

Vulcan Mine Ignition Exercise

Problem Booklet

Instructions

Read the problem situation described on the next page. Study the map until you understand the location of the miners and equipment in the problem. Next, answer each of the 11 questions. Do them one at a time. Don't jump ahead, but you may look back to earlier questions and answers. For some of the questions, choose only one answer unless you are told to "Try again!". Other questions ask you to select as many answers as you think are correct. Follow the instructions for each question.

After you have selected a choice to a question, look up its number on the answer sheet. Select your answer to each question by rubbing the developing pen between the brackets on the answer sheet. A hidden message will appear and tell you if you are right. When you have finished, you will learn how to score your performance.

Vulcan Mine Ignition Exercise

Background

The wet mine is in 52 inch coal and has a good sandstone top.

It is moderately gassy, but the ventilation is good.

The section was firebossed two hours before the shift.

The face is 4700 feet from the portal by mantrip.

You are the on-side shuttle car operator just returning from lunch.

The utility man has been operating your car while you were eating.

The section is shorthanded with only seven miners.

Problem

After lunch, you tram your car inby toward the continuous miner in the #4 entry. As you get to the last crosscut, you see the line curtain is down. You stop in the middle of the crosscut. You feel intake air moving from your right to the left. (Study Figure 1 until you know your location and the section layout.)

Just as you stop, Bull Dog, the miner operator, starts the ripper and begins a cut on the left side of the face. The miner helper, Skeeter, and the faceboss are standing just to the right of Bull Dog. (See Figure 2.)

Before you can yell to them that the curtain is down, there is a bright orange ball of fire and a "whoosh". The fireball covers all three men in the entry and all of the continuous miner except for the tail boom. You feel hot air on your face. The fireball disappears in a few seconds. The air in the entry is white and smoky but you can see the three men. Bull Dog has gotten off of the miner, grabbed the wash-down hose, and sprayed Skeeter and the faceboss putting out their clothing fires. The faceboss is staggering around near the tail boom. Skeeter is down on his back with his head against the rib. He is not responding to Bull Dog's yelling at him to get up. The line curtain is down as far as you can see into the entry. Now turn to the first question and begin.

