

## **Belt Fire Injury Exercise**

### **Problem Booklet**

## **Instructions**

Read the problem situation on the next page. Study the figure until you understand the location of the miners and equipment in the problem. Next, answer each of the 13 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 developing pen between the brackets on the answer sheet. You will find that broad, smooth strokes work better than grinding the pen into the paper. A hidden message will appear and tell you if you are right. When you have finished, you will learn how to score your performance.

## **Background**

You are the section foreman on the 16 South panel at Black Hole No. 3 Mine. In addition to being section foreman, you are also the only certified EMT on the crew.

It is 12:15 P.M. and you are at the face of #2 entry making your on-shift section check.

The 16 South panel is located off the 6 West Mains about 6,500 feet from the portal.

The average seam height in 16 South is 60 inches.

The mine is dry and 16 South is poorly rockdusted since the duster on the scoop is out of service.

The fire boss on the midnight shift reported excessive spillage along the 16 South panel belt for a distance of 300 feet outby the tailpiece.

The shift foreman instructed you to clean up the spillage and rockdust the area if the opportunity presented itself. Your crew is having a good day and they are mining their fifth cut.

A water line, with fire taps and 200 feet of 1 1/2 inch fire hose located at 300 feet intervals, extends the full length of the belt.

A total of 8 miners are working on the crew today.

Battery powered rail haulage vehicles are used to transport men and supplies to the section.

## **Problem**

After you complete your methane check at the face of #2 entry, you think you hear someone yelling "Fire!" You run down #2 entry and through the last open crosscut to entry #3. You see Louie, the section mechanic, running up #3 entry. Louie informs you that there is a fire along the belt, 2 crosscuts outby the tailpiece. He also tells you that he has found Ollie, one of your shuttle car operators, lying injured along the belt just outby the fire. Study Figure 1 on the next page and then turn to the following page and read the first question.

