

Bernie's Feeder Accident

Instructor's Copy

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¹ This exercise was developed and field tested under U. S. Bureau of Mines research contract no. H0348040. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies or recommendations of the Interior Department's Bureau of Mines or the U. S. Government.

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Introduction

This document contains most of the materials needed to use the exercise. The main part of the document is the instructor's copy. It tells how to use the exercise, presents the objectives, the master answer sheet, the scoring key, and discussion notes to be used following the exercise. The last part of this document is three appendices. Appendix A is the exercise problem booklet. This booklet can be duplicated locally. The booklets are reusable. One is needed for every person in the classroom. Appendix B is the answer sheet. Copies of this answer sheet must have the invisible ink answers that appear in Appendix C printed on them.² Answer sheets are consumable. One is needed for each person or each small group of persons who work the exercise.

Exercise Summary

Read this section first. It determines if the exercise is appropriate for your classes. If you choose to use the exercise, examine the table of contents and review the remainder of this document.

<u>Type:</u>	Invisible ink
<u>Length:</u>	Eleven questions (25 minutes for administration plus 30 for discussion)
<u>Skills:</u>	Recognizing and avoiding hazards from falling equipment and material Proper procedures for propping an unstable piece of machinery before working under it Proper materials handling procedures in confined spaces Recognizing and avoiding pinch points First aid Treating a crushed hand injury Treating shock Moving an unconscious victim from a long, narrow confined space (tunnel)
<u>Location:</u>	Surface phosphate ore processing plant (Also appropriate for sand, gravel, limestone, and coal preparation plant workers.)
<u>Problem:</u>	A feeder in the reclaim tunnel under the product pile at a phosphate ore processing plant has failed and fallen on the belt conveyor. The belt is stopped. You and two workers are moving timbers to prop and jack the failed feeder so it can be repaired. Bernie, one of your coworkers is tired. He places himself in a dangerous position. He is hurt. You must provide first aid and remove him from the tunnel.

² You can do this yourself if you have the proper equipment, or you may obtain copies of preprinted answer sheets from MSHA, National Mine Health & Safety Academy, Dept. of Instructional Materials, 1301 Airport Road, Beaver, WV 25813-9426 phone 304-256-3257, fax 304-256-3368 or email to lord-mary@msha.gov.

How To Use This Exercise

1. Look at the performance objectives. Decide if the exercise is relevant for your mine training class.
2. Work through the exercise with the developing pen and score your responses.
3. Read the master answer sheet for the exercise. Look at all the answers.
4. Read the "Instructor's Discussion Notes" for the exercise.
5. Become thoroughly familiar with the problem so that you can present it to your class without reading it. Put the illustrations on an overhead projector so you can use these to help explain the problem.
6. When you present the exercise to the class:
 - Give each person an exercise booklet, and each group of 3 to 5 persons an answer sheet and a developing pen.
 - Demonstrate how to select and mark answers using the developing pen.
 - Go over the instructions for doing the exercise with the whole group.
 - Explain the problem making sure everyone understands the problem situation.
 - Have the class members work the exercise.
 - When the class members finish, have them figure up their score using the instructions at the end of the exercise.
 - When everyone has finished, discuss the exercise. Let class members discuss the merits of each answer. Add your own ideas.

Performance Objectives for Bernie's Feeder Accident

Objective number	Capability verbs)	Description of required performance and conditions under which it is to occur
1. MH ³	Assess Recognize	Safe and effective ways of handling heavy timbers in a confined space
2. FIWHR	Recognize Select	Safe and effective methods to support a piece of heavy equipment with timbers before going under the equipment
3. HR/MH	Recognize	Hazards of work being performed, including tripping and stumbling, fall of equipment and material, and hazards of handling materials in a confined space
4. FA	Assess	Probable nature and extent of injury to a hand struck by a falling timber
5. FA	Identify Treat	Multiple fractures of the hand and palm laceration
6. FA	Select	Proper method of immobilizing an unconscious victim with a crushed hand, when the victim is in shock
7. FA	Recognize	Symptoms of shock and factors contributing to the victim's state of shock
8. FA	Recognize	Proper method for transporting an unconscious victim from a long narrow tunnel with many slipping and tripping hazards

³ Skill and knowledge domain abbreviations:

MH = materials handling
 FM = fall of material
 HR = hazard recognition
 FA = first aid

Master Answer Sheet for Bernie's Feeder Accident

Use this answer sheet to mark your selections. Rub the developing pen gently and smoothly between the brackets. Don't scrub the pen or the message may blur. Be sure to color in the entire message once you make a selection. Otherwise you may not get the information you need.

Question A (Select as MANY as you think are correct.)

1. [Bernie is tired and unable to handle the 6 x 6's alone. You hear him grunting]
[as he strains to position the timbers under the feeder.]
2. [Correct. Handling heavy materials, such as large timbers, in limited space, is]
[more than a two-man job.]
3. [Correct. Five foot, 6" x 6" timbers can weigh as much as 60 pounds. They are]
[difficult to handle without help, especially when tired.]
4. [This would not help the situation at all.]
5. [Definitely Not. Totally against lockout procedure, and dangerous. Anyway,]
[the belt is jammed.]

