

Continuous Miner Fire Exercise

Problem Booklet

Instructions

Read the problem situation described on the next page. Study the diagram until you understand the location of the workers and equipment in the problem. Next, answer each of the 12 questions. Do them one at a time. Don't jump ahead, but you may look back to earlier questions and answers. Some questions ask you to select all of the answers that you think are correct. Other questions ask you to select only one answer unless you are told to "Try again!" Follow the directions for each question.

After you have selected a choice to a question, look up its number on the answer sheet. Select your answer(s) to each question by rubbing the special 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.

Continuous Miner Fire Exercise

Background

You are acting section foreman during the absence of the regular section foreman.

You are at the face of the #5 entry on the 001 section making pre-shift checks for the oncoming second shift.

Miners from the first shift are working on the two other active sections in this mine.

Section 001 is 3,500 feet from the portal.

This mine has an average seam height of 36 inches.

The mine is dry, dusty, and not well rock dusted.

The section EMT, Claude Kildare, is the scoop operator. At the moment you think he is at the supply hole unloading bolts and plates.

You are well trained in basic first aid procedures.

A water line, with fire hose outlets and fire hose, extends the full length of the belt.

A one inch flexible water line runs from the dumping point to the continuous miner.

Including yourself, there are 12 miners working on this section today.

Rubber tired battery operated scoops are used to transport supplies and miners to the section.

Problem

As you complete your pre-shift checks of the face area of the #5 entry, you hear someone yelling "Fire!" You crawl out from the face of #5 entry into the last open crosscut and turn right toward the #3 entry. You see the continuous miner burning in the crosscut between #2 and #3 entries. Study Figure 1 on the next page. Then turn to page 5 and do the first question.

