

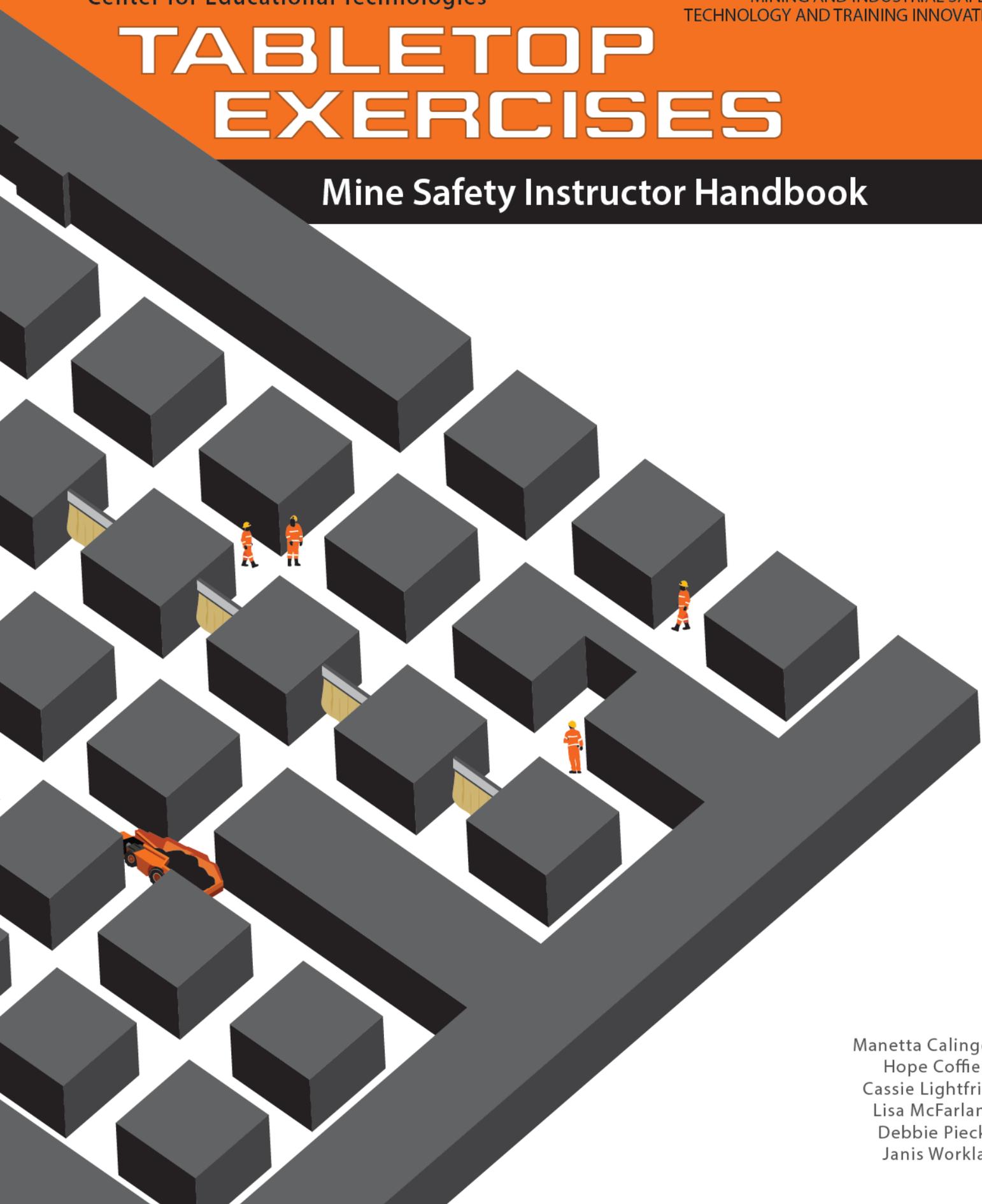
MISTTI

MINING AND INDUSTRIAL SAFETY
TECHNOLOGY AND TRAINING INNOVATION

Wheeling Jesuit University
Center for Educational Technologies®

TABLETOP EXERCISES

Mine Safety Instructor Handbook



Manetta Calinger
Hope Coffield
Cassie Lightfritz
Lisa McFarland
Debbie Piecka
Janis Worklan

