(UB1)

NSW Coal Competence Board

EXAMINATION FOR CERTIFICATE OF COMPETENCE AS

UNDER MANAGER

(Coal Mine Health & Safety Act 2002)

NORTHERN REGION
SOUTHERN REGION
WESTERN REGION

Friday 20 September 2013

9.00 am to 10.00 am

MINING LEGISLATION

INSTRUCTION TO CANDIDATES

All five (5) questions are to be attempted.

All questions are of equal value - **20 marks each**

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10 minutes reading time is allowed prior to the start of the examination.

Question 1 (20 marks)

The *Coal Mine Health and Safety Regulation 2006,* Clause 31 **'Contents of major hazard management plan: underground transport management plan'** states:

"For the purposes of section 36 of the Act, a major hazard management plan in relation to a major hazard comprising hazards arising from the transport of people and materials, in particular from transport that is operated in the underground parts of the coal operation and locomotives that are operated on the surface part of a coal operation where the surface rail system operates jointly with the underground system, must make provision for the following matters:"

What are these matters?

Question 2 (20 marks)

The Coal Mine Health and Safety Act 2002 No 129, s 73 **Duties of contractors regarding safe work method statement', outlines contractors' requirements**.

What are these requirements?

Question 3 (20 marks)

Coal Mine Health & Safety Regulation 2006, Clause 81, details the **Installation and Operation of Belt Conveyors** at an underground coal operation.

List the requirements of this clause.

Question 4 (20 marks)

What are the requirements of Clause 49 - **When consultation is required** - *Work Health and Safety Act 2011?*

Question 5 (20 marks)

Clause 13*, Coal Mines Health & Safety Regulations, 2006* refers to **'Additional Components of Health & Safety Management System'.**

Detail these requirements in relation to an Underground Mine.

END OF QUESTIONS

END OF PAPER

(UB2)

NSW Coal Competence Board

EXAMINATION FOR CERTIFICATE OF COMPETENCE AS

UNDER MANAGER

(Coal Mine Health and Safety Act 2002)

NORTHERN REGION
SOUTHERN REGION
WESTERN REGION

Friday 20 September 2013

10.30 am to 12.30 pm

MINE VENTILATION

INSTRUCTION TO CANDIDATES

All questions are to be attempted.

Question 1 and 2 are of equal value - **100 marks each**.

10 minutes reading time is allowed prior to the start of the examination.

Please write your candidate number on your plan

Question 1 (Worth a total of 100 marks)

Oscar Colliery workings are shown on the attached plan.

The colliery works the “Jacob West” seam, which has a medium propensity to spontaneous combustion, is 4.2 metres thick and is overlaid by 6 metres of shale and mudstone.

The target working section is the lower 3.6 metres of the “Jacob West” seam.

The immediate strata below the “Jacob West” seam, is a 1.42 metre thick reasonably competent bed of shale.

The workings are accessed via three decline drifts. There is also one concrete lined 5.5 metre diameter upcast ventilation shaft 80 metres long.

The “Jacob West” seam is moderately gassy with a moderate permeability. Total in situ-seam gas content is typically 5 m^3/t, with a CO_2:CH_4 ratio of 20:80. Approximately 70% of the in situ gas in the cut coal is liberated during the production process.

The “Jacob West” seam coal has a specific gravity of 1.48 t/m^3.

Typical roof support is 6 x 2.1 metre bolts and a 1 metre x 4.8 metre mesh module per metre. Ribs are friable and prone to failure in the upper third of the rib, requiring support with mesh and 2 x 1.2 metre point anchor bolts every metre.

The mine produces thermal coal from three Continuous Miners in development units seven days per week and a longwall panel (LW22) five days per week.

The mine produces approximately 3.5 million tonnes per year.

One development unit is advancing the main headings to the South East (District 500); two Continuous Miners are used to develop a gate road for a new Longwall panel LW23.

