Instructor Guide

306: Troubleshooting and Repair of Interlockings
Module 1: Overview

SIGNALS TRAINING CONSORTIUM

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INDIVIDUAL ACTIVITY

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CLASSROOM ACTIVITY

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SMALL GROUP ACTIVITY

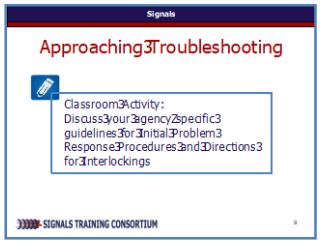
REFER participants to

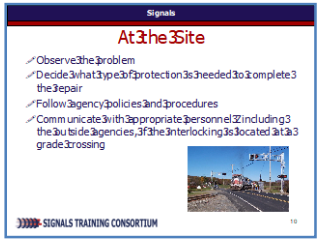
Agenda

Topic #	Topic Title	Duration
1	Overview	10 minutes
2	CBTC Specific Components	30 minutes
3	Field Trip	90 minutes
4	Summary	10 minutes
5	**Total Time:**	140 Minutes

DO	SAY	Materials Needed
CLASSROOM ACTIVITY **ASK**	**In your own words:** Thinking about the steps we just discussed, what are the guidelines that your agency uses to direct initial problem solving response procedures? Write them down. You have [xx] minutes. *Read the directions for the classroom activity. Allow participants time to complete the activity. Ask for 1-2 volunteers to share their agency-specific guidelines.* ***Advance slide.*** Once at the site, the signal maintainer's primary role is to repair and restore the interlockings to service as safely and as quickly as possible. Consider the initial assessment of the issue as well as any hazards that present themselves at the site. ***Advance slide.***	✓ PPT Slides 9, 10

Instructor's Notes





PARTICIPANT GUIDE VIEW

At the Site

Once on site, a signal maintainer's primary role is to repair and restore the interlockings to service as safely and as quickly as possible. Often, the first step is to observe the problem and determine if the interlocking can be repaired quickly or if additional protection is needed for the repair. If the interlocking requires more extensive repairs and additional protections put in place, a signal maintainer should follow their agency's policy and procedures for completing this step.

The initial analysis that began when the notice of the problem was first received should continue. Once on site, a signal maintainer must observe all present safety hazards that may impact the work of the signal maintainer. How hazards are handled will depend on the situation and the signal maintainer's agency policy and procedures to follow. The signal maintainer must also consider what other communication should take place when handling various types of hazards in accordance with their agency's policies and procedures. In some cases, police or local transportation agencies may need to be notified, if the interlocking is located at a grade crossing.

Beyond preliminary observations, it is critical for a signal maintainer to determine potential hazards not listed or immediately recognizable for the safety of everyone else beyond the signal maintainer in the area of the interlockings, nearby road and pedestrian systems, and larger signal and rail systems. This type of analysis is known as **a job site analysis**. A job site analysis involves asking key questions to determine what other hazards may be present or could occur on a job site. In other words, a signal maintainer must not only observe the immediate problem at hand and determine a solution, but they must also take a more in depth look at the problem in conjunction with potential hazards in the surrounding environment as well as within the equipment and system they are working in.

The following questions and related examples regarding a particular work site illustrate an example of a job site analysis.

- **What can go wrong?** The worker's hand/foot could get stuck in a switch point that closes unexpectedly.
- **What are the consequences?** The worker could receive a severe injury or lose toes or hands.
- **How could it happen?** The accident could happen as a result of the worker not adequately securing switch point and/or turning off power going to the switch or derail.
- **What are other contributing factors?** This hazard occurs very quickly. It does not give the worker much opportunity to recover or prevent it once his foot comes into contact with the point. This is an important factor, because it helps you determine the severity and likelihood of an accident when selecting appropriate hazard controls.
- **How likely is it that the hazard will occur?** This determination requires some judgment. If there have been "near-misses" or actual cases, then likelihood of a recurrence would be considered high.

In your rail system, job site hazards may include a range of possible situations and circumstances that are usually determined by the location, as well as equipment and sub-systems involved. These should always be considered and accounted for during a job hazard analysis.

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Classroom Activity

With the help from your instructor, list some of the more common potential and subtle hazards that may be found in your transit system when troubleshooting interlockings.

Situational awareness is another process used by one rail authority to analyze potential hazards on a job site. Specifically, situational awareness:

- Involves being aware of what is happening around you to understand how information, events and your own actions will impact your safety and the safety of others, both now and in the near future.
- Encompasses understanding your work environment, your job task, possible changing conditions and the actions of yourself and those around you.
- Can benefit everyone.

Further, this situational awareness policy urges frontline workers to be the eyes and ears of the public transportation agency and to: "if you see something, say something;" as well as expect the movement of trains at any time, on any track in either direction.

The policy outlines several areas where situational awareness would be beneficial, including: operating trains/on-track equipment; working on or near Right-of-Way or in a shop or office environment or in complex interdepartmental operations; and during emergencies.

Classroom Activity

With assistance from your instructor, review your rail agency's job site analysis or situational awareness policy and/or procedures. Then share one experience when you implemented one aspect of that policy, giving the location, and how your actions fostered a safe environment for you and others.

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DO	SAY	Materials Needed
CLASSROOM ACTIVITY **WRITE**	**In your own words:** Let's apply the concepts of job site analysis and situational awareness to your own experiences. Write down some of the more common potential hazards that may be found when troubleshooting interlockings? Then, review your agency's job site analysis or situational awareness procedures and describe a situation in which you implemented them. ***Advance slide.***	✓ PPT Slide 13

Instructor's Notes