Question B (Choose only ONE unless you are told to "Try Again!")

6. [You are now both exposed to a crushing hazard. Try again!]
7. [Bernie says "No it's not, it needs to be moved." He keeps working. Try again!]
8. [Correct. But Bernie does not come out. Do the next question.]
9. [Bernie is in danger. Try again!]

Question C (Select as MANY as you think are correct.)

10. [The belt has been properly locked out. It will not start up.]
11. [Correct. Although the feeder seems to have moved all it's going to, it is still]
[not stabilized.]
12. [Correct. It moved once, it could again. Bernie is in a very bad position.]
13. [Correct. He should avoid "pinch points".]

Question D (Choose only ONE unless you are told to "Try Again!")

14. [Correct. Bernie says, "No! Damn it!" Do the next question.]
15. [This is not the first thing to do. Other injuries maybe present. Try again!]
16. [Since Bernie is talking, his breathing must be OK. Try again!]
17. [You should not move an injury victim until you know what is wrong with him.]
[Anyway, you're 300 feet away from the first aid kit. Try again!]

Question E (Select as MANY as you think are correct.)

18. [This could cause further injury. You should suspect multiple fractures.]
19. [Correct. Bernie points to his palm and first three fingers.]
20. [Correct. The first, second, and third fingers are twisted. The wrist appears]
[normal.]
21. [Bruising usually takes several hours to show.]
22. [Correct. The wrist appears normal, but the palm and first three fingers are]
[swollen and red.]

Question F (Select as MANY as you think are correct.)

23. [Correct. His hand should be placed in a relaxed position before bandaging.]
24. [Correct. His fingertips should be left visible so that circulation may be]
[checked.]
25. [This should not be done. His hand should be placed in a relaxed position.]
26. [The wrist (radial) pulse won't tell you if the circulation to the hand has been]
[cut off. Circulation should be checked by nail bed compression before and]
[after bandaging.]
27. [Correct. Elevating his hand will help minimize swelling and reduce bleeding.]
28. [Correct. Although blood loss may be minimal, he could still go into shock.]

Question G (Choose only ONE unless you are told to "Try Again!")

29. [When you do, he gets angry and says he was just kidding around. Try again!]
30. [When you do this, Bernie doesn't wake up. You are endangering him.]
[Try again!]
31. [Once correctly applied, don't remove a dressing. More bleeding could occur.]
[Try again!]
32. [Correct. You find his airway open. There is no sign of vomit. His pulse is fast]
[and weak. Do the next question.]

Question H (Select as MANY as you think are correct.)

33. [Bernie needs your help now.]
34. [It would be difficult to carry Bernie 400 feet in this way.]
35. [Correct. The blanket will help keep him warm, and help you move him.]
36. [Correct. A stretcher will make transport much easier.]
37. [Correct. This will help maintain his circulation.]
38. [Correct. Do anything to limit further injury to Bernie and others too.]

Question I (Select as MANY as you think are correct.)

39. [Giving Bernie something to drink could harm him.]
40. [Correct. His breathing is fast but strong and regular. His pulse is fast and]
[weak.]
41. [This could harm him.]
42. [Correct. It is important to maintain his airway since he is unconscious.]
43. [Correct. Your voice and words can comfort him even if he cannot respond.]
[When you pinch, he responds slightly.]

Question J (Select as MANY as you think are correct.)

44. [Correct. You say you found none. The two EMT's continue their own primary]
[and secondary survey.]
45. [Correct. You say about 30 minutes.]
46. [This is inappropriate. It might be heard by Bernie and add to his problems.]
47. [Correct. You explain a 6 x 6 timber fell on his hand and mashed it.]
48. [This is irrelevant and it might be heard by Bernie and add to his problems.]
49. [You say you don't know. The EMTs should know which is the nearest and]
[best facility.]
50. [Correct. You explain how you applied the dressing and bandages. After]
[inspecting the bandage and checking Bernie's finger circulation by nail bed]
[compression, the EMTs leave the bandage in place.]
51. [Correct. You say no, but that John is upset because his joke made Bernie]
[worse.]

Question K (Select as MANY as you think are correct.)

52. [Correct. Pain and mutilation can easily induce a state of shock.]
53. [There was very little loss of body fluids.]
54. [It was important to conduct a primary and secondary survey and bandage]
[Bernie's hand before transporting him.]
55. [These are symptoms of shock not the cause.]
56. [Correct. Such remarks made in jest may be taken seriously by the victim.]
57. [Correct. Although Bernie did not loose much blood, his fainting indicated a]
[pooling of blood in his abdomen and legs. This is why laying him down and]
[raising his feet helped supply his heart and brain with blood.]
58. [These are symptoms of his shock not the cause.]

Finding your score

Number of "Correct" answers you colored in = (1) _____

29 minus number of incorrect answers you colored in = (2) _____

Add the numbers in blanks one and two to get your total score = (3) _____

Highest possible score = 58

Lowest possible score = 0

Instructor's Discussion Notes for Bernie's Feeder Accident

Use the information presented in the problem book, your own ideas and experience, and those of the miners in your class, to discuss the exercise after it is completed. Group discussion can strengthen knowledge and skills, correct errors, and relate the exercise content to the experiences of the miners. After they have worked the exercise, miners enjoy discussing the problem. They frequently think of better ways to respond to a problem than those listed among the answers. The purpose of the exercise is to help miners think about and remember basic knowledge and skills they may someday need to deal with an unstable piece of equipment, fall of material, or a materials handling hazard. The discussion following the exercise can contribute to this goal and tailor the exercise content to the needs of the training group.