On the accompanying plan:

a) Show the location of all the production faces, together with an estimate of their daily production levels. (15 Marks)

b) Ventilate the plan using the code of symbols specified in the relevant Australian Standards, Mine Plans – Preparation and Symbols. (30 Marks)

c) Document the air quantities you would expect to be entering each production panel measured at the commencement of the hazardous zone. Indicate why these quantities have been chosen. (15 Marks)

d) Calculate the general body methane and carbon dioxide content in the LW22 panel return whilst the LW is producing coal (clearly state assumptions you are relying upon in these calculations and why you have chosen these assumptions). (20 Marks)

e) Calculate the main ventilation fan power requirements to ventilate this mine. (20 Marks)

END OF QUESTION 1

Question 2 (Worth a total of 100 marks)

a) From the data supplied in Question 1 and in relation to the mine layout as per the attached plan: Identify and list the relevant hazards associated with the ventilation arrangements and those issues which must be addressed by, the ventilation management system. Your answer should include ventilation control measures and any other identified major hazard management requirements associated with the ventilation. (70 marks)

b) Specifically what issues need to be addressed regarding the 700 and 800 District panels and describe an efficient means of dealing with those issues? (10 marks)

c) Graham's Ratio was derived as a measure of the intensity of the oxidization of coal. Using the following data from your gas monitoring determine the GR of this sample. (20 Marks)

Oxygen	- 20.0 %
Nitrogen	- 78.90 %
Carbon monoxide	- 91 ppm
Methane	- 1.2%

i. What does this answer tell you about what is happening?

ii. What are the generally accepted GR levels and what does each level indicate?

END OF QUESTION 2

END OF PAPER

(UB3)

NSW Coal Competence Board

EXAMINATION FOR CERTIFICATE OF COMPETENCE AS

UNDER MANAGER

(Coal Mine Health & Safety Act 2002)

NORTHERN REGION
SOUTHERN REGION
WESTERN REGION

Friday 20 September 2013

1.30 pm to 4.30 pm

COAL MINING PRACTICE

INSTRUCTION TO CANDIDATES

Only five (5) of the eight (8) questions are to be attempted

All questions are of equal value - **20 marks each**

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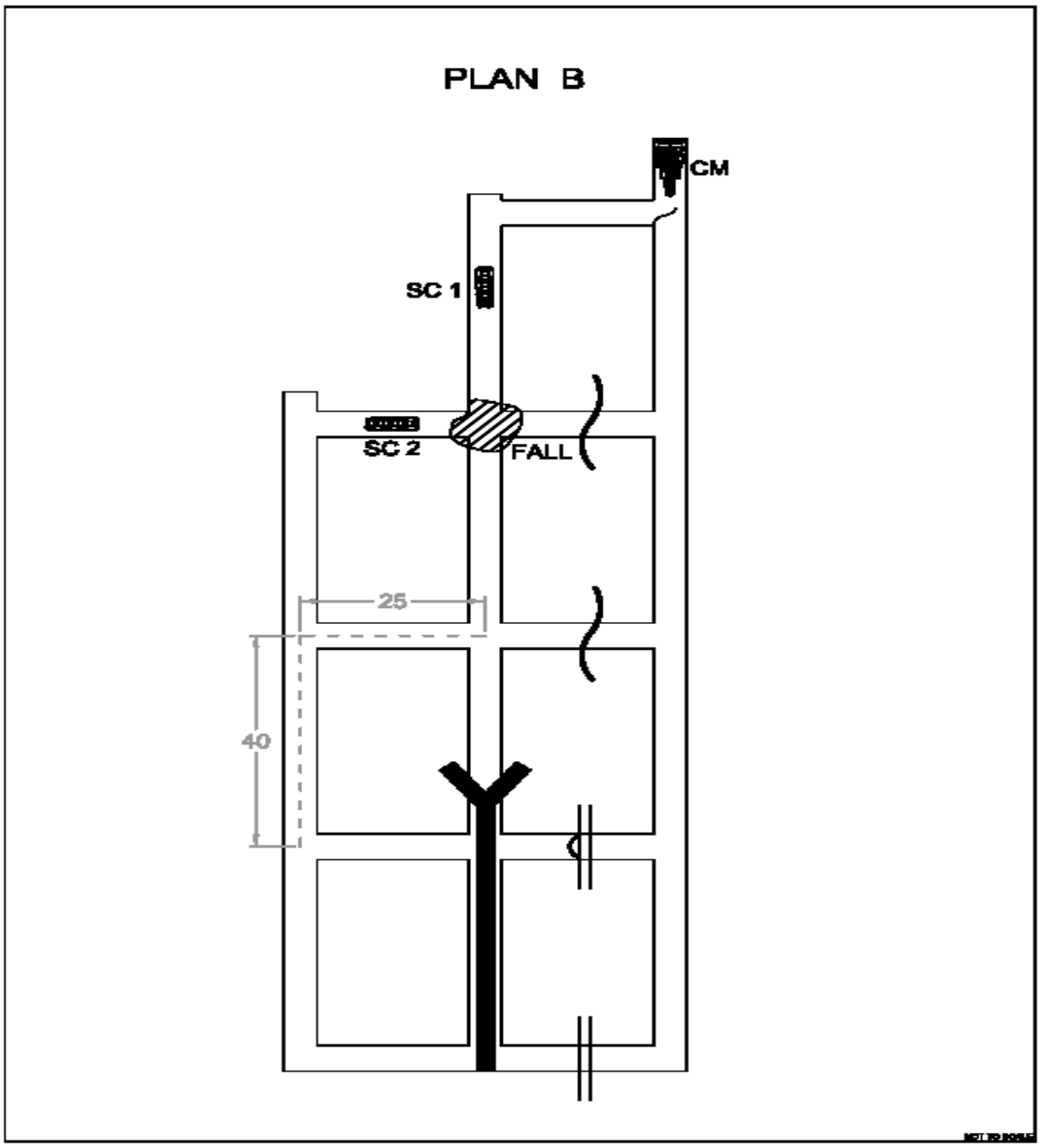
10 minutes reading time is allowed prior to the start of the examination.