PREFACE

Emergencies happen. How your mine responds may determine whether lives are saved. Crandall Canyon, Sago, Aracoma, and Upper Big Branch mine disasters remind us that an industry's record of continuous improvement and the lives of miners can be compromised in a moment. Mines are dangerous and dynamic environments. Each mine must systematically and continuously identify and then eliminate or control its risks for hazards that could contribute to fire, explosion, inundation, or roof fall in order to prevent multiple fatality disasters. Mine safety in the United States has improved dramatically since the 1977 Mine Safety and Health Act. However, underground mine disasters as well as injuries and fatalities because of accidents during routine repair and maintenance activities still occur.

As mines become safer and disasters fewer, the number of miners experienced in handling emergencies is also smaller. This tabletop exercise handbook was developed by the Emergency Preparedness and Worker Safety Training Program at the Center for Educational Technologies[®] at Wheeling Jesuit University in Wheeling, WV, as a training tool for mines to discuss their plans and procedures in the context of an emergency scenario. These exercise materials were developed with input from mine safety professionals and mine emergency responders. They were influenced by guidance set forth by the U.S. Department of Homeland Security (DHS) Homeland Security Exercise and Evaluation Program (HSEEP).

Tabletop exercises offer an effective method for reviewing plans, procedures, and policies before investing the high level of time, cost, and resources necessary for a functional, or full-scale, exercise. They do not involve expensive physical simulators nor do they attempt to arrange elaborate facilities or actual communications. However, they are a good way to acquaint key personnel with emergency responsibilities, procedures, and one another. Tabletops can motivate people to think as they would in a real event and to solve problems as a group.

DISCLAIMER

This publication was made possible by grant number 1H75OH009822-01 from the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention. The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official view of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. Mention of any company, product, or website does not constitute endorsement by NIOSH.

CONTACT INFORMATION

For more information about The Mining and Industrial Safety Technology and Training Innovation (MISTTI) project, contact the Center for Educational Technologies:

Telephone: (304) 243-4326

Email: mistti@cet.edu

Website: <http://mistti.cet.edu/>

This page is intentionally left blank.

CONTENTS

Preface	i
Disclaimer	i
Contact Information	i
Tabletop Exercises	1
Definition	1
Participants	1
Exercise Structure.....	2
Exercise Guidelines	2
Exercise Assumptions	2
Facilitating the Exercise	3
Preparation	3
Facilitation Tips.....	3
Evaluating the Exercise	5
Participant Debriefing and Feedback.....	6
Module 1: Eagle Creek Mine—Normal Day?	7
Key Issues	7
Discussion Questions.....	7
Module 2: Atmosphere Alerts	9
Key Issues	9
Discussion Questions.....	9
Module 3: Incident and Injuries	11
Key Issues	11
Discussion Questions.....	11
Exercise Debrief Summary	13
Participant Feedback	15

This page is intentionally left blank.

TABLETOP EXERCISES

Definition

Tabletop exercises are discussion-based exercises that offer an effective method for reviewing plans, procedures, and policies before investing the high level of time, cost, and resources necessary for a functional, or full-scale, exercise. In some cases they are used to develop new plans or to assess interagency coordination. Tabletop exercises do not involve expensive physical simulators nor do they attempt to arrange elaborate facilities or actual communications. However, they are a good way to acquaint key personnel with emergency responsibilities, procedures, and one another. Tabletops can motivate people to think as they would in a real event and to solve problems as a group.

Objectives

Tabletop exercises are designed to improve knowledge of a mine's current plans, procedures, and capabilities for a response to mine emergency. Participants will:

1. Demonstrate knowledge of their mine's routine, nonroutine, and emergency procedures in responding to scenario-specific situations.
2. Practice responses to both routine and emergency incidents in a secure, low-stress environment.
3. Become more aware of communication protocol in both routine and emergency situations.
4. Discuss the decision-making process used during response to a mine emergency.
5. Identify areas where plans, procedures, or capabilities may need improvement in a secure environment.
6. Gain confidence in dealing with nonroutine and emergency situations.

