



Training Solutions, Delivered!

CRANE SIGNAL PERSON BASIC TRAINING

**Leader's Guide, Fact Sheet
& Quiz**

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation.

PREPARING FOR THE MEETING

Here are a few suggestions for using this program:

- a) Review the contents of the Fact Sheet that immediately follows this page to familiarize yourself with the program topic and the training points discussed in the program. The Fact Sheet also includes a list of Program Objectives that details the information that participants should learn from watching the program.
- b) If required by your organization, make an attendance record to be signed by each participant to document the training to be conducted.
- c) Prepare the area and equipment to be used for the training. Make sure the watching environment is comfortable and free from outside distractions. Also, ensure that participants can see and hear the TV screen or computer monitor without obstructions.
- d) Make copies of the Review Quiz included at the end of this Leader's Guide to be completed by participants at the conclusion of the presentation. Be aware that the page containing the answers to the quiz comes before the quiz itself, which is on the final page.

CONDUCTING THE PRESENTATION

- a) Begin the meeting by welcoming the participants. Introduce yourself and give each person an opportunity to become acquainted if there are new people joining the training session.
- b) Introduce the program by its title and explain to participants what they are expected to learn as stated in the Program Objectives of the Fact Sheet.
- c) Play the program without interruption. Upon completion, lead discussions about your organization's specific policies regarding the subject matter. Make sure to note any unique hazards associated with the program's topic that participants may encounter while performing their job duties at your facility.
- d) Hand out copies of the review quiz to all of the participants and make sure each one completes it before concluding the training session.

4034 CRANE SIGNAL PERSON BASIC TRAINING FACT SHEET

LENGTH: 17 MINUTES

PROGRAM SYNOPSIS:

Cranes have been in operation for more than 2,000 years, having been invented by the ancient Greeks. Today, there are a wide variety of cranes found on construction sites and in industrial facilities. Just as important as cranes are in moving material and equipment is communication between the crane operator and the crane signal person. Knowing crane limitations and communicating clearly with the operator will help keep this valuable equipment operating safely, while protecting the safety of the operator and your co-workers on the ground.

This program provides a basic overview of signal person roles, responsibilities, signals and safety considerations. Illustrated are the twenty standardized hand signals approved by OSHA and ASME as well as a review of voice signals, “new” and “non-standard” signals.

PROGRAM OBJECTIVES:

After watching the program, participants will be able to:

1. Provide a general overview of crane operations and limitations.
2. Describe and demonstrate the standard crane hand signals.
3. Explain and demonstrate the correct use of voice signal communication.
4. Explain the use of non-standard and new signals.
5. Describe the basic safety practices for a crane signal person.

INSTRUCTIONAL CONTENT:

INTRODUCTION

- The beginning of the program describes how important cranes are for the movement of material and equipment in the construction environment. The importance of clear communication between the crane operator and the crane signal person is also highlighted. The relevant OSHA and ASME standards are also cited.

BASIC CRANE COMPONENTS AND OPERATION

- Cranes have been in operation for more than 2,000 years, having been invented by the ancient Greeks. Today, there are a wide variety of cranes found at construction sites, such as truck mounted cranes, rough terrain cranes and crawler cranes equipped with tracks.
- The basic components of mobile cranes include a movable boom attached to a platform. The boom can be raised or lowered, as well as rotated to move a load horizontally. There are also cranes with telescoping booms. A spool with steel cables extends to the end of the boom and attaches to the load. A powerful motor provides the force to move the boom and raise or lower the load.
- Most cranes also have heavy counterweights to help offset the weight of the load. Many cranes have outriggers to increase stability and help ensure that they remain level during operation.
- Tower cranes are also widely used. The jibs on most tower cranes are secured in a horizontal position and rotate on their pedestal. The load can be raised or lowered and travel horizontally along the length of the jibs.

CRANE LIMITATIONS

- It is important to be aware of crane limitations, such as their load limits. The further the load is moved from the center of the crane, the less weight the crane can lift. For example, extending a telescopic boom reduces its lifting capacity. Also, lowering the boom decreases the crane’s load limit, because the load moves further away from the crane.
- When a crane picks a load, the boom often deflects downwards. This is called boom deflection. This can present two hazards. It lowers the cranes lifting capacity by causing the load to be further from the crane. It can also cause the load to swing as it lifts off.