Question 1 (20 marks)

You are the Production Manager at a large LW operation. You receive a phone call from the Deputy in a 3 Hdg Development Panel and he tells you he has just had a large roof fall in the Panel. This is shown on Plan B. What are your actions?



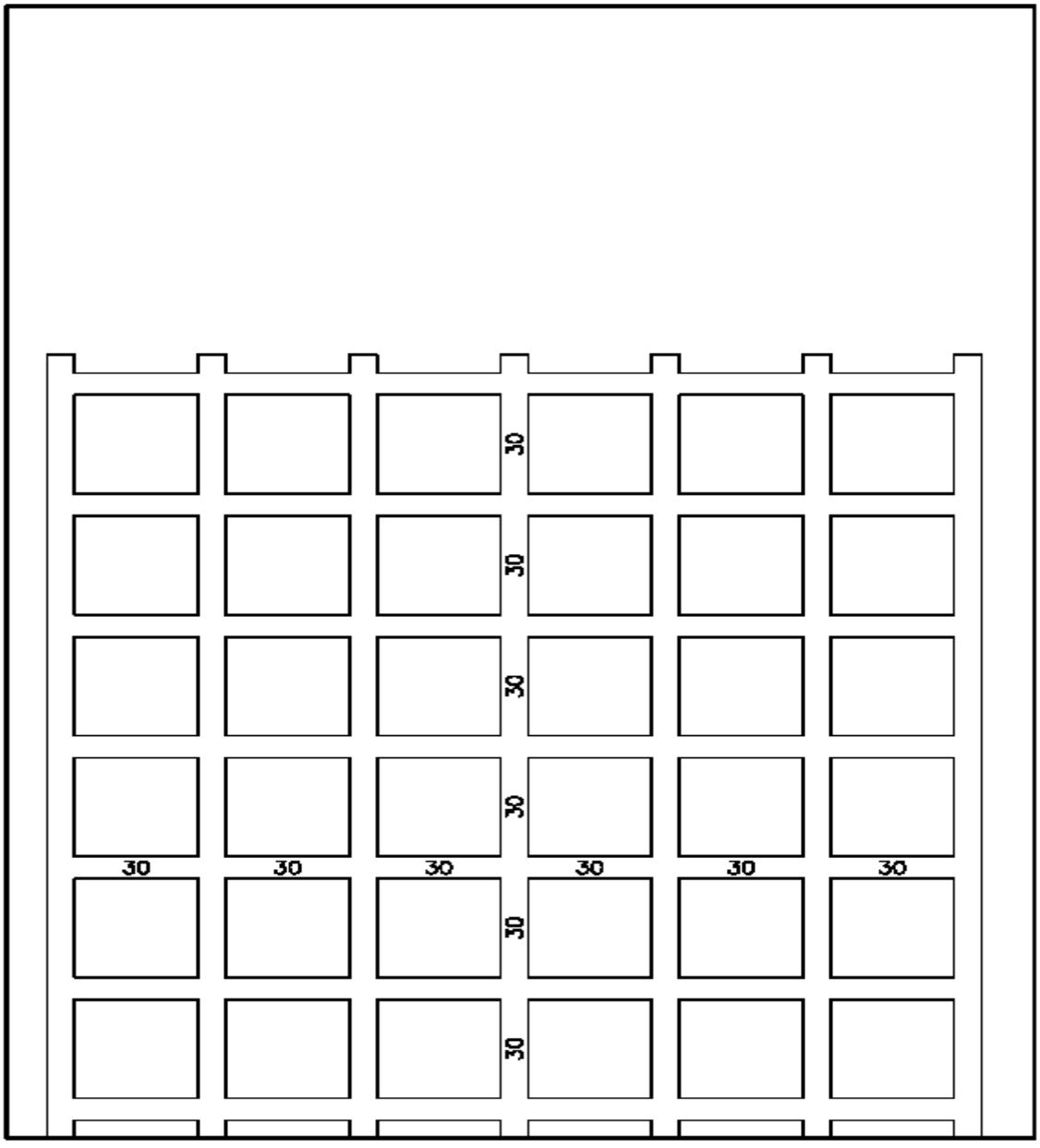
Questions continue on next page

Question 2 (20 marks)

You are the Production Manager at a Continuous Miner operation. The Mine Manager has asked you to develop a Pillar Extraction system for the 7 Hdg Development shown below.

a) Show boot and location, ventilation devices and load centre location on the plan.

b) Show the extraction sequence for the first row of pillars on the plan.



c) Draw Stook 'X' and show its dimensions.