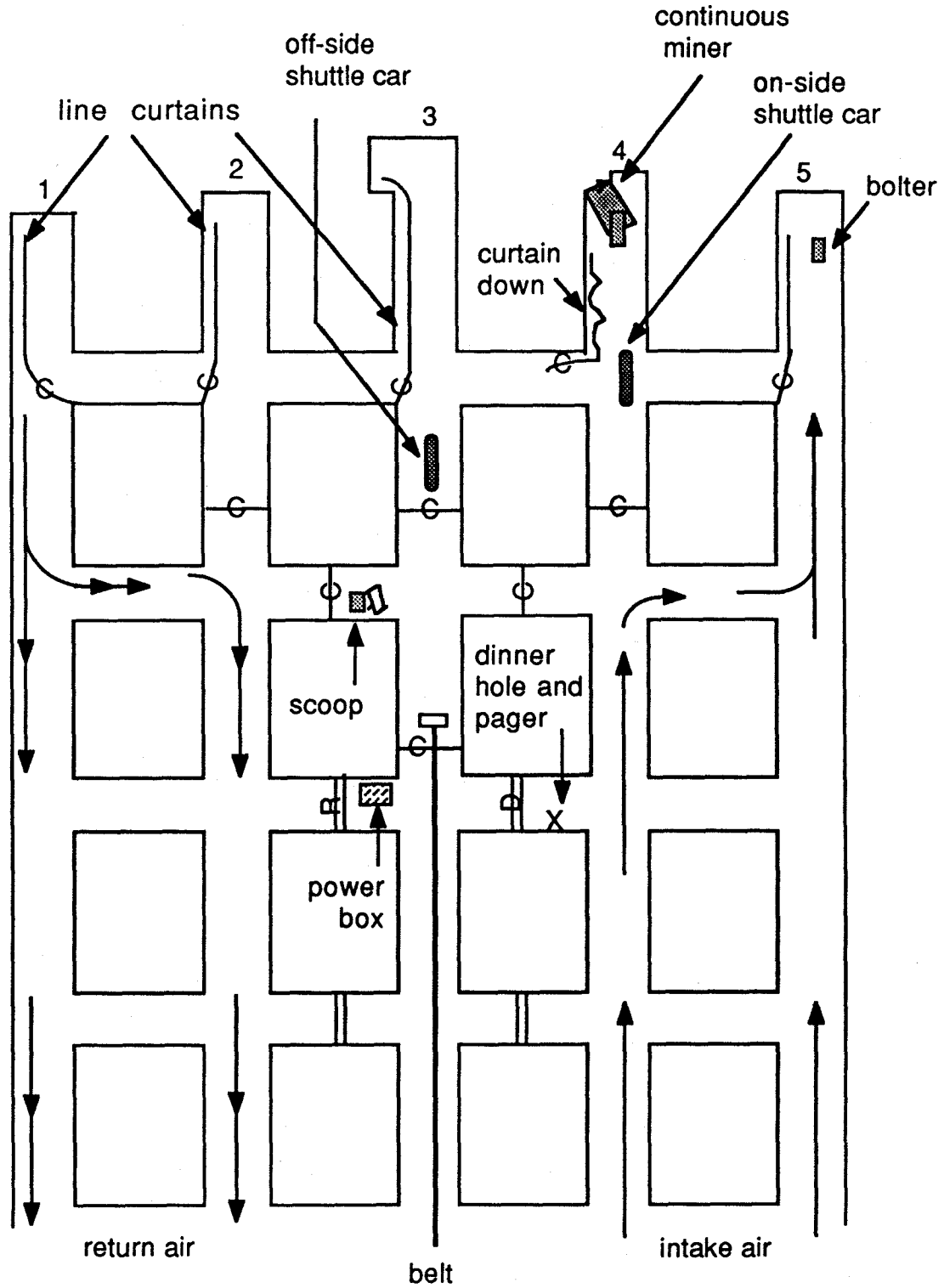


Figure 1: Map showing section ventilation and conditions

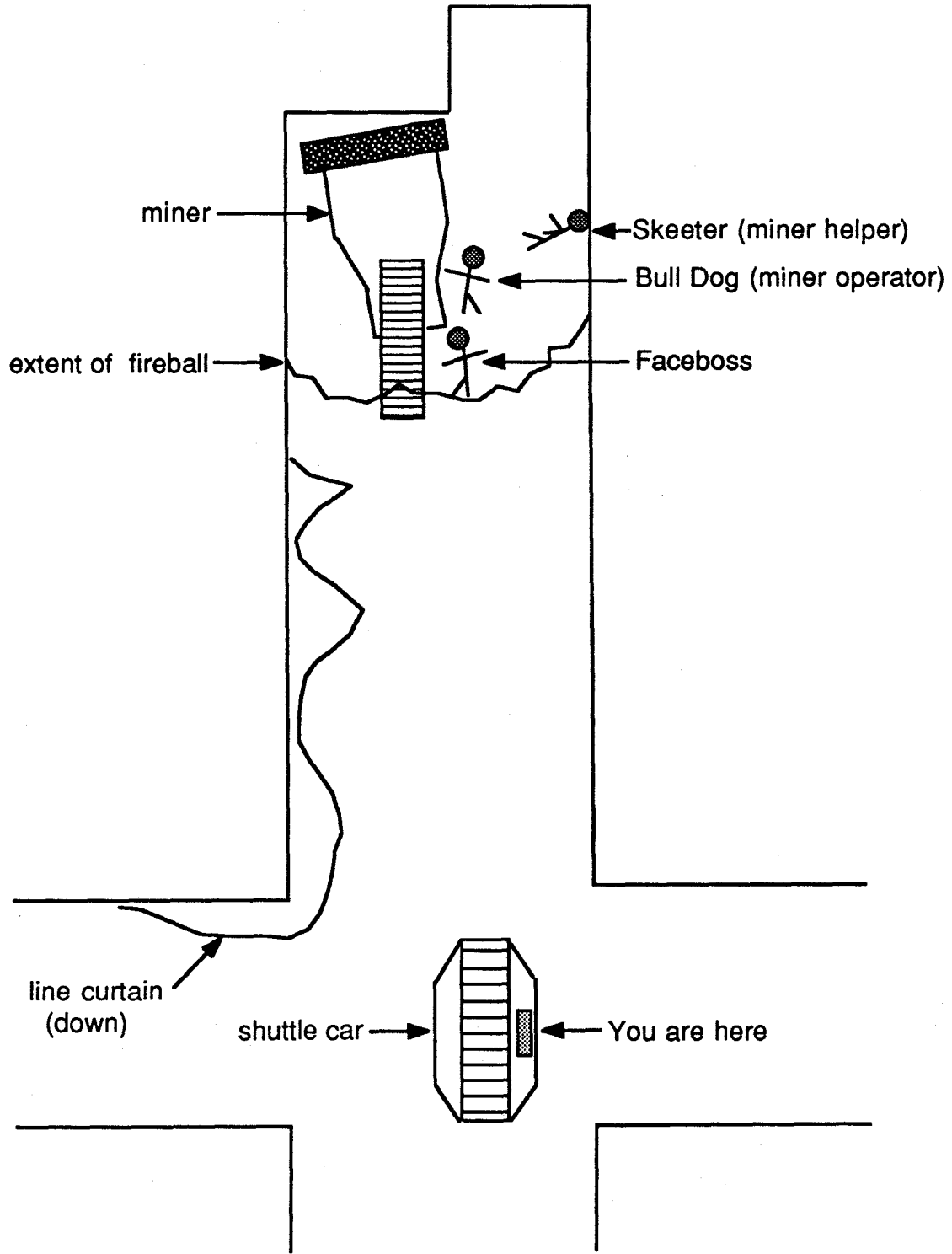


Figure 2: Details of ignition in number 4 entry

Question A

Just as you are getting off of the shuttle car, the roof bolter operator (who was in #5 entry) comes running. The other shuttle car operator and the utility man get there at about the same time. Through the white smoke in the entry you can see the faceboss leaning against the tail boom of the miner. Bull Dog is trying to get Skeeter up but Skeeter is limp and apparently unconscious. There appears to be no fire in the entry but the white smoke prevents you from seeing the front half of the miner and the face.

What things should you and your three buddies do now to help Bull Dog, Skeeter, and the faceboss? (Select as MANY as you think are correct.)

1. All four of you go in, have Bull Dog and the faceboss sit down and examine them for burns and other injuries.
2. Two of you go in and examine Skeeter for possible head and spinal injuries and immobilize him if necessary.
3. Send one miner in all the way to the face to check and make sure there is no fire.
4. Send the utility man to knock the power to the continuous miner and the shuttle car, and to bring back three SCSRs from the dinner hole.
5. Have three of your buddies dash into the entry with you. Drag Skeeter out and get Bull Dog and the faceboss out. Be quick.
6. Immediately yell to the faceboss and Bull Dog to get out of the entry.
7. Put the line curtain up across the crosscut and then extend it into the entry along the right rib, advancing with good air until you get to Skeeter.
8. You and two of your buddies put on your filter self-rescuers (FSRs) and go in and bring out Skeeter (and the others if necessary).
9. Send one of your buddies to get three SCSRs. Have two of your buddies stay outside the entry in the crosscut. Quickly put on your filter self-rescuer. Go in and drag Skeeter out fast using a clothing drag.

When you have made your selection(s), develop the box on the answer sheet under answer 9.

Question B