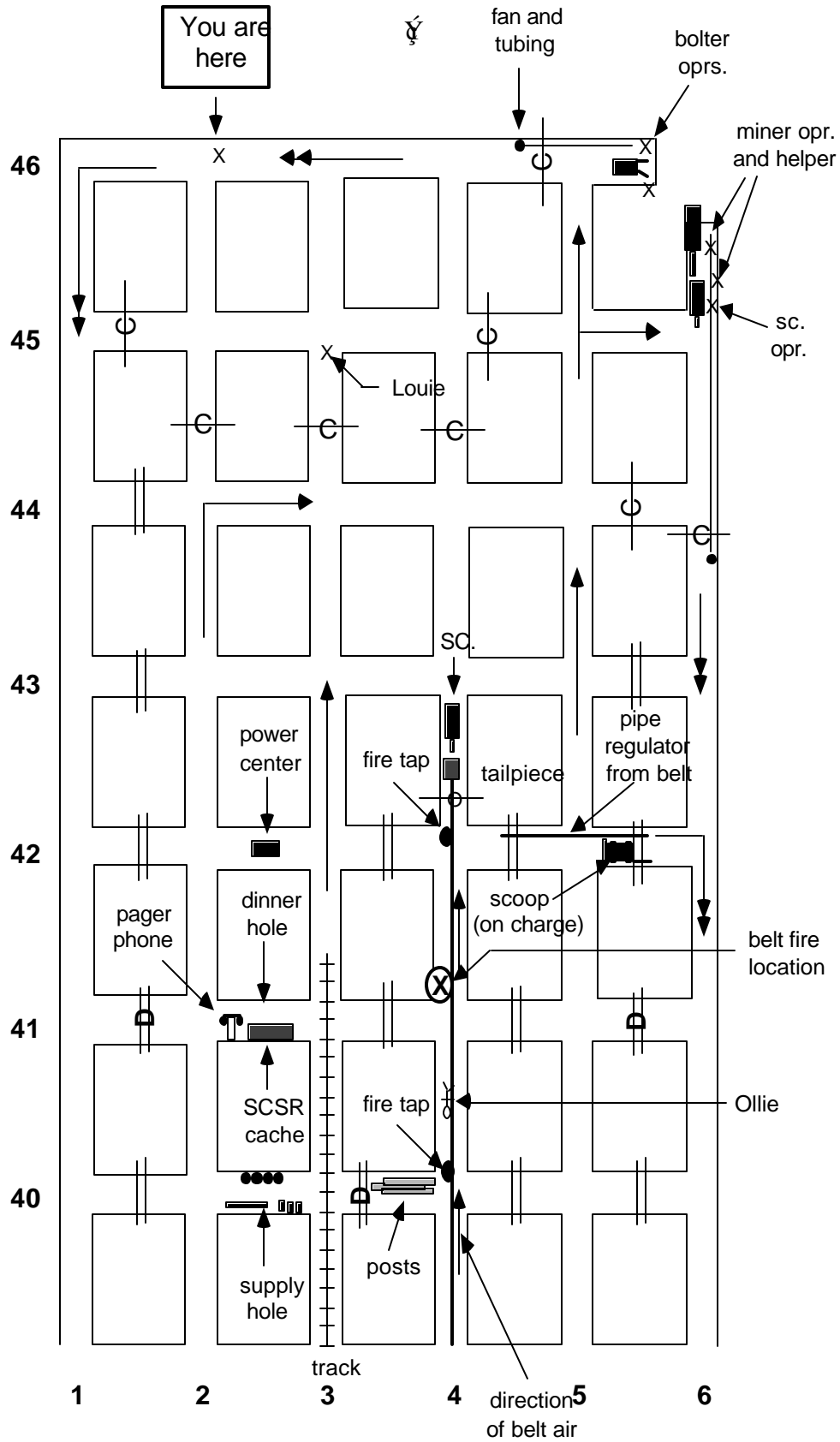


Figure 1: 16 South section

**Question A**

You and Louie start back to the fire area. As soon as you go through the check curtain in #3 entry, you hit moderate smoke. You continue out to the first mandoor at crosscut #40 leading to the belt entry. Entry 3 in the area of the mandoor is clear of smoke. When you get into the belt entry, you see an orange glow inby your position. You approach the pillar near the fire tap and see flames engulfing the belt and entry and Ollie lying on his back beside the belt. What should you do now? (Select as MANY as you think are correct.)

1. Send Louie to warn the bolter and miner crews of the fire, and tell him to return with help and the first aid kit.
2. While waiting for Louie to return, begin fighting the fire with the fire hose Ollie had apparently been using before he was injured.
3. Put on your FSR.
4. Check the mine roof around Ollie to see if it is OK.
5. Grab Ollie under the arms and drag him outby to the crosscut #40 near the mandoor.
6. Conduct a primary survey to assess Ollie's condition.

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

**Question B**

Louie has not yet returned from warning the other miners on the section and getting the first aid kit. Your primary survey on Ollie shows he is dazed and doesn't recognize you; his airway is open and clear and his respirations are rapid (32/min) and shallow. His pulse is 120 and regular, but weak. You note that the skin on Ollie's face is pale, cool, and moist. What would you do now? (Select as MANY as you think are correct.)

7. Ask Ollie what happened and to tell you where he is hurt.
8. Help Ollie get up and get out of the belt entry to the safety of the track entry.
9. Feel Ollie's skull and neck with your fingertips.
10. Feel Ollie's chest, abdomen, pelvis, middle and lower spine, and his upper and lower limbs for injuries.
11. Check Ollie's grip strength in both hands simultaneously and ask him to press his feet against the palms of your hands.

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

**Question C**

Your primary and secondary surveys of Ollie's injuries have taken about a minute. Ollie complains of tingling in his fingers, hands and arms. Ollie's face and lips are not burned, and there is no swelling of his lips and mouth. Based on your findings, what is wrong with him? (Select as MANY as you think are correct.)

- 12. Severe blood loss.
- 13. Shock.
- 14. Internal injuries and bleeding.
- 15. Possible head and/or spinal injuries.
- 16. Possible injury to his lungs and airway.