CRANE HAND SIGNALS

- Standardized hand signals are commonly used by the crane signal person. The signal person is the only one who should give signals to the operator. The only exception is if other personnel see a hazard, they can use the emergency stop signal. When the signal person gives directions to the operator, they must be from the operator's perspective.
- The video illustrates the 20 standardized hand signals that are included in OSHA and ASME documents. The first group of signals applies to both mobile and tower cranes: Stop, Emergency Stop, Hoist, Lower, Move Slowly, Swing and Dog Everything.
- The next group generally applies to mobile cranes: Use Main Hoist, Use Whipline, Boom Up, Boom Down, Boom Down and Raise the Load, Boom Up and Lower the Load and Travel.
- This set of signals applies to crawler cranes: Travel-Both Tracks and Travel-One Track.
- Cranes with telescoping booms also have specific signals: Telescope Out, Telescope In, Telescope Out (One hand signal), and Telescope In (One hand signal).
- Two additional signals apply to tower cranes only: Tower Travel (Travelling tower cranes only, and Trolley Travel).

VOICE SIGNAL COMMUNICATION

- In situations where hand signals are not appropriate, voice signals are an option. Portable radios are often used. They should be tested before crane operations begin and they should use a dedicated channel.
- The crane operator must use a hands free device. Verbal signals should be short and clear. They should include three key elements, spoken in this order:
 - The function and direction**
 - The distance and/or speed**
 - Function stop**
- The function names should be the same as the hand signals described earlier. Here are some examples of proper voice signals:
 - Boom up. Slowly. Slowly. Boom stop.**
 - Lower load. 10 feet. 5 feet. 2 feet. Lower stop.**
- As with hand signals, voice communication between the signal person and the operator should be continuously maintained during crane movements. Directions should be given from the direction perspective of the operator.

NON-STANDARD AND NEW SIGNALS

- A situation may arise where standard signals don't communicate all the information the operator needs. In that case, a new, non-standard signal may be used, as long as it is clearly understood by the operator, signal person and lift director.
- OSHA guidelines regarding the use of non-stand signals are outlined in CFR 1926.1419.

GENERAL SAFETY CONSIDERATIONS

- An overview of basic safety precautions is described.
- Typical PPE will likely include hard hat, safety glasses, gloves, high visibility vest and work boots.
- Before the lift begins, check that the load hook is centered over the load and that the rigging gear is properly set. Also check that the load stays centered during the lift.
- Watch for power lines to be sure the boom or load doesn't get too close.
- Watch the boom deflection closely to make sure it doesn't exceed the load radius.
- Make sure other personnel stay out of the crane operating area and always keep yourself and others from under a suspended load.
- The rotation of the cab and counterweights presents a hazard. Stay well away from its rotation zone.
- Avoid using your hands to control a load. Use a tag line so you can stay a safe distance from the load.
- When an operator is moving a load horizontally, it may swing if the boom stops suddenly. Stay well away from swinging loads.
- Also, pay close attention to weather conditions. Lightning and strong side winds can produce serious hazards. The steel boom can act like a lightning rod and the wind pushing on the load and boom can make cranes unstable.

CONCLUSION

- This has been a basic overview of signal person roles, responsibilities, signals and safety considerations. It is likely that there are other signals, safety procedures and policies that are specific to your work site.
- Cranes are magnificent pieces of equipment. Knowing their limitations and communicating clearly with the operator will help keep them operating safely, while protecting the safety of the operator and your co-workers on the ground.

INTERVIEW STATEMENTS

- The video also contains several statements by an experienced crane operator about the vital role the crane signal person plays to ensure the safety and effectiveness of crane operations.

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ANSWERS TO THE REVIEW QUIZ

1. b

2. a

3. b

4. c

5. a

6. a

7. a

8. b

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REVIEW QUIZ

The following questions are provided to determine how well you understand the information presented in this program.

Name _____ Date _____

1. Cranes have been in operation for more than 2,000 years, having been invented by the ancient _____.
 - a. Romans
 - b. Greeks
 - c. Egyptians

2. Most cranes have heavy counterweights to help offset the weight of the load.
 - a. True
 - b. False

3. The further the load is moved from the center of the crane, the _____ weight the crane can lift.
 - a. More
 - b. Less

4. _____ is the only hand signal that should be given to the crane operator by personnel other than the signal person.
 - a. Move Slowly
 - b. Hoist
 - c. Emergency Stop

5. When using voice signal communication, the crane operator must use a hands free device.
 - a. True
 - b. False

6. Signals that specify direction should be given from the direction perspective of the operator.
 - a. True
 - b. False

7. Non-standard signals may be used in certain situations as long as they are clearly understood by the operator, signal person and lift director.
 - a. True
 - b. False

8. You should use your hands to control a load.
 - a. True
 - b. False