Participants

Tabletop exercises include at least one facilitator and a group of participants.

Facilitators present the scenario situation updates, moderate the discussion, monitor the pace of the exercise, and may pose questions to the participants.

Participants respond to situations presented in the emergency scenario based on current plans and procedures used by their organization as well as their knowledge and experience.

Sometimes, one or more **evaluators** may assist the facilitator by observing and recording key issues discussed during the exercise.

Exercise Structure

Exercise scenarios are constructed to challenge participants with realistic event narratives and are paced for communication interaction, response, and evaluation. During this tabletop exercise participants will participate in the following three modules:

- Module 1: Eagle Creek Mine—Normal Day?
- Module 2: Incident and Injuries
- Module 3: Atmosphere Alerts

Each module begins with a situation update that summarizes key events occurring within that time period. Based on the information provided, participants review the situation and engage in a discussion of appropriate response issues. The goal of the discussion is to identify any additional requirements, critical issues, decisions, or questions that should be addressed at this time.

Questions provided after each situation update suggest general subjects for discussion. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question. Select from or add to these discussion questions to meet your mine's specific training needs.

Exercise Guidelines

- A tabletop exercise is not a test.
- Participants should respond based on their knowledge of current plans, capabilities, and assets—not what may be planned for the future.
- The exercise setting is the perfect opportunity to consider different approaches and evaluate possible improvements to current resources, plans, and training.
- Varying viewpoints are not only OK, but expected. This is intended to be an open, low-stress, no-fault environment.
- This exercise is an opportunity to discuss and present multiple options and possible solutions. Decisions are not precedent setting and may not reflect your organization's final position on a given issue.
- Suggestions and recommended actions that could improve response and preparedness efforts are more valuable than placing blame. Problem solving should be the focus.

Exercise Assumptions

In any exercise some assumptions and artificialities are necessary in order to finish discussion within the time allotted. During an exercise the following apply:

- The scenario is plausible, and events occur as they are presented.
- It is a typical workday at the mine. There are no unusual events or extraneous mining operations occurring in addition to what is presented in the situation updates.
- There is no hidden agenda, and there are no trick questions.
- All participants receive information at the same time.

FACILITATING THE EXERCISE

A tabletop exercise is like a problem-solving or brainstorming session. Problems are usually tackled one at a time and talked through without stress. The facilitator must have good communication skills and be well informed on your mine's plans, procedures, and organizational responsibilities.

The facilitator has a number of responsibilities. As the facilitator you will:

- Introduce the scenarios.
- Select and ask discussion questions.
- Facilitate the problem solving and draw answers and solutions from the participants by steering them in the right direction without giving them the answer.
- Control the pace and flow of the exercise.

Preparation

Decide on a location, training date, training duration, and whom to invite. Invite participants well before the training date. The exercise timeline is expected to last no more than four hours. Before the exercise familiarize yourself with the scenario situation updates. If desired, further customize these for your mine to add realism. Select from or add to the discussion questions provided to meet your mine's specific training needs. Ahead of time, prepare any digital or hard copies of materials you intend to share with participants, such as the situation updates and participant feedback forms.

Facilitation Tips

Set the stage. Opening remarks and activities influence the whole experience. Participants need to know what will happen and to feel comfortable being there. If the participants don't know one another, it may be a good idea to have them introduce themselves (name and job title) so that everyone will understand where individual perspectives are coming from during the ensuing discussions.

Explain. Success largely depends on the participants' having a clear understanding of what is expected of them. Explain the ground rules or any simulation techniques you plan to use before beginning the exercise.

Begin the exercise. Present the first situation update. Then, try to let the discussion evolve naturally on its own. If necessary to get the discussion started, nudge participants with a non-leading question, such as What would you do in this situation? If no one is willing to break the ice, direct the question to a particular individual, preferably one whom you know has a leadership role in his or her regular work environment.