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

**Question D**

Louie comes back with the first aid kit and backboard. He tells you that the other miners have been warned and are going to cut the power to all equipment including the face fans. Louie says he told the other miners to meet at the dinner hole. Cletus, the other shuttle car operator, is with Louie. Just as they arrive, you notice that the roof over the fire area begins to flake. The roof over Ollie still appears stable. What should you do now? (Choose only ONE unless you are told to "Try again!")

17. Have Louie and Cletus help you drag Ollie around the corner to crosscut #40 near the mandoor.
18. Keep watching the roof. If it gets worse, have Louie and Cletus move Ollie to a safer location.
19. Have Louie and Cletus begin setting support posts between Ollie and the working roof, using the posts that are lying in the crosscut near the mandoor.
20. Help Ollie get up and walk back to the dinner hole.



**Question E**

Louie and Cletus are setting posts. The fire continues to burn, feeding on coal spillage, belting, and debris. It is advancing toward the tailpiece. What should you do now? (Choose only ONE unless you are told to "Try Again!")

21. Help Louie and Cletus set posts so that the work can be done faster.
22. Grab the hose line and start to fight the fire.
23. Tell Ollie to lie still, that Louie and Cletus will be keeping an eye on him while you go back to the dinner hole and check on the other crew members. Also tell Louie and Cletus to keep an eye on Ollie.
24. Tell Louie to help Ollie while Cletus continues to set posts.

**Question F**

You go to the dinner hole and find that the other four crew members have arrived. One of the roof bolter operators tells you that the power has been cut. He also tells you that the smoke is very heavy in by the fire (see Figure 2). What should you do now? (Select as MANY as you think are correct.)

25. Have everyone put on their SCSRs, then go get Ollie and the others, and leave the section.
26. Call out to the surface. Report the conditions on the section and ask for help.
27. Assign one man to stay by the pager phone in the dinner hole to maintain communications with the surface.
28. Have both roof bolter operators put on SCSRs and go to the belt tailpiece to connect a fire hose and begin fighting the fire from there.
29. Take the remaining three miners with you into the belt entry and assign duties accordingly.