It is helpful to show overhead transparencies of the exercise questions during the discussion. This allows you to lead the group through the exercise and to disclose and discuss all the answers to each question. Most of the information about why particular answers are correct or incorrect is given on the master answer sheet.

The following notes provide additional information for you to discuss with your class. Read through and think about the notes before the class. Don't read the notes to the class members. This would be boring and ineffective. Rather, incorporate the ideas you find here with your own ideas and make these points at the appropriate place in the discussion.

Question A - The correct answers are 2 and 3. Many accidents occur because miners disregard safe work practices in an effort to quickly complete a task. This is particularly true for distasteful tasks or those which are classified as "dead work." Large timbers are particularly difficult to handle in confined areas and in awkward positions. Although carrying the timbers and stacking them (1) minimizes the walking, tripping, and stumbling hazard for Bernie, having Bernie install the timbers alone (4) invites both a materials handling accident (pinch point), back strain, muscle pull, and a falling material accident (placing himself under unsupported equipment). Telling Bernie to get the rest of the timbers would add more stress for Bernie. Moving the timbers in on the belt is very dangerous.

Question B - The correct answer is 8. Exposure to further falling of the feeder or the product should be avoided by staying out of the area until props are set. Even though Bernie might not appreciate the tone of voice used to get his attention, there should be a sense of urgency in getting Bernie back into a safe working position. Miners should be reminded that when helping a coworker complete a task which is underway the task must be done safely. By positioning yourself beside Bernie to help him (6), the task might be done more easily and more quickly, but now two people are exposed instead of one. The feeder must be properly supported with timbers before you or Bernie go underneath it.

Question C - The correct answers are 11, 12, and 13. Of note here is the increased severity of a fall of material accident compared to a materials handling accident although both types are present.

Question D - The correct answer is 14. If the accident scene is safe and the victim passes the primary survey checks (airway, breathing, and circulation), the first-aider should then check for injuries other than those which are apparent. This is done both to prevent further harm and to prioritize first aid treatments.

Question E - The correct answers are 19, 20, and 22. Typical signs of a fracture are pain (19), deformity (20), swelling, redness (22), and loss of use of the involved area. This type of crushing accident, could be worsened by attempting to move the wrist (18). Since multiple fractures are suspected, the hand should be immobilized as soon as possible.

Question F - The correct answers are 23, 24, 27, and 28. The procedure for bandaging a crushed hand is: 1) check circulation by nail bed compression; 2) place dressings between each finger and a gauze roll in the palm (23); 3) bandage the hand with roller gauze leaving the finger tips exposed (24); 4) recheck circulation; and 5) elevate the hand to reduce swelling (27). Shock should always be watched for (28) and guarded against after such traumatic injuries, especially since you already know that Bernie is squeamish about the sight of blood.

Question G - The correct answer is 32. Bernie has probably fainted due to the pain and the emotional stress of his injury. This has caused a decrease in his blood pressure and the circulation to his brain has been temporarily impaired. The best treatment for this condition is to lay the victim down, elevate his feet, and check breathing and pulse (32). The pulse check will provide evidence of the severity of shock. All the other answers would interfere with prompt and proper first aid care of Bernie.

Question H - The correct answers are 35, 36, 37, and 38. A stretcher should be obtained to facilitate Bernie's transport. Since Bernie has signs of shock he should be wrapped in a blanket and his legs elevated. Since the walkway is narrow, wet and slippery, three miners are needed to carry Bernie out, two to carry the stretcher, and one to precede the stretcher and watch for tripping hazards.

Question I - The correct answers are 40, 42, and 43. The unconscious shock victim should remain flat on his back with his legs elevated, if possible. The airway should be maintained by using the head tilt, chin lift method and breathing, pulse, and level of consciousness should be monitored frequently. The victim is covered with a blanket to prevent excessive heat loss to the environment. Since the individual's level of awareness is unknown, he or she should receive the same kind of emotional support as the conscious victim.

Question J - The correct answers are 44, 45, 47, 50, and 51. The information which the EMT's should obtain includes: 1) the number of injured persons (51), 2) the patients' name, 3) how the injury took place (47), 4) the injuries found (44), 5) the treatments given (50), and, 6) how long Bernie has been unconscious (45). In addition, the EMT's should ask whether the victim has a known illness and if he or she is taking medication.

Question K - The correct answers are 52, 56, and 57. Bergeron defines shock as "the failure of the circulatory system to provide enough blood flow to all parts of the body."

This failure may be due to inadequacies of one or a combination of the three basic components of the system: the pump (heart), the blood volume, or blood vessel tone (degree of constriction). The last of these appears to be central in the present case. Pain (52) may cause vasodilatation by inhibiting centers in the brainstem which are responsible for blood vessel tone. Strong emotions due to the sight of blood (52), for example, may cause direct vasodilatation and slowing of the heart which can result in fainting. When the blood vessels in the abdomen dilate fully (57) the volume of the circulatory system increase so much there is too little blood available for the heart to pump to the brain and rest of the body.