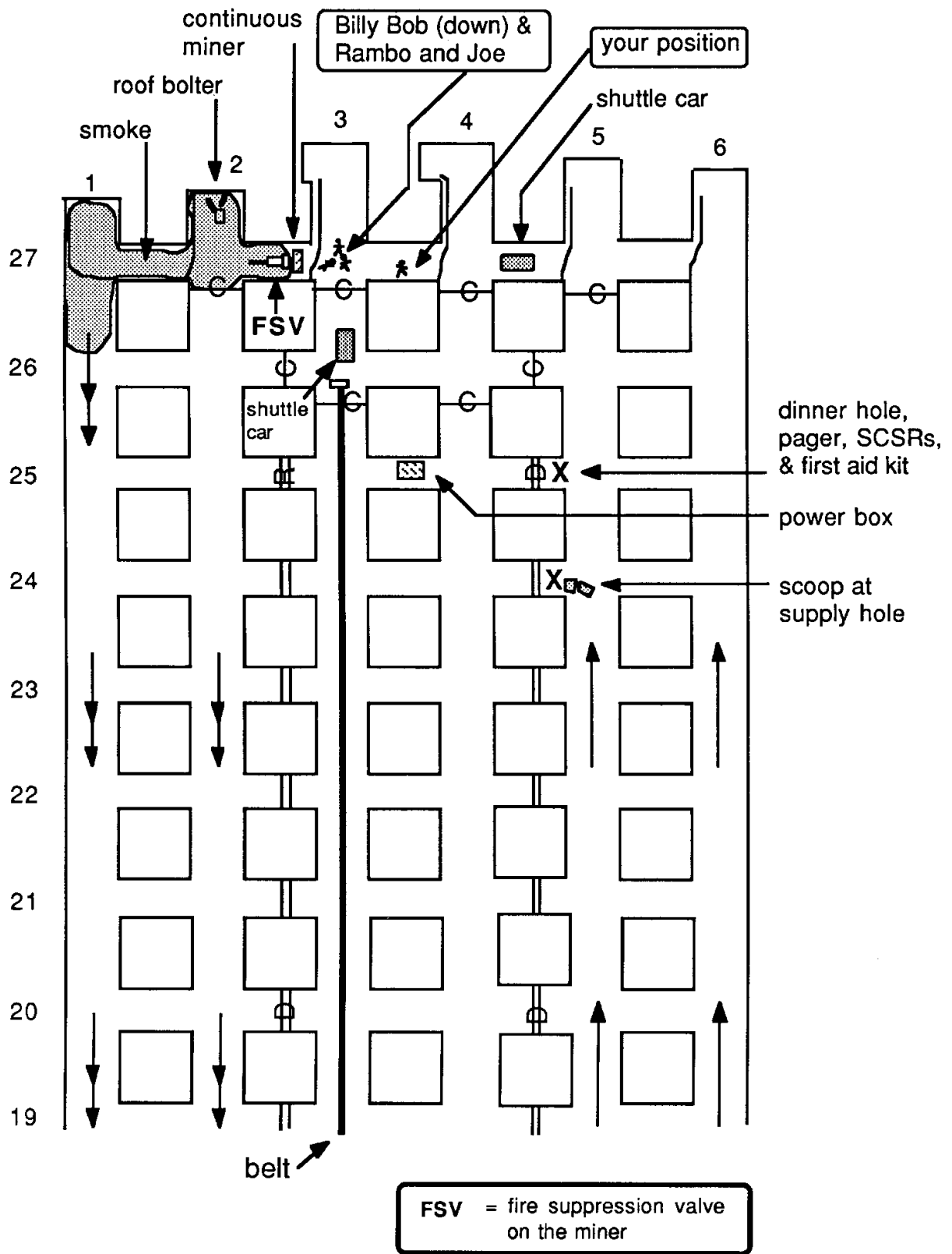


Figure 1: Location of miners accounted for and last known location of the two missing miners

Question A

You find the continuous miner engulfed in dense black smoke and large orange flames. The fire suppression system on the mining machine is not working. The fire is spreading rapidly, fed by oil and loose coal dust that have accumulated on the machine. Billy Bob, the miner operator is lying on his right side on the mine bottom about 15 feet in front of the miner on the fresh air side of the fire. Rambo, a buggy operator, and Joe are bent over him. Rambo says, "Billy Bob is hurt bad!"

What should you do now? (Select as MANY as you think are correct.)

1. Before you do anything else, go to Billy Bob and begin first aid.
2. Send Joe to the power box to de-energize the continuous miner and to bring back a couple of fire extinguishers.
3. Tell Rambo and Joe to put on their filter self rescuers and you do the same.
4. Put on your filter self-rescuer and then manually activate the fire suppression valve on the miner.
5. Look at the mine roof over Billy Bob and the miner to see if it is O.K.
6. Send Rambo across the section in fresh air to get Claude, the EMT, and to warn other miners and have them assemble at the dinner hole.
7. Put Billy Bob on a piece of brattice curtain and have Rambo and Joe drag him to the dinner hole immediately so Claude can begin first aid treatment.

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

Question B

Joe has gone to knock the power to the miner, and Rambo is warning other miners and getting Claude to help you take care of Billy Bob. You start checking Billy Bob's injuries. The left side of his face is covered with blisters. He is dazed and doesn't recognize you. He is moaning softly. The skin on both his hands and fingers is charred. His coveralls are singed.

What would you do now? (Select as MANY as you think are correct.)

8. Check his airway and breathing while taking his pulse on the unburned side of his neck.
9. Ask him what happened and to tell you where he is hurt.
10. Begin treating the burns on his face and hands by wrapping them gently with the clean inside part of your shirt or jacket.
11. Shine your cap lamp into his eyes, one at a time, and look at his pupils.
12. Feel his skull and spine with your finger tips.
13. Quickly check him for other injuries.
14. Ask him to wiggle the toes of his boots.

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

Question C

Your survey of Billy Bob's injuries has taken about a minute. Based upon what you have found, what is wrong with him? (Select as MANY as you think are correct.)