Bull Dog and the faceboss come out of the #4 entry when you yell to them. You drag Skeeter out without being overcome. Where should you go and why? (See Figure 1.) (Choose only ONE unless you are told to "Try Again!")

10. Turn left at the crosscut and go a few feet toward the #5 entry.
11. Turn right at the crosscut and go a few feet toward #3 entry.
12. Drag Skeeter and walk Bull Dog and the faceboss down to the dinner hole.
13. Drag Skeeter and walk Bull Dog and the faceboss into the #3 entry up near the face and barricade with line curtain.
14. Drag Skeeter and walk Bull Dog and the faceboss down to the tailpiece.

Question C

You and your two buddies have Skeeter, Bull Dog, and the faceboss in the first crosscut between the #4 and #5 entries. The intake air is moving and fresh. The utility man returns with a first aid kit and three SCSRs. He says he knocked the power to the miner, shuttle cars, and the bolter. You send him back to the dinner hole to call outside and report what has happened.

You decide to examine Skeeter first because he looks unconscious. He is lying on his back. He has blister burns on his face, neck, upper front chest, and right hand and forearm. What is the first thing you should do for Skeeter? (Choose only ONE unless you are told to "Try Again!")

15. Ask him if he can hear you.
16. Check his pulse.
17. Check his pupils.
18. Feel the temperature of his unburned hand.
19. Remove the shreds of clothing sticking to his burned skin.

Question D

You see Skeeter's chest moving, but no air is coming out of his airway. What is the first thing you should do for him now? (Choose only ONE unless you are told to "Try Again!")

20. Apply sterile dressings to his burns.
21. Roll Skeeter on his side and strike him on the back four times.
22. Do a secondary survey to check for other injuries.
23. Perform a "finger sweep" of his mouth.
24. Gently lift on the back of his neck with one hand and tilt his head backward.
25. Fold a blanket and prop his head up tilting it forward even more.
26. Give Skeeter a breath with mouth to mouth.

Question E

Skeeter is breathing normally. His unburned hand feels warm. His pulse is about 100 and strong. You tell one of your buddies to cover Skeeter's burns with sterile dressings and to tie these gently in place with triangular bandages.