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Scoring Key for Bernie's Feeder Accident

The correct answers are marked with an asterisk.⁴

Question	Answer Number								
A	1	2*	3*	4	5				
B	6	7	8*	9					
C	10	11*	12*	13*					
D	14*	15	16	17					
E	18	19*	20*	21	22*				
F	23*	24*	25	26	27*	28*			
G	29	30	31	32*					
H	33	34	35*	36*	37*	38*			
I	39	40*	41	42*	43*				
J	44*	45*	46	47*	48	49	50*	51*	
K	52*	53	54	55	56*	57*	58		

⁴ This page is printed in large type so that it may be copied and used as an overhead transparency.

Appendix A: Problem Booklet

Duplicate this copy of the problem booklet for use in your classes. **Booklets should be printed on only one side of the paper.** Each person in your class should have a problem booklet while they are working the exercise. The problem booklets are reusable.

You may obtain a copy of the problem booklet from MSHA, National Mine Health & Safety Academy, Dept. of Instructional Materials, 1301 Airport Road, Beaver, WV 25813-9426 phone 304-256-3257, fax 304-256-3368 or email to lord-mary@msha.gov.

Bernie's Feeder Accident

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 11 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. 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 in the reclaim tunnel under the main product storage pile at a phosphate ore processing plant.

The tunnel walkway along the belt is 6 feet high and 22 inches wide. The floor is wet and slippery.

The flow of rock to the dryers has been stopped because of a feeder failure. The belt has been locked out properly.

You and Bernie are maintenance mechanics.

Both of you have been trained in first aid. You are a volunteer fireman and are currently taking an EMT class.

Bernie is known to be squeamish about the sight of blood.

John, a conveyor feedman, has little to do until the belt runs again.

Problem

You are helping to secure a feeder, part of which has collapsed due to structural failure.

The feeder is now wedged against the main belt. A small amount of pebble is trickling through the feeder into the tunnel. You are trying to stabilize the feeder by supporting it with a number of 6 x 6 timbers 5 feet long before attempting to jack it back into place so welding can be done.

You are carrying the timbers one at a time about 400 feet from the tunnel entrance and are laying them along the wall near the feeder. Bernie is there shoveling some spilled rock out of the way. As you return with another 6 x 6, you see Bernie starting to place a timber under the feeder on the far side of the belt. He is complaining of being tired and is having difficulty positioning the timber by himself. After studying Figure 1, turn the page and answer the first question.