- 15. First degree burns to the hands and face.
- 16. Second degree burns to the hands and fingers.
- 17. Third degree burns to the hands and fingers.
- 18. Second degree burns to the face.
- 19. Possible head or spinal injury.
- 20. Shock.
- 21. Heat exhaustion.
- 22. Possible injury to his airway and lungs from smoke inhalation.

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

Question D

Claude arrives on the scene with the first aid kit. You tell him what you have found. He begins to treat Billy Bob and confirms your assessment. You notice the roof over the miner is working and some small pieces of shale are failing in front of the miner, near Billy Bob, Claude, and you.

What should you do now? (Choose only ONE unless you are told to "Try Again!")

23. Go get a couple of roof jacks and set them around Billy Bob and Claude.
24. Help Claude stabilize Billy Bob so you can move him to a safer place as soon as possible.
25. Continue to watch the roof carefully. If it gets worse, tell Claude to help you move Billy Bob to a safer spot.
26. Immediately tell Claude to help you use a clothing drag to move Billy Bob to a safer place.
27. Help Claude carefully roll Billy Bob onto the stretcher. Then secure him to the stretcher, cover him with a blanket and take him to the dinner hole.

Question E

You and Claude move Billy Bob to #4 entry in the last open cross cut. Claude is taking care of Billy Bob. Rambo and Joe come back with two small fire extinguishers and say they told everybody they saw to meet at the dinner hole. The whole continuous miner is now nearly covered with smoke and flames.

What should you do now? (Select as MANY as you think are correct.)

- 28. Continue to help take care of Billy Bob.
- 29. Tell Rambo and Joe to go behind the miner, cut the water line, and attack the fire.
- 30. Tell Rambo and Joe to attack the fire from the fresh air side with the two fire extinguishers.
- 31. After Billy Bob has been placed on the stretcher and stabilized, tell Claude and Joe to move him to the dinner hole.
- 32. Send Rambo to the feeder in the belt entry to hook up a hoseline and bring it to the fire while staying in fresh air.
- 33. Go to the assembly point and make a head count.
- 34. Call the surface. Report the conditions on the section and ask for help.

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

Question F

Your head count has shown that the pinner man and his helper are missing. (See Figure 2 on the next page.) What should you do now? (Choose only ONE unless you are told to "Try Again!")

35. Put on your filter self-rescuer and travel up to the #2 entry to the face where they were last seen.
36. You and another miner put on your SCSRs. Then go through crosscut #26 and up to the face of entries # 1 and #2, and then out the returns to look for the two missing miners.
37. Call the outside man and tell him two miners are missing. Have him watch for the missing miners and immediately call your section if they arrive outside.
38. Forget about the missing miners. You have other things to take care of.