Control and sustain action. A discussion-based exercise, including the debrief, typically can be conducted in a 2-4 hour session. This time range is flexible and depends on the amount of discussion generated during the exercise. The pace is controlled by the facilitator, who manages the discussions and presents the situation updates. Situation updates and discussion questions are for sustaining action while meeting key objectives. Maintain a balance between talking a

problem to death and moving along so fast that nothing gets settled. Watch for signs of frustration or conflict. Tabletops are for training participants, not testing participants. If you see mounting frustration or conflict, stop the exercise and use your experience as a discussion leader to help the participants resolve conflicts and feel comfortable.

Involve everyone. It is important that everyone participates and that no one person dominates the discussion. Give extra encouragement to those reluctant to join the discussion. Be patient. Avoid the temptation to jump in with solutions if it is silent at first. Instead, draw out the answers from the participants.

Push beyond superficial solutions. Some facilitators move too quickly through the scenario, believing that they need to meet all of the objectives and get through all of the questions. That is not a good approach if nothing gets settled. Take the time to solve problems rather than rushing through questions or situation updates. Make sure your participants come up with realistic, accurate, and workable solutions. If you encourage participants to work through issues, maintain their interest throughout the exercise, and enable them to reach consensus, then the tabletop is a success!

EVALUATING THE EXERCISE

An important part of any exercise is evaluating the exercise outcomes. For small exercises the facilitator is often the exercise evaluator. Sometimes, one or more evaluators may assist the facilitator by observing and recording key issues and recommendations discussed during the exercise.

Before the exercise: If you're not already, become familiar with the mine's routine and emergency plans and procedures as well as the tabletop exercise objectives

During the exercise: During the exercise numerous issues are likely to be discussed at the same time. You won't be able to record all of the discussion, especially if you are also facilitating the exercise, but take notes during the discussions that might help you facilitate an exercise debrief. If you are familiar with written plans and procedures, it will make identifying the most valuable evaluation information more manageable. The notes you take will ensure that a summary of the take-home points are not overlooked or forgotten. Note problem or gray areas that might require follow-up.

The following questions might help you identify noteworthy types of information:

- What plans, policies, and procedures do participants implement to prevent, protect against, respond to, or recover from the incident described in the exercise scenario?
- Do participants engage in creative problem solving beyond current plans and procedures?
- Are roles and responsibilities of the various positions in the emergency action plan clearly defined?
- What information about the scenario, the hazards, or the victims do the participants attempt to collect?
- How are various decisions made? Who has authority to make those decisions?
- Are there any problem or gray areas that might require follow-up?

After the exercise: A debrief is essential for evaluating exercise outcomes. A tabletop exercise debrief is a brief discussion after the exercise to allow participants to give their feedback on the exercise and the conclusions or decisions at which they arrived. Review the exercise objectives to determine if the objectives were met by the exercise.

Participant Debriefing and Feedback

After the exercise there will be a short exercise debriefing. Encourage participants to describe how they think things went, what should change, and what they might have done differently. You may wish to write some of these key points on a flip chart during the debriefing. Start out by asking participants to identify major strengths or other positive outcomes. You can use the exercise debrief summary form provided in this handbook as a tool to focus discussions during the debriefing as well as a tool for recording key issues and recommendations discussed during the exercise.

Distribute and ask participants to complete the participant feedback forms after each day of the workshop and then collect these forms. This feedback can be used to improve future exercises.

MODULE 1: EAGLE CREEK MINE—NORMAL DAY?

The Eagle Creek mining complex owned by CoalCon Resources has three bituminous coal mines in West Virginia. The Number 2 Mine began continuous miner development in April 2005 and longwall mining later that fall. The mine produces medium-sulfur coal from under its 8,900 acres and employs 650 miners.

It is 5:35 a.m. on a typical Sunday at work at the Number 2 Mine. You hear from another miner that the belt at Crosscut 54 is running rough, but still running.

Shortly after, you learn that an electrical problem has affected the ventilation flow on the operating longwall.

Key Issues

- Possible problem with conveyor at Crosscut 54.
- Electrical problem has affected ventilation flow.