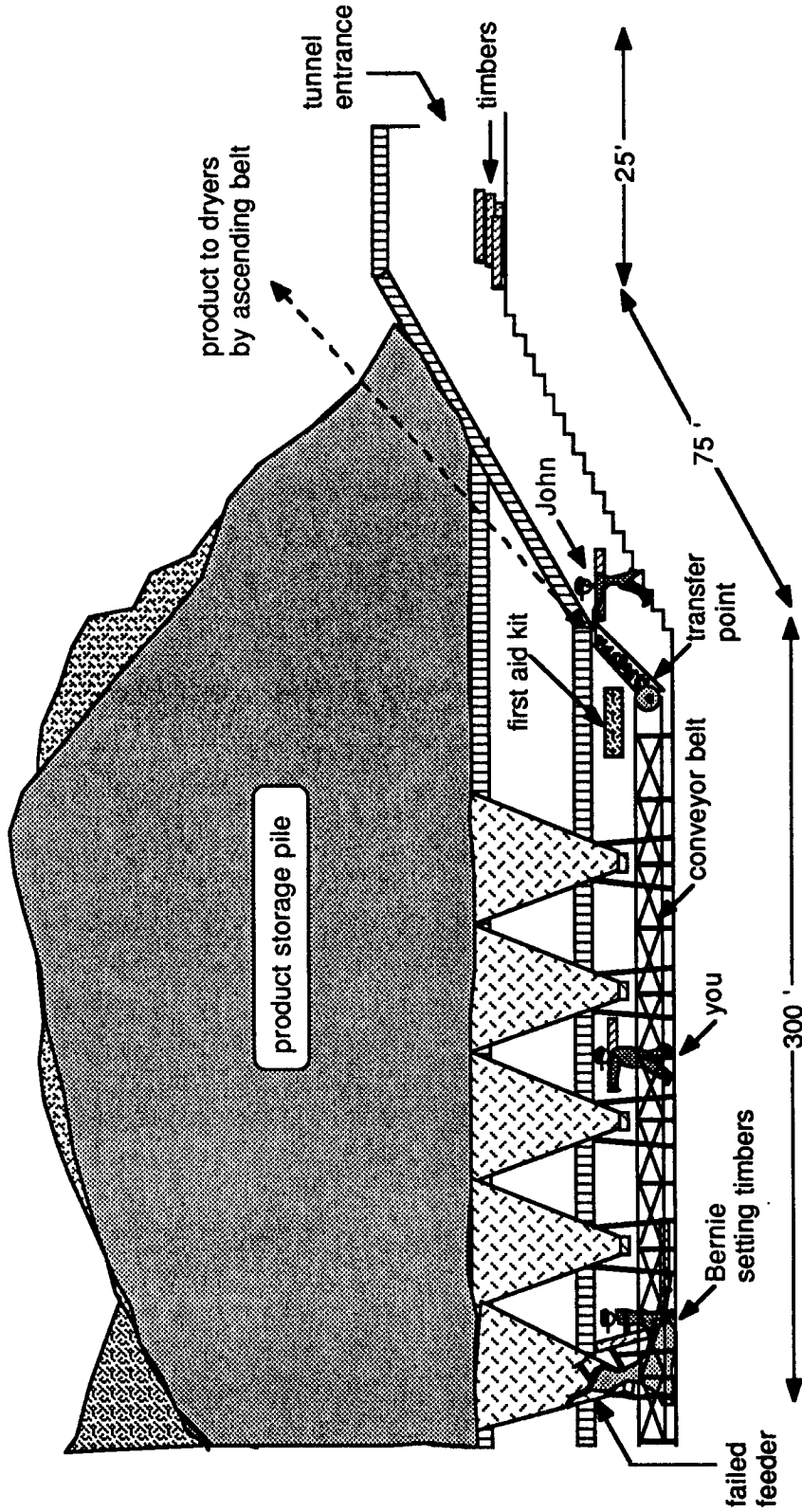


Figure 1: Schematic of reclaim tunnel under main product pile (not to scale)

Question A

You are anxious to finish propping the feeder up so it can be welded and production begun. What should you do to help complete the job safely and efficiently? (Select as MANY as you think are correct.)

1. Keep carrying timbers from the tunnel entrance to the bad feeder. Stack them carefully for Bernie.
2. Call John (the conveyor feedman) to assist you and Bernie.
3. Tell Bernie not to try handling the timbers by himself in such an awkward way.
4. Tell Bernie to get the remaining timbers while you wait.
5. Take your lock off at the breaker, start the main belt, and move the timbers in on the belt.

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

Question B

You and John go to help Bernie. You see Bernie positioning himself between the framework of the conveyor and the unstable feeder to reposition a timber. (See Figure 2.) What should you do now? (Choose only ONE unless you are told to "Try Again!")

6. Quickly position yourself beside Bernie to help him stabilize the feeder.
7. Tell him "That's OK, let's go get the jacks. "
8. Yell "Get outta there! You wanna get mashed?"
9. Wait until he positions the 6 x 6 so the feeder can't move anymore.