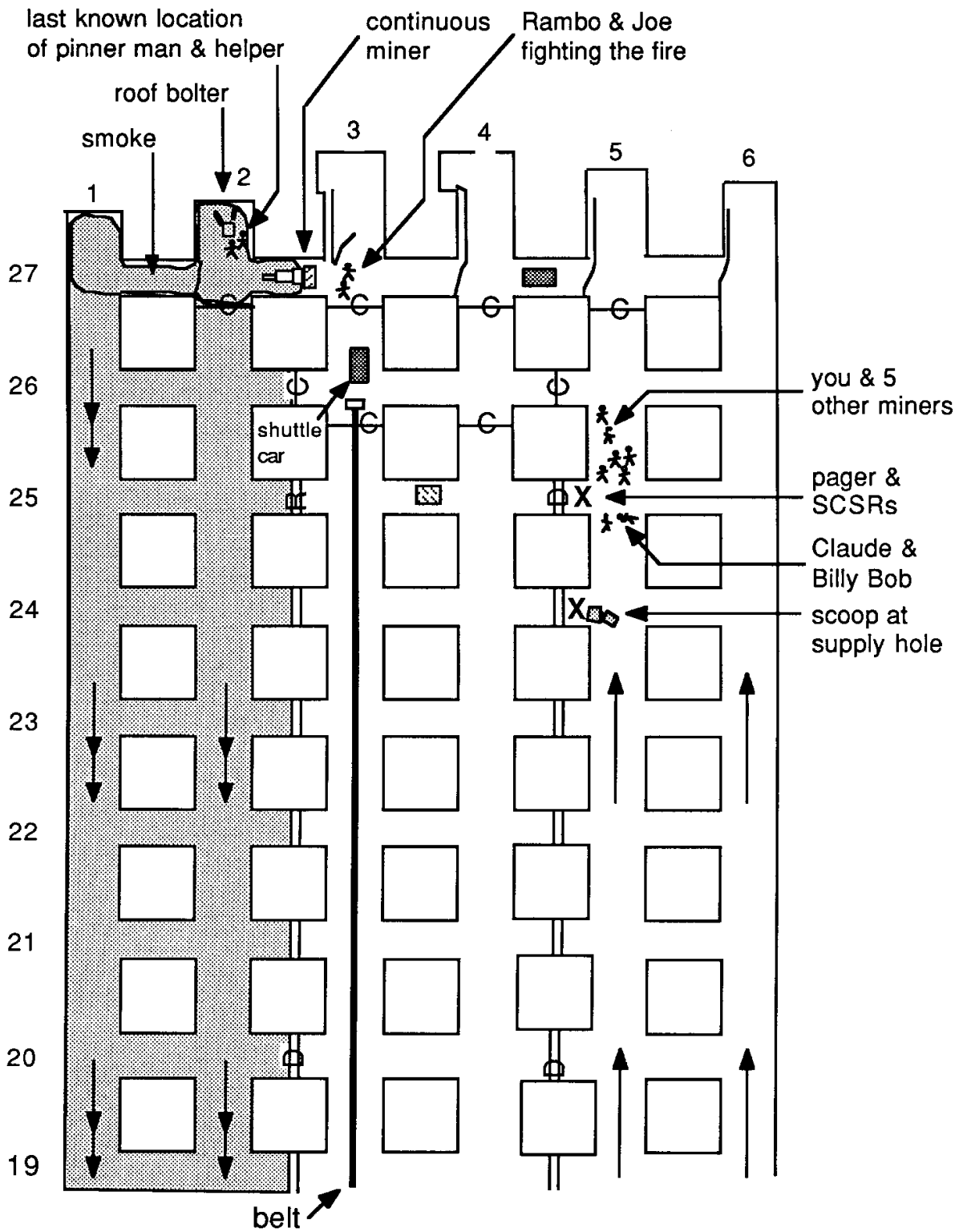


Figure 2: Location of miners accounted for and last known location of the two missing miners

Question G

Keeping in fresh air, you take three miners with you and return to the burning miner. At present this is how the situation stands. You have not accounted for the two missing workers. You find Rambo and Joe near the miner with a fire hose in place and almost ready to fight the fire. The power to the miner has been disconnected at the power center. Claude is taking care of Billy Bob at the dinner hole. All the other miners, except the two missing workers and the five with you, are at the dinner hole.

What should you do now? (Select as MANY as you think are correct.)

39. Assign fire fighting duties to the miners who are with you.
40. Send one miner to tell the others at the dinner hole to go outside immediately.
41. Send one miner to maintain constant communications with the outside man by staying at the mine phone in entry #5 at crosscut 25 at the dinner hole.
42. Tell the miner at the phone to call the outside man and tell him to cut off the fan to keep from feeding oxygen to the fire.
43. Take your instruments and go through a mandoor from the belt entry into the #2 entry. Then check the return air for oxygen deficiency and the presence of carbon monoxide and methane.

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

Question H

Rambo and Joe are fighting the fire with water from the fresh air side. But their efforts are not making much difference. The fire has spread to the ribs and mine floor. The roof is beginning to fall around the continuous miner. The fire has now burned for 30 minutes and is so hot you can't get closer than 20 feet from the machine. The miner monitoring the mine phone comes and tells you that the two missing miners went out the belt entry and are now outside.