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

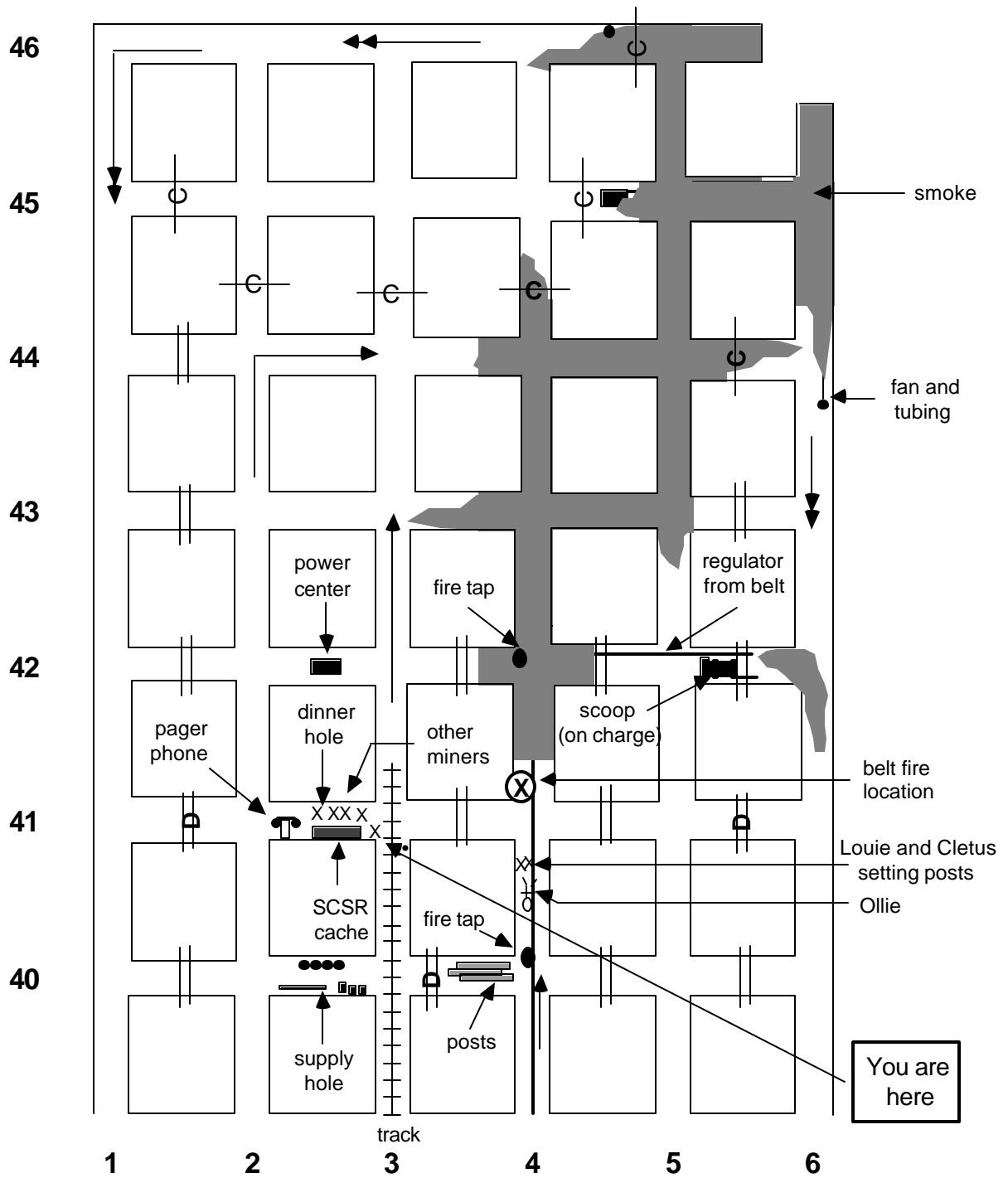


Figure 2: 16 South section, 15 minutes into the fire

**Question G**

You assign the continuous miner helper to be communications man and tell him to stay at the dinner hole near the pager phone. You take the other three miners to help in the belt entry. When you return to the fire area, you see that the fire is worse. Louie and Cletus still have several more posts to set. Ollie is still lying beside the belt. What should you do now? (Choose only ONE unless you are told to "Try Again!")

30. Have three miners help you drag Ollie through the mandoor at crosscut #40 into the track entry.
31. Send someone into #5 entry to the scoop charger, get the scoop, and knock down the stopping behind the charger and the last inby stopping between the belt and #5 entry to send the smoke and fire toward the right return.
32. Assign fire fighting duties to two miners while Louie and Cletus finish setting posts. Have another miner help you begin treating Ollie's injuries.
33. Have two miners, using sledge hammers, knock down the stopping at the mandoor to get more fresh air into the belt entry and to the fire fighting area.

## **Question H**

Two miners begin fighting the fire with the 1 1/2" hose line while Louie and Cletus finish setting posts. You and another miner start treating Ollie's injuries. You find that the backboard straps are missing from the first aid kit. What should you do now? (Select as MANY as you think are correct.)

34. Have the others help you lift Ollie on the backboard and quickly carry him out of the belt entry without securing him.
35. Place yourself at Ollie's head, directly behind him, and begin holding light traction on his head to help stabilize his neck.
36. Send Louie out to the supply hole to get a roll of brattice cloth from which you can cut strips for making straps.
37. Have someone cover Ollie's head wound with several gauze pads and gently secure the pads with cravat bandages.
38. Tell Ollie that he is badly hurt and that you'll try to get him out of the mine before the fire gets worse.
39. Have someone take the backboard and place it beside Ollie while you are waiting for Louie to return with the roll of brattice curtain.

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

**Question I**

Louie returns with a section of brattice cloth. While you hold traction on Ollie's head, you tell another miner to cut 5 strips of brattice cloth 8 feet long and about 3 inches wide. A miner fighting the fire yells and tells you that he isn't sure how much longer he and his buddy can fight the fire as it is continuing to spread slowly. What should you do now? (Choose only ONE unless you are told to "Try Again!")