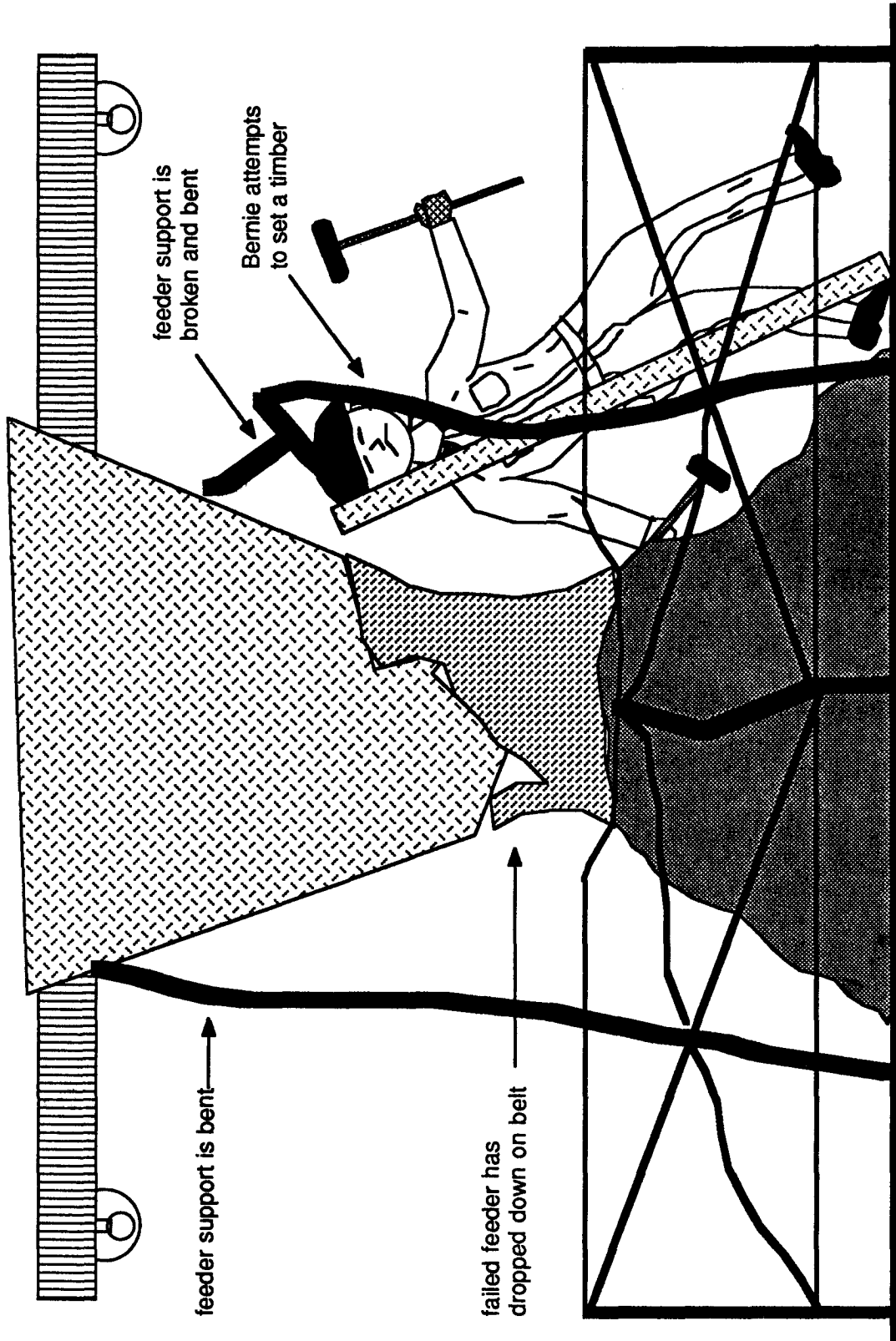


Figure 2: Bernie's position under the failed feeder as he sets a timber

Question C

To what hazards is Bernie exposed? (Select as MANY as you think are correct.)

10. Unexpected startup of the main belt.
11. Further movement of the feeder.
12. Severe crushing injuries if the feeder would move more.
13. Having his head or other extremities caught between the timber and the feeder.

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

Question D

Bernie changes his position from between the feeder and framework but is still reaching in to reposition a timber. You hear a "thud" followed by Bernie's loud screams. Although the feeder is now stable, a timber has fallen and pinned his right hand. You manage to move the timber from his hand. Bernie slumps to the floor, cusses, and looks at his hand, which is oozing dark red blood from a deep gash in the palm as shown in Figure 3. What is first thing you should do? (Choose only ONE unless you are told to "Try Again!")

14. Ask Bernie if anything else is hurt besides his hand.
15. Bandage his hand with your clean handkerchief.
16. Check his breathing.
17. Walk Bernie to the first aid kit at the product transfer point.

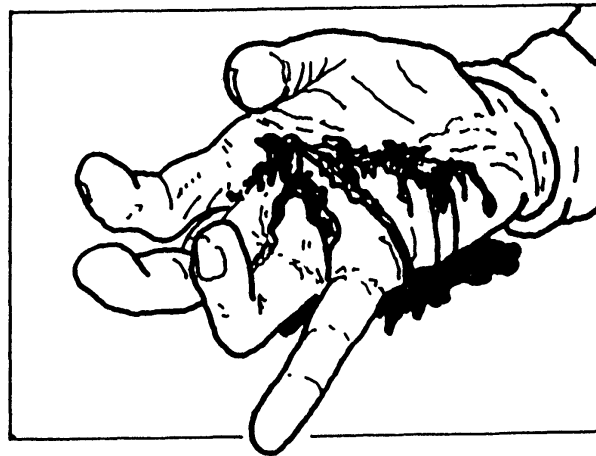


Figure 3: Bernie's injured right hand

Question E

You ask John to go for the first aid kit, to call for an ambulance, and to report the accident to the foreman. You give Bernie your clean handkerchief to apply to the laceration and help him hold his right hand at shoulder level. You are worried Bernie may have multiple fractures of the hand and wrist. How would you find out what his injuries are? (Select as MANY as you think are correct.)

18. Ask Bernie if he can make a fist and move his wrist up and down.
19. Ask him "Where does it hurt?"
20. Check to see if his fingers, palm, or wrist look deformed.
21. Look for bruising of the fingers, palm, or wrist.
22. Look for swelling and redness of the fingers, palm, and wrist.

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

Question F

John returns with the first aid kit and the foreman. He says that an ambulance is on the way. How should you care for Bernie? (Select as MANY as you think are correct.)

23. Before putting any bandages on, put a piece of gauze between each finger and a small roll of gauze in Bernie's palm.
24. Bandage his hand with roller gauze, but leave his fingertips showing.
25. Put Bernie's hand and forearm flat on a board splint extending from the elbow to the fingertips. Snugly bandage the entire length with roller gauze to keep his hand flat and immobilized.
26. After bandaging Bernie's hand, check his circulation by taking a wrist pulse.
27. After bandaging his hand, place his arm in a sling with his hand supported at collarbone level.
28. Watch him for symptoms of shock.

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

Question G

You examine Bernie and find no other injuries. John comes back just as you finish bandaging the injured hand and are leading Bernie out of the tunnel. Bernie says he's sick to his stomach. He looks a little pale. He asks "will my hand be OK?" Before you can answer, John responds with, "Looks like it's so bad they'll have to amputate!" Then he laughs. Bernie's legs get shaky. He faints, and you catch him and lay him on his back on the concrete tunnel floor. What should you do now? (Choose only ONE unless you are told to "Try Again!")

29. Tell John he's an absolute fool.
30. Sit Bernie up, slap his face gently to wake him up.
31. Undo the dressing on his hand to see if the bleeding has stopped.
32. Make sure he's breathing OK and then take a neck pulse.

