

# Event Recorder Systems Electrician Training

Course ID# X000-000-00 \_\_\_\_\_

**Course Objective:** In this course, participants learn how to operate the Event Recorder Systems (ERS) used in: Gallery 8400/8500/8600 series cab cars; Highliner 1500/1600/1200 series EMU cars; and locomotives HL2, MP36PH\_Elec, and EMD-F40PH-3 in compliance with \_\_\_\_\_. At the end of the course, participants must be able to identify ERS components, understand the basic operation of the ERS, perform ERS data download, understand basic troubleshooting of ERS fault conditions, and perform ERS 92-day inspection and download.

**Audience:**

- Apprentice Electricians

**Duration of Course:**

- 4 days

**Prerequisites:**

- \_\_\_\_\_

## Course Assets

X	Course Guide	X	Assessments	X	Misc Documents
X	Presentation	X	Practical Exercises		Training Aids

**Pass/Fail Criteria:**

- Written exam: 75%
- Practical exercise: 75%

## Materials/References

**Course Guide(s):**

- *Event Recorder Systems Electrician Training\**

*Listed in order of presentation.*

**Forms/Procedures:**

- *Cab Car Event Recorder 92-Day Inspection and Download Form – Form #:RC99068CC (Apprentice Electricians)*
- *Highliner 1200 Series Event Recorder 92-Day Inspection and Download Form – Form #:RC99068H-1200 (Apprentice Electricians)*
- *Locomotive Event Recorder 92-Day Inspection and Download Form – Form #:RC99068L (Apprentice Electricians)*
- *Maintenance Practice 19 Event Recorder System Download Instructions for Metra Form RC99068CC, Metra Gallery Cab Car, Cab Car Nos. 8400-8478, 8501-8608 (Apprentice Electrician)*
- *Maintenance Practice 19, Highliner 1200 Series Maintenance Practices, Event Recorder System Download Instructions for Metra Form RC99068H-1200, Metra 1200 Series Highliner, Highliner Nos. 1201-1226 (Apprentice Electrician) [Note: Guide is not specifically labeled “Maintenance Practice 19” but is referred to as that during the course]*

- *Maintenance Practice 19 Event Recorder System Download Instructions for Metra Form RC99068L, Metra Locomotive (Apprentice Electrician)*

## Tools:

- Gallery Cab training simulator
- Laptop (1) with WinDnld software and WinDAS software
- Projector (1) and screen (1) for laptop
- Download cable (2, if possible, for cable integrity)
- Access to Metra telephone
- Speed verifier (1)
- Automated Cab Signal Test System (1) with 2 cables

## Media:

- Schematics:
  - *ERS Gallery Cab Car 8400 series*
  - *ERS Gallery Cab Car 8500-8600 series*
  - *ERS Highliner 1200 series*
  - *ERS Highliner 1500-1600 series*
  - *MP36PH\_Elec\_V 28, Event Recorder, Air Manifold, Speed Indicator, Isolation Amplifier & Crew Alerter, Sheet 25 of 89*
  - *MP36PH\_Elec\_V 29, Event Recorder, Sheet 26 of 89*
  - *EMD-F40PH-3\_L 70, Alertor / Event Recorder, Sheet 70 of 110*
  - *EMD-F40PH-3\_L 71, Alertor / Event Recorder, Sheet 71 of 110*
  - *Schematic Diagram of Alertness Control / Event Recorder and Speed Indicator*
  - *Schematic Diagram of PTC Circuit*
  - *Table of Contents, ERS TOC*
  - *Cover Page Loco, Event Recorder Cover*
  - *Table of Contents, Loco ERS TOC*
  - *Cover Page Cab & Highliner [can't locate on server]*
- PowerPoint Presentation:
  - *ERS Electrician Training*
- *Video file, engineer driving locomotive*
- *Event Recorder Evaluation Form*

## Assessment(s):

*Listed by craft.*

- *Exam 1, Event Recorder Systems, Versions 1-3*
- *Mechanical Apprentice Training, Event Recorder Systems Exam 1 