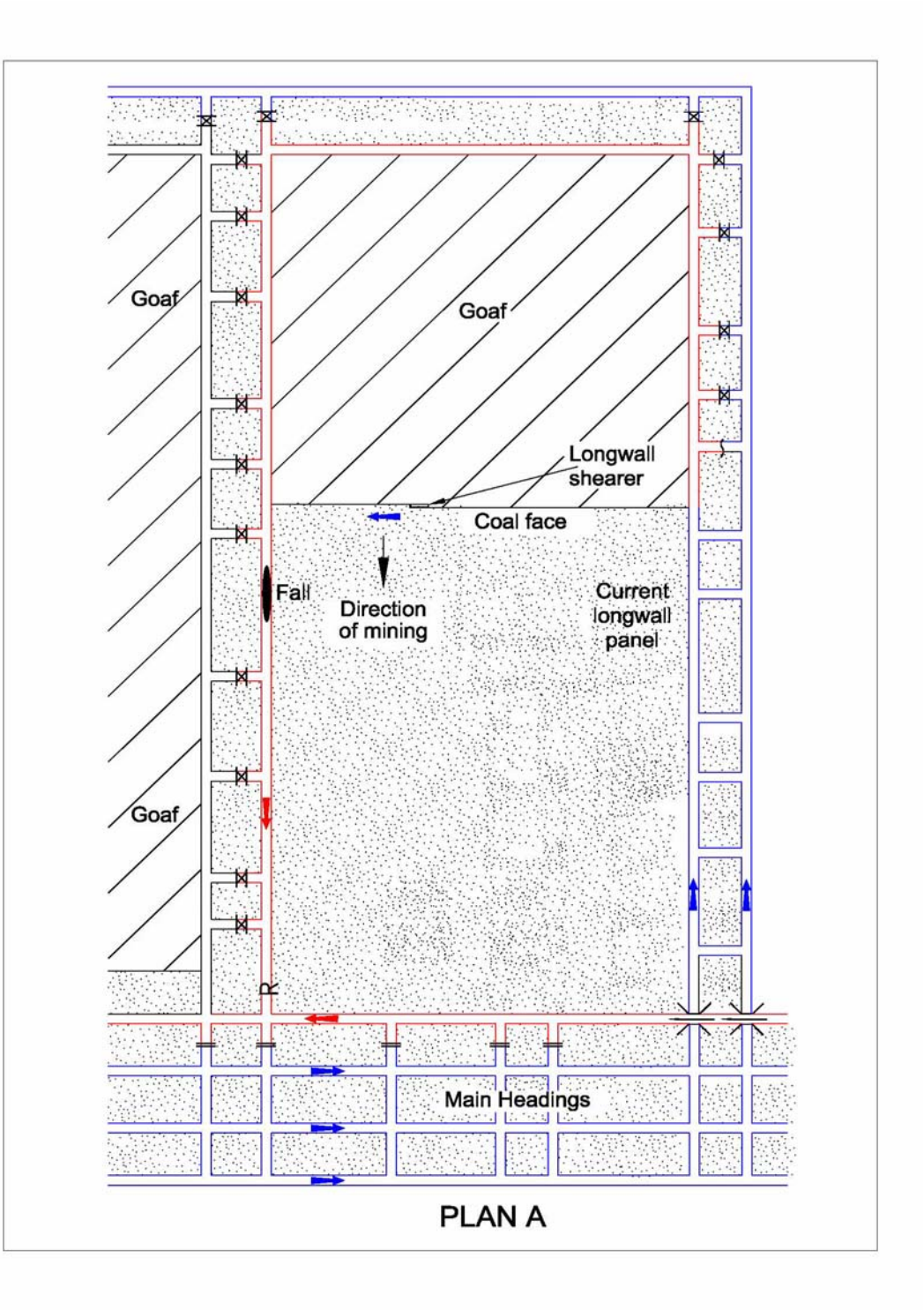
d) Describe how Stook 'X' is designed and what it is designed for.

e) List the main hazards associated with Pillar Extraction operations.

f) List the items that you would expect an Under Manager to check during a Panel Audit.

Question 3 (20 marks)

You are a LW Superintendent at a large operation. There has been a fall in the Tail gate as shown in the plan below (Plan A). The roof is laminated shales and the fall has extended 50 along the roadway. Approximately 3 cubic metres/sec of air is passing over the fall.



a) What are the issues you see with this situation, and what are you immediate actions? (10 marks)

b) Develop a strategy in accordance with the Statutory Framework and good mining practice to minimise disruption to LW production? (10 marks)

Question 4 (20 marks)

You are the Under Manager at a mine carrying out longwall extraction. The current longwall is just passing the starting point of the previous longwall. Extra support has been placed in the tailgate in the form of tin cans to support the roadway.

You are informed that the tailgate motors are becoming bound by the supports. An inspection of the tailgate indicates that the shearer has progressively been cutting into the roof and leaving coal on the floor. The situation is such that over 600 mm of roof has now been cut into at the tailgate.

After advice from the Manager, it is decided to shoot the floor using P1 explosives. This task has not been undertaken previously at this mine.

a) Describe the process you would take to get this job done. (10 marks)

b) Describe the hazards that need to be considered and the controls you use to reduce these hazards to an acceptable level. (10 marks)

Question 5 (20 marks)

You are the Under Manager on afternoon shift and senior person on site when you receive a call from a Deputy that a frictional ignition has occurred at the face. There has been a gas explosion and the miner driver and shuttle car driver have been burnt. The crew was driving up to a known fault which had been mined six times previously without incident. The mine is considered to be non gassy.

a) Outline the course of action you would take in response to this emergency. (5 marks)

b) Who would you report this incident to? (5 marks)

