 total Marks = 20

Compulsory question

Gazettal No 24 dated 2 February 2007: “Requirements for canopies on Continuous miners”

Candidates were provide with a scenario and a copy the gazettal and asked a series of questions relating to the gazettal document with respect to canopies on continuous miners.

Recommendation:

It is expected candidates are able to read and interpret the requirements of Gazettal notices and apply the information where required.

Highest mark = 18

Lowest mark= 17

Average mark = 17.33

Analysis of Questions: CME 3 Surface Mechanical practices

This year for the first time the paper was broken down into two parts, part “A” and part “B” with both parts being compulsory.

Part A: Legislation, this section of the paper consisted of 3 questions and was open book format. This allowed candidates to refer the WH&S regulation and CMH&S regulation in answering the questions.

Part B: Mechanical practices; this section was closed book format and consisted of 5 questions.

Q1.Total marks = 25

Part A Compulsory question

WH&S regulation 2011 “Noise”

This question was around a piece a plant being delivered to site which is emitting excess noise. Candidates were asked a series question regarding the management of noise from this plant.

Recommendation:

Noise is a health and safety issue and candidates should have some knowledge of the issue and where they need to go to obtain relevant information to assist in the management of noise.

Highest mark = 25

Lowest mark= 9

Average mark = 17

Q2 Total marks = 25

Compulsory question

WH&S regulation 2011 “Management of risk of fall”

Working at height is a high risk activity and requires proper management.

Candidates were asked a series of questions relating to safe work procedures for the management of risk of fall.

Recommendations:

Working at heights and risk of falls are high risk activities which require proper management. Candidates should have some knowledge in this area to assist them in reviewing, developing and implementing SWP for the management of such risks

Highest mark = 21

Lowest mark= 21

Average mark = 21

Q3 Total marks = 25

Compulsory question

Coal mine health & safety regulations 2006: “Flammable materials”

Candidates were provided with a scenario whereby they were asked to review a “Standards of Engineering Practice: (SEP) for the safe storage of “Flammable Liquid”, and include certain elements

Recommendation:

Candidates need to be aware of the definition of a ‘Flammable Liquid’ and the specific requirements for the safe storage.

Highest mark = 21

Lowest mark= 20

Average mark = 20.5

Q4 Total marks = 25

Part B: Compulsory

Multiple choice:

This question is designed to test the candidate’s general knowledge on topics and subjects within the mining industry.

Recommendations:

Part of the candidate’s preparation should be to review MGD’s, Guidelines and relevant standards commonly used by the mining industry to help develop their basic knowledge.

Highest mark = 18

Lowest mark= 15

Average mark = 16.5

Q5 Total marks = 25

Tender specification

Candidates were asked to list the requirements for a section within a tender document called “Marking and Identification” with a list of specific areas included.

Recommendations:

The answer to this question is contained within MDG 41. It is expected a candidate would have good knowledge and understanding of relevance of MDG’s

Highest mark = 15

Lowest mark= 14

Average mark = 14.5

Q6 Total marks = 25**Slings, chains and lift equipment:**

This question was broken down into to 2 parts.

Part A looked at the management of lifting equipment and its procurement through a purchasing department and potential deviation from the Standards of Engineering practice

Part B looked at reviewing the mines SEP for towing, pulling and what considerations are needed to ensure the equipment is fit for purpose as well as the needs to have safe systems of work

Recommendations:

Lifting and slinging equipment is used quite extensively within the mining industry and also poses one of the highest risks to persons. Therefore it is expected candidates have a good understanding of the need to ensure the equipment meets current standards and is fit for purpose.

Highest mark = 20.5

Lowest mark= 20.5

Average mark = 20.5

Q7 Total Marks = 25**Management of plant associated with stock piles and reclaim tunnels**

Candidates were asked a series of questions relating to the safe management stockpile/ reclaim tunnels including associated plant.

Recommendation:

Stock piles and reclaim tunnels are common place on surface coal operations and come with their own inherent risks, MDG 28 is a good reference tool to assist in the safe management of stockpiles and reclaim tunnels.

Highest mark = 23

Lowest mark= 17

Average mark = 20

Q8 Total marks = 25**Contractor management**

Candidates were provided with a scenario where new contractors to site were employed to perform maintenance work during the allocated maintenance window.

Recommendation:

The management of contractors is a key responsibility of the operator and requires a structured process when introducing new contractors to site, also the need to have the appropriate licensing where required, eg Dogging/rigging, EWP, etc.