Discussion Questions

The following questions are provided as suggested topics that you may wish to address as the exercise discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question. Select from or add to these discussion questions to meet your mine's specific training needs.

1. What do you do?
2. What actions, if any, should be taken to correct the “rough running” conveyor belt?
3. What are the hazards involved in the rough running conveyor belt?
4. What are the hazards involved in reduced ventilation flow on the operating longwall?
5. How would miners know the ventilation has been affected?
6. How would you find out ventilation flow requirements for the operating longwall?
7. What ventilation regulations apply to the situation?
8. Who makes the decisions regarding the situation?
9. Do you have the needed internal and external resources and capabilities to respond?
10. What actions did your group decide to take? What steps, if any, should be taken next?

This page is intentionally left blank.

MODULE 2: ATMOSPHERE ALERTS

The atmosphere gets dustier, and visibility is definitely reduced. The carbon dioxide reading is up in some parts of the mine, and the methane reading is at 1.30 percent.

Key Issues

- Increased dust in the atmosphere.
- Decreased visibility.
- Increased carbon dioxide level.
- Increased methane level.
- Evacuation possibility.

Discussion Questions

The following questions are provided as suggested topics that you may wish to address as the exercise discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question. Select from or add to these discussion questions to meet your mine's specific training needs.

1. What do you do?
2. What safety procedures are followed?
3. What do you know about the procedures in your mine rescue notification plan?
4. How do you find out what miners may still be in the mine?
5. When do you don your SCSRs?
6. Are your communication procedures different from communication used in routine operation? If so, how do they differ?

This page is intentionally left blank.

MODULE 3: INCIDENT AND INJURIES

You expect to receive a report on the ventilation flow. Instead, you are told that a roof fall has occurred on the headgate end of the longwall, some 2.5 miles inby from the mains on the startup of the longwall. The resulting airblast injured miners working at the longwall section.

Key Issues

- Roof fall at the maingate end of the longwall.
- Injured miners.

Discussion Questions

The following questions are provided as suggested topics that you may wish to address as the exercise discussion progresses. These questions are not meant to constitute a definitive list of concerns to be addressed, nor is there a requirement to address every question. Select from or add to these discussion questions to meet your mine's specific training needs.

1. What would be done to address this situation?
2. What safety procedures are followed?
3. Are your communication procedures different from communication used in routine operation? If so, how do they differ?
4. What do you know about the procedures in your mine rescue notification plan?
5. Who is responsible for reporting this incident? Who would be called to assist?

This page is intentionally left blank.

EXERCISE DEBRIEF SUMMARY

Exercise Name:

Date and Location:

Participants:

Strengths, Areas for Improvement, and Lessons Learned

1. The major strengths or other positive outcomes identified by today's exercise include:
2. The exercise raised the following recommendations for improvements related to mine emergency response:
3. The following issues were unresolved or are items that may require follow-up. If applicable, indicate if the issue is a high priority requiring immediate attention:
4. Describe any lessons learned suitable for sharing with other mines or responders:
5. Exercise participants also noted the following:

This page is intentionally left blank.

PARTICIPANT FEEDBACK

I have _____ years of experience in the mining industry.

Exercise role: Participant Facilitator Observer Evaluator

Please circle your response

(1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5 = strongly agree).