Next you attend to the faceboss. He is sitting on the mine floor leaning against the rib. He is dazed and unresponsive. He repeatedly asks for water. What things would you do for the faceboss at this time? (Select as MANY as you think are correct.)

27. Check the appearance of his eyes.
28. Ask if he can move his fingers and toes.
29. Examine him for location and appearance of burns and other injuries.
30. Check pulse rate and character.
31. Feel his unburned hand.
32. Check his type of breathing.

When you have made your selection(s) do the next question.

Question F

You have now examined the faceboss for injuries and find only the burns. Keeping in mind the information you just gathered (see Question E), what would you do first for the faceboss at this time? (Choose only ONE unless directed to "Try again!")

33. Apply moist sterile dressings to his burns.
34. Lay him down on his back on a blanket in a dry level spot. Raise his legs about 12 inches. Cover him with another blanket.
35. Give him small sips of water as he requests.
36. Lay him down in a dry flat place, then prop up his head and shoulders with a folded blanket.
37. Lay him down on his back. Pour cold water over his burns.

Question G

After instructing one of your buddies to apply dry sterile dressings to the faceboss' burns, you attend to Bull Dog's injuries. The back of his left hand and forearm is blistered including the skin between the fingers. His hair is singed, but his face and neck are O. K. You find no other injuries. His pulse is a little fast, but strong and steady. He is alert and has been helping you and the others care for the faceboss and Skeeter. What would you do for Bull Dog at this time? (Select as MANY as you think are correct.)

- 38. Smear burn ointment over the injured area and wrap it with sterile dressings.
- 39. Gently apply sterile dressings moistened with clean water to the burned area.
- 40. Separate each burned finger with a sterile moistened gauze pad before bandaging the hand and forearm.
- 41. Pull away clothing fragments that are sticking to the burn.
- 42. Elevate the burned hand after it is bandaged.

When you have made your selection(s) do the next question.

Question H

The utility man comes back with another first aid kit. You now have two stretchers. Skeeter is conscious and complaining of pain. His pulse is about 80 and strong. His burns have been properly bandaged with dry sterile dressings held in place by cravats. He is lying on his side on a stretcher with the burned side up. He is covered with a blanket.

The faceboss is almost unconscious. His pulse is weak and fast. His burns have been properly dressed. He is lying on his back on the floor on a folded blanket in a dry spot. His legs are propped up about a foot. He is covered with a blanket.

Bull Dog is alert and helping you take care of the other victims. His hand is properly bandaged. At this point select the most important thing(s) to do. (Select as MANY as you think are correct.)

43. Call the surface and tell them you have burned miners, two severely, one in shock, and the other one with a burned hand.
44. Get the faceboss on a stretcher. Keep the foot end elevated about a foot. Keep him warm and get him to the surface as fast as possible.
45. Have the utility man and another person go into the #4 entry and hang the line curtain all the way to the face.

When you have made your selection(s) do the next question.

Question I

What should you and the other three miners on the section do before you take the mantrip to the portal to get the injured people out? (Choose only ONE unless directed to "Try again!")

46. Call outside again to report the condition on the section, and tell the surface people you are bringing out the injured on the mantrip.
47. Before you leave, send the utility man and the roof bolter back to hang line curtain and restore ventilation to the #4 entry.
48. Energize the #1 shuttle car and drive it into and across the mouth of the #4 entry to keep other persons out of the area.
49. Energize the roof bolter and send someone into the #5 entry to tram it into the first cross cut.

Question J

All of the following statements about the face ignition in the #4 entry are true except one. Find the FALSE statement. (Choose only ONE unless directed to "Try again!")

50. The methane detector on the continuous miner was not working properly.
51. The line curtain to the #4 entry was down for awhile.
52. The ignition that burned the three miners was mainly a dust explosion.
53. When proper ventilation is maintained, face ignitions of methane are usually confined to a smaller area such as only the cutter head of the miner.
54. A spark from a cutter bit on the sandstone top may have set off the ignition.

Question K

List all the violations of state and federal laws and your company rules that you can find in this problem.

Finding your score

1. Count the total number of responses you colored in that were marked "correct". Write this number in the first blank on the answer sheet.
2. Count the total number of "incorrect" responses you colored in. Subtract this number from 35. Write the difference in the second blank on the answer sheet.
3. Add the numbers on the first and second blanks. This is your score.

The best possible score of 54 results from selecting all the correct answers and no wrong answers. The worst possible score of zero results from selecting all the wrong answers and no correct answers.