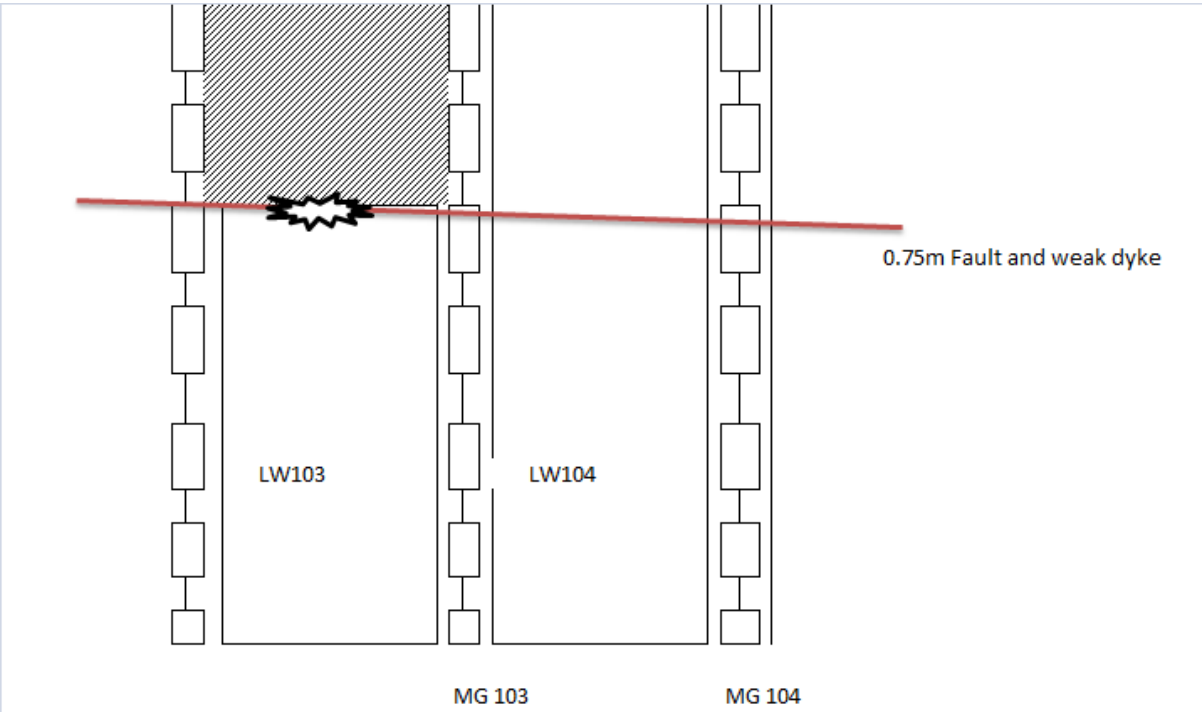
c) List all the hazards you will have to deal with as a result of this incident. (5 marks)

d) What control measures would you recommend to prevent this incident? (5 marks)

Question 6 (20 marks).