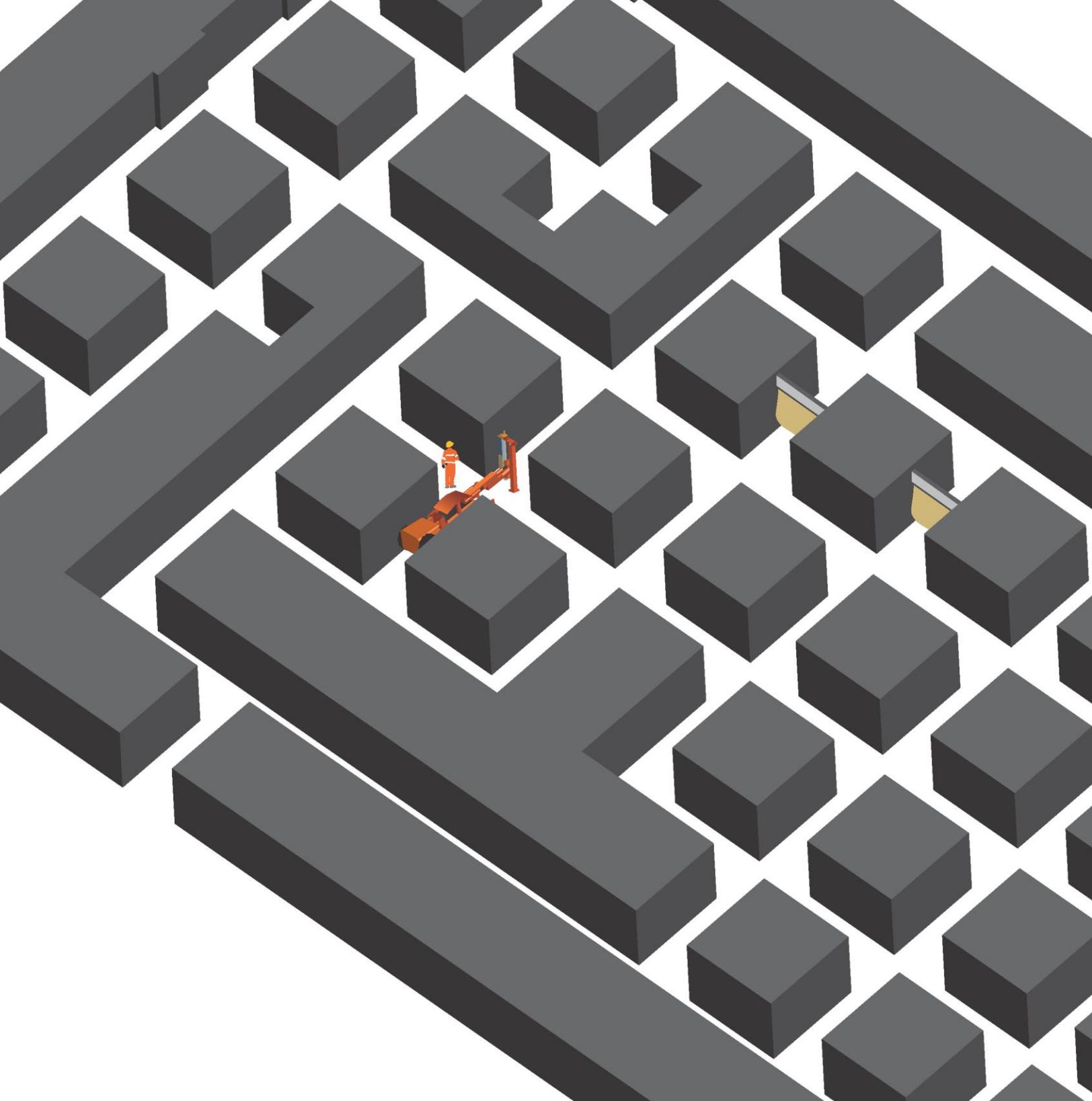
The exercise content was relevant to my job.	1	2	3	4	5
The exercise scenario was plausible and realistic.	1	2	3	4	5
Exercise discussion questions promoted relevant group discussion.	1	2	3	4	5
The exercise materials provided were useful.	1	2	3	4	5
The difficulty of this exercise was appropriate.	1	2	3	4	5
The pace of this exercise was appropriate.	1	2	3	4	5
Because of this exercise I believe I am better prepared to deal successfully with the scenarios that were exercised.	1	2	3	4	5
Because of this exercise I believe my organization is better prepared to deal successfully with the scenarios that were exercised.	1	2	3	4	5

What was most valuable about this exercise?

What was least valuable about this exercise?

Please provide any recommendations on how future exercises could be improved.

This page is intentionally left blank.



This project was supported by Grant Number 1H75OH009822-01 from the CDC-NIOSH. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC-NIOSH.