40. Forget about treating Ollie further; have the other miners help you carry him to the mantrip and evacuate the section.
41. Go to the mine phone and call to the surface to see what the superintendent wants you to do.
42. Instruct Cletus to fold one of the blankets so it forms a horseshoe about 8" wide that can be placed around Ollie's head to stabilize it.
43. Go with Cletus and Louie to connect up another fire hose line and help the others fight the fire.

## **Question J**

Cletus has folded the blanket as instructed and all of the brattice strips are in place on the backboard. Ollie is still on his back on the mine floor. Now the fire is advancing outby as well as inby. A miner yells "We can't fight this fire too much longer. Hurry up!" The communications man then comes and tells you that the stopping across from the dinner hole at crosscut #41 is beginning to burn through into the #3 entry. What should you do now? (Select as MANY as you think are correct.)

44. Have Cletus and Louie hook up another hose line and help fight the fire.
45. Have the miners not fighting the fire position themselves along Ollie on the side opposite the backboard and have one stay on the other side.
46. Continue holding traction on Ollie's head. Tell the three miners to roll Ollie slowly, and together on your command. Have the other miner slide the backboard under Ollie as far as possible.
47. Once the board is under Ollie's back as far as possible, on your command, have the three miners helping you roll Ollie back over on his back and finish positioning him on the backboard.
48. After you get Ollie on the backboard, release your traction on Ollie's head, pick up the backboard and carry Ollie to the track entry.
49. While you maintain traction on Ollie's head, have another miner place the horseshoe-shaped blanket around Ollie's head and secure his head and blanket wrap to the backboard.
50. While you hold traction on Ollie's head, have the other miners securely tie the straps over the full length of Ollie's body to secure him to the board.

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

**Question K**

Ollie is secured to the backboard and you are carrying him out through the mandoor to the track entry. Two miners are still fighting the fire but had to retreat 40 feet outby since the fire is now spreading rapidly and heavy smoke and flames are rolling back. You also hear the roof falling over the fire. The communications man tells you that the stopping at crosscut #41 has burned through near the right rib. What should you do now? (Select as MANY as you think are correct.)

51. Carry Ollie outby a couple of crosscuts, lay him down along the track entry and tell him to wait, while you and the other miners continue to fight the fire.
52. Put up a check curtain in #3 entry at crosscut #41, outby the burning stopping to prevent additional fresh air from reaching the fire.
53. Tell the miners fighting the fire to quit and prepare to evacuate the section.
54. Have several miners go to the dinner hole and pick up all the SCSRs to take with you as you prepare to evacuate the mine.
55. Walk to the face of #1 entry and across the faces to assess the spread of the fire inby the belt tailpiece.
56. Call outside to inform the communications man of conditions in the section and tell him that you are leaving the section.

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



**Question L**

You and the crew are ready to leave the section. What route should you take and how should you travel? (Choose only ONE unless you are told to "Try Again!")

57. Have everyone go to the scoop charging station, get in the bucket, and ride the scoop out #5 entry since it is in fresh air.
58. Put on your SCSRs and start walking out the track entry since it is the primary escapeway.
59. Take all the SCSR's, load Ollie and the others into the mantrip and follow the usual route out of the section.
60. Take the crew, carry Ollie and walk the belt entries out of the mine.

## **Question M**

Ollie and the other miners were safely evacuated from the mine. Ollie was taken to the hospital where he was found to have both a cracked cervical vertebrae and a fractured skull. He thinks he fell against the conveyor belt support structure while he was fighting the fire. Your good first aid may have saved his life and prevented him from being paralyzed. The mine section had to be sealed to control the fire, and the mine was closed for six weeks.

Now think about the whole problem and answer the following question. What conditions contributed to the seriousness of this fire? (Select as MANY as you think are correct.)

61. When Ollie first found the fire, he should have immediately reported it and called for help.
62. Excessive coal spillage along the belt near the tailpiece probably contributed to the fire and its rapid development.
63. The section ventilation plan was improper and contributed to the rapid spread of the fire.
64. Because the section foreman (you) had to take care of Ollie, the fire got out of hand.

## **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. The best score is 64. The worst score is 0.