Question H

Bernie is still unconscious. John is very upset, feeling his joke made Bernie worse. You are about 400 feet from the tunnel entrance. What would you do now? (Select as MANY as you think are correct.)

- 33. Leave Bernie where he is, cover him with a blanket, and wait for an EMT to arrive and assist you.
- 34. Work with the foreman and John to use a 3-man carry to get Bernie out.
- 35. Wrap Bernie in the blanket from the first aid kit, keeping him on his back and keeping his injured hand across his chest.
- 36. Send John to get a stretcher. Then immobilize Bernie on the stretcher with 7 or 8 bandages.
- 37. Begin carrying Bernie outside keeping the head end of the stretcher a foot or so lower than the foot end.
- 38. Have one person precede the stretcher making sure there are no tripping hazards in the narrow walkway.

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

Question I

You are now at the entrance of the reclaim tunnel under a metal shelter. It is raining heavily. Bernie is on his back, covered with a blanket and legs elevated. You and the foreman are taking care of Bernie. He is still unconscious. What things should you do to help him? (Select as MANY as you think are correct.)

- 39. Send John for some water to give to Bernie.
- 40. Watch his breathing and check his pulse frequently.
- 41. If he starts to regain consciousness, sit him up.
- 42. Tilt his head and lift his chin to maintain a good airway.
- 43. Talk to him. Tell him what you're doing. Gently pinch his neck muscle at his shoulder every now and then.

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

Question J

Within a few minutes a basic life support ambulance arrives. One of the two EMTs asks, "What happened?" You tell them about the crushed right hand. As they check Bernie, they ask more questions. What questions should they ask? (Select as MANY as you think are correct.)

- 44. Did you see or find any other injuries?
- 45. How long has he been unconscious?
- 46. Who is Bernie's next of kin?
- 47. How was he injured?
- 48. Is Bernie accident prone?
- 49. Which hospital would Bernie like to go to?
- 50. How did you bandage his hand?
- 51. Was anyone else hurt?

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

Question K

Bernie was taken to the hospital where he was found to have multiple fractures and a deep laceration of the right hand. He had little blood loss. He was in shock. Your prompt and good treatment saved his hand from further harm and prevented shock from deepening. What caused Bernie's shock? (Select as MANY as you think are correct.)

- 52. The appearance of and pain from his mutilated hand.
- 53. Loss of body fluids.
- 54. Failure to promptly evacuate him before bandaging his hand.
- 55. Bernie's being sick to his stomach and his fainting.
- 56. John's remark that Bernie's hand might have to be amputated.
- 57. Pooling of blood in Bernie's abdomen and legs.
- 58. His rapid and weak pulse.

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 29. 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 highest possible score is 58.

Appendix B: Answer Sheet Blanks

These are the answer sheet blanks. Copies of these blank answer sheets may be duplicated in the normal fashion. However, the answers that are found within the brackets must be printed on these blank answer sheets in invisible ink. These answers are found in Appendix C. If you have the capability to print invisible ink, make copies of the blank answer sheets. Make a master of the answers that appear in Appendix C. Then print the invisible ink on the blank answer sheets, being careful to make sure all pages print and that the appropriate answers line up with the appropriate blanks. The Master Answer Sheet shows all the answers in their proper places.

Most companies and trainers prefer to obtain copies of the preprinted answer sheets from MSHA, National Mine Health & Safety Academy, Dept. of Instructional Materials, 1301 Airport Road, Beaver, WV 25813-9426 phone 304-256-3257, fax 304-256-3368 or email to lord-mary@msha.gov.

The exercise is designed to be used in small groups. You will need one answer sheet for each group of 3 to 5 persons in your class. The answer sheets are consumable. You will need a new set for each class.

A developing pen is also needed by each person who marks an answer sheet.

Answer Sheet for Bernie's Feeder Accident

Use this answer sheet to mark your selections. Rub the developing pen gently and smoothly between the brackets. Don't scrub the pen or the message may blur. Be sure to color in the entire message once you make a selection. Otherwise you may not get the information you need.

Question A (Select as MANY as you think are correct.)

- 1. []
[]
- 2. []
[]
- 3. []
[]
- 4. []
- 5. []
[]

Question B (Choose only ONE unless you are told to "Try Again!")

- 6. []
- 7. []
- 8. []
- 9. []

Question C (Select as MANY as you think are correct.)

- 10. []
- 11. []
[]
- 12. []
- 13. []

Question D (Choose only ONE unless you are told to "Try Again!")

- 14. []
- 15. []
- 16. []
- 17. []
 []

Question E (Select as MANY as you think are correct.)

- 18. []
- 19. []
- 20. []
 []
- 21. []
- 22. []
 []

Question F (Select as MANY as you think are correct.)

- 23. []
- 24. []
 []
- 25. []
- 26. []
 []
 []
- 27. []
- 28. []

Question G (Choose only ONE unless you are told to "Try Again!")

29. []

30. []
[]

31. []
[]

32. []
[]

Question H (Select as MANY as you think are correct.)

33. []

34. []

35. []

36. []

37. []

38. []

Question I (Select as MANY as you think are correct.)