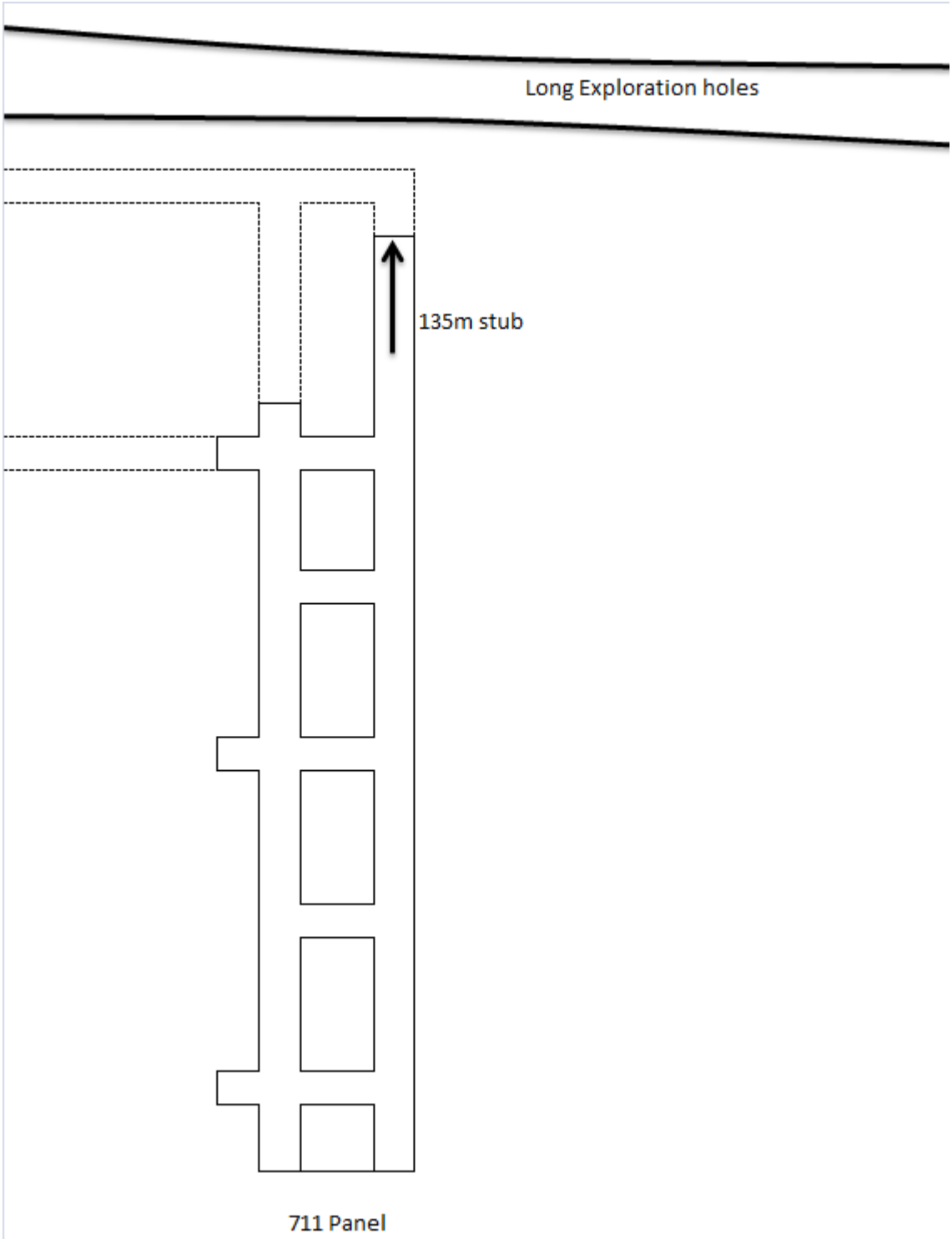
Following a large roof fall on the longwall face in LW103 that required significant PUR and Cavity filling, the Manager of Mining Engineering has asked you to develop a plan for minimising the risk of a similar occurrence in the upcoming LW104

Your answer should include references to Strata Management, Management Controls, Operator Practices.



Question 7 (Total 20 marks)

The 711 development panel is completing the last sequence before starting the new 711 longwall face installation road. Ahead of the unit is two long 2km inseam exploration holes into a high gas area - both of which have become blocked and pressurised. No mining is planned through these holes.



Question 7 (continued)

a) As the Under Manager, what controls would you ensure are in place during the mining of this sequence with regard to the hazard of the exploration holes? (5 marks)

During the shift, you receive notification that one of the exploration holes has been unexpectedly intersected and is rapidly gassing out the panel with gas at the DCB up to 1% CH_4.

b) What controls have failed to allow this to occur? (5 marks)

c) How would you safely recover this incident? (10 marks)

Question 8 (Total 20 marks)

You are an Under Manager at a mine that has a gateroad being driven by Contractors. As the Under Manager, you are responsible for the contractor activities on your shift.

a) How do you ***practically*** ensure that the Contractor is meeting their obligations with regard to Clause 42 - **Duties of Operator regarding Contractors** - *Coal Mines Health and Safety Act 2002?* (10 marks)

An incident occurs on your shift where an unplanned movement occurs on the Continuous Miner used by the Contractors. The Manager of Mining Engineering directs you to complete an investigation into the incident.

b) How would you complete this investigation, with particular focus on the legislative requirements for Contractors? (10 marks).

END OF QUESTIONS

END OF PAPER