Highest mark = 23

Lowest mark= 22

Average mark = 22.5

ORAL EXAMINATION

Dates: Surface Operations	30th April 2013
Number of Candidates eligible:	3
Number of Candidates examined:	3
Candidates deemed as Competent	2
Dates: Underground Operations:	30th April 2013, 2 nd May 2013
Number of Candidates eligible:	9
Number of Candidates examined:	9
Candidates deemed as Competent	3

Overall Comments:

- Rate of success of 41.66% was encouraging, considering all eligible candidates were given the opportunity to participate in a number of trials before the actual oral
- The trial oral process is designed to develop the candidate's ability to apply their knowledge gained whilst studying for their certificate of competency, to apply that knowledge to practical scenarios and apply workable solutions. At the conclusion of the trial orals each of the candidates were provided with feed back and areas of opportunity for improvement.
- Candidates need more exposure in the work place to understand the role and responsibilities of the Manager of Mechanical Engineering to develop an educated approach to deal with various situations encountered at a mine site.

Oral examination: Areas of discussion

Winders (underground)

- Types of winder you have inspected
- Winding ropes types
- Examples where used
- Methods of testing
- Limitation of testing
- What to look for from testing
- Rope maintenance both in use and spare
- Rope attachments
- Detaching hooks, types, methods of action
- Discuss SA 13-02

Fluid power Isolation (SB12-03) Surface operations and Underground)

- Standards and guidelines
- Types of methods of fluid power isolation (block and bleed & double block and bleed)
- Hazards associated with high pressure fluids
- Risks from the identified hazards
- Examples of fluids under high pressure
- Methods of pressure intensification, how and where
- Oil injection protocol
- Interpretation of escape of fluid under pressure

Duties of the Manager of Mechanical Engineering (surface operations and underground)

- Ask the candidate for his/her interpretation of the Role of MME or qualified engineer
- You have been successful in gaining a position as a Manager of Mechanical Engineering at an underground coal operation, describe to the panel how you structure your first 100 working days at the operation.
- What two clauses of the CMHS Regs form the basis of the Mechanical Engineering Mgt Plan (*CL 13 and 20*)
- Reference to the Mechanical Engineering Management Plan
 - Ask the candidate what he believes that the content of the plan should be
 - Design/item registration
 - Ask about the requirements for conveyor belting
- Identify and report deviation from SEP
- Monitor, Audit & Review MEMP

Incident A (Scaffolding toppled, 2 workman injured) Surface operations and underground)

- Photograph provide of incident site.
- Systematic approach
- Inquiry as to any injuries
- Site serialisation if necessary
- Information gathering, statements, maintenance logs, prestart Inspections, SWMS, competencies
- Possibility of a notification to the regulator (notifiable)
- Discuss possible prevention of a reoccurrence
- Recommendations to stake holders
- Review equipment site entry std's

Or Incident B (Crane rollover) (Surface operations and underground)

- Photograph provide of incident site.
- Systematic approach
- Inquiry as to any injuries
- Site serialisation if necessary
- Information gathering, statements, maintenance logs, prestart Inspections, SWMS, competencies
- Possibility of a notification to the regulator (notifiable)
- Discuss possible prevention of a reoccurrence
- Recommendations to stake holders
- Review equipment site entry std's
- Removal of the radio active isotope from the Coal Scan
- Use of ground penetrating radar to confirm compacted ground.

Contractor management (Surface operations and underground)

You are the MME of a mine currently having major upgrade works on your surface coal preparation plant. You are increasing the capacity of the preparation plant by 100%, all works are being carried out by contractors.

- How is the best way to manage this type of upgrade
- What are the hazards associated with the employment of contractors
- How would intend on managing contractors/subcontractors
- How would you control the use of sub contractors to the main contractor?

Hot works (Surface operations)

- Area categories
- Examples of area categories
- Hazards associated with welding
- Risk control measures
- Causes of electric shock
- Protocol for suspected electric shock
- Notification to the regulator
- Control of identified hazards
- Working in multi level buildings
- PPE

Introduction of Plant (procurement of a new tele-handler) (Surface operations)

- Consultation
- Development of specification
- Training packages
- Licensing
- Maintenance documentation
- Design Risk assessment
- Operation risk assessment
- Audit against MDG's (MDG 15)
- Development of spare listing