39. []

40. []
[]

41. []

42. []

43. []
[]

Question J (Select as MANY as you think are correct.)

- 44. []
[]
- 45. []
- 46. []
- 47. []
- 48. []
- 49. []
[]
- 50. []
[]
[]
- 51. []
[]

Question K (Select as MANY as you think are correct.)

- 52. []
- 53. []
- 54. []
[]
- 55. []
- 56. []
- 57. []
[]
[]
- 58. []

Finding your score

Number of "Correct" answers you colored in = (1) _____

29 minus number of incorrect answers you colored in = (2) _____

Add the numbers in blanks one and two to get your total score = (3) _____

Highest possible score = 58

Lowest possible score = 0

Appendix C: Invisible ink Answers

These pages contain the answers that must be printed in the blanks of the answer sheet in Appendix B. These answers are spaced and sequenced correctly so that they exactly match up with the appropriate blanks on the answer sheet blank.

Once the answers have been printed in the answer sheet blanks, the developing pen reveals the formerly invisible printed message.

You may obtain preprinted answer sheets or you may prepare your own copies. To learn more about these options, and to determine how many answer sheets and developing pens you will need, see the introductory section of the Instructor's Copy.

Bernie is tired and unable to handle the 6 x 6's alone. You hear him grunting as he strains to position the timbers under the feeder.

Correct. Handling heavy materials, such as large timbers, in limited space, is more than a two-man job.

Correct. Five foot, 6" x 6" timbers can weigh as much as 60 pounds. They are difficult to handle without help, especially when tired.

This would not help the situation at all.

Definitely Not. Totally against lockout procedure, and dangerous. Anyway, the belt is jammed.

You are now both exposed to a crushing hazard. Try again!

Bernie says "No it's not, it needs to be moved." He keeps working. Try again!

Correct. But Bernie does not come out. Do the next question.

Bernie is in danger. Try again!

The belt has been properly locked out. It will not start up.

Correct. Although the feeder seems to have moved all it's going to, it is still not stabilized.

Correct. It moved once, it could again. Bernie is in a very bad position.

Correct. He should avoid "pinch points".

Correct. Bernie says, "No! Damn it!" Do the next question.

This is not the first thing to do. Other injuries maybe present. Try again!

Since Bernie is talking, his breathing must be OK. Try again!

You should not move an injury victim until you know what is wrong with him. Anyway, you're 300 feet away from the first aid kit. Try again!

This could cause further injury. You should suspect multiple fractures.

Correct. Bernie points to his palm and first three fingers.

Correct. The first, second, and third fingers are twisted. The wrist appears normal.

Bruising usually takes several hours to show.

Correct. The wrist appears normal, but the palm and first three fingers are swollen and red.

Correct. His hand should be placed in a relaxed position before bandaging.

Correct. His fingertips should be left visible so that circulation may be checked.

This should not be done. His hand should be placed in a relaxed position.

The wrist (radial) pulse won't tell you if the circulation to the hand has been cut off. Circulation should be checked by nail bed compression before and after bandaging.

Correct. Elevating his hand will help minimize swelling and reduce bleeding.

Correct. Although blood loss may be minimal, he could still go into shock.

When you do, he gets angry and says he was just kidding around. Try again!

When you do this, Bernie doesn't wake up. You are endangering him.
Try again!

Once correctly applied, don't remove a dressing. More bleeding could occur.
Try again!

Correct. You find his airway open. There is no sign of vomit. His pulse is fast and weak. Do the next question.

Bernie needs your help now.

It would be difficult to carry Bernie 400 feet in this way.

Correct. The blanket will help keep him warm, and help you move him.

Correct. A stretcher will make transport much easier.

Correct. This will help maintain his circulation.

Correct. Do anything to limit further injury to Bernie and others too.

Giving Bernie something to drink could harm him.

Correct. His breathing is fast but strong and regular. His pulse is fast and weak.

This could harm him.

Correct. It is important to maintain his airway since he is unconscious.

Correct. Your voice and words can comfort him even if he cannot respond.
When you pinch, he responds slightly.

Correct. You say you found none. The two EMT's continue their own primary and secondary survey.

Correct. You say about 30 minutes.

This is inappropriate. It might be heard by Bernie and add to his problems.

Correct. You explain a 6 x 6 timber fell on his hand and mashed it.

This is irrelevant and it might be heard by Bernie and add to his problems.

You say you don't know. The EMTs should know which is the nearest and best facility.

Correct. You explain how you applied the dressing and bandages. After inspecting the bandage and checking Bernie's finger circulation by nail bed compression, the EMTs leave the bandage in place.

Correct. You say no, but that John is upset because his joke made Bernie worse.

Correct. Pain and mutilation can easily induce a state of shock.

There was very little loss of body fluids.

It was important to conduct a primary and secondary survey and bandage Bernie's hand before transporting him.

These are symptoms of shock not the cause.

Correct. Such remarks made in jest may be taken seriously by the victim.

Correct. Although Bernie did not loose much blood, his fainting indicated a pooling of blood in his abdomen and legs. This is why laying him down and raising his feet helped supply his heart and brain with blood.

These are symptoms of his shock not the cause.