What would you do at this point? (Select as MANY as you think are correct.)

44. Lead all of the miners on your section outside and evacuate the mine.
45. Call the outside man to make sure that state and federal regulatory agency officials have been notified about the fire.
46. Call outside to get extra miners to bring in timbers and crib blocks to be used to support the roof on the fresh air side of the fire.
47. Send a miner carrying an unopened SCSR to check the belt entry and to look for smoke leaking through the brattices from the returns and to tell you what he finds.
48. Send a miner to open the regulator and mandoor between the #3 belt entry and the #2 return air entry to short circuit air away from the fire.
49. Call outside for more equipment to fight the fire from the fresh air side.
50. Call the outside man and tell him to chew out the roof bolter operator and helper for going outside without telling somebody.

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

Question I

Ten minutes have passed. Extra hoseline and supplies are on the way. The fire is growing larger. You hear large roof falls in the smoke around the miner. The bad roof conditions around the miner and "rollback" of heavy black smoke are preventing the men from getting close enough to fight the fire from the fresh air side.

What should you do now? (Select as MANY as you think are correct.)

51. Have two miners using the fire hose put on their SCSRs and go around the pillar to the number #2 entry to attack the fire from behind the continuous miner.
52. Call out report that you are leaving. Then lead all of the miners out of the mine immediately.
53. Call out and have the mine fan shut off so the fire won't receive so much air and so you can have a better chance of fighting it.
54. Call out and have electrical power to the underground portions of the mine cut off.

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

Question J

You have ordered all the remaining miners on the section to leave the mine with you. What route should you take and how should you travel? (Choose only ONE unless you are told to "Try Again!")

55. Don't use the scoop because of the risk of explosion. Tell the other miners to follow you as you crawl out the # 5 entry.
56. Follow the usual route and procedures, e.g. load the four remaining miners into the scoop bucket and tram out the #5 entry.
57. Ask one miner to crawl out the belt entry with you so you can check on the smoke and fire as you leave the mine. Tell the other miners to go out the # 6 entry.
58. Tell all of the miners to leave with you and crawl out the belt entry because if the smoke gets bad you can follow the belt outside.

Question K

What can be said about the actions of the roof bolter operator and helper when they put on their filter self-rescuers and went out of the mine in the belt entry without telling anyone? (Select as MANY as you think are correct.)

- 59. Their action increased the risk for other miners.
- 60. Their action violated standard emergency procedures for mine fires.
- 61. They were foolish to put on their filter self-rescuers when SCSRs were available.
- 62. They were foolish to crawl 3,500 feet out the belt entry in 36 inch coal when there were other better options available.
- 63. They should have used the primary escapeway rather than the secondary escapeway.

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

Question L

What are the responsibilities of surface personnel during a serious mine fire? (Select as MANY as you think are correct.)

- 64. Notify state and federal regulatory agencies about the fire.
- 65. Alert ambulance personnel and ask them to be ready to assist.
- 66. Alert mine rescue teams.
- 67. Alert management to gather additional supplies and equipment needed for the fire fighting operation.
- 68. Look at the check-in and check-out board and make a list of all mine personnel who are underground, on the surface, or unaccounted for.
- 69. Immediately notify the families of missing miners.
- 70. Notify state police for crowd and traffic control.
- 71. Make preparations for informing and dealing with family members if miners are found to be missing.
- 72. Arrange for someone to guard the mine fan and mine power.
- 73. Make a list of the persons who are responsible for actions that caused the fire.

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

The fire at this mine was stopped by sealing the section. The entire mine was closed for one week and the section where the fire occurred was closed for 3 months. No one except Billy Bob was injured.

Billy Bob survived because of the good first aid he received. While waiting at the dinner hole to be transported outside, his breathing became more difficult because of swelling in his upper respiratory track. Claude, the EMT, saved Billy Bob's life by inserting an airway to maintain his breathing.

END OF PROBLEM

Scoring your performance

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 33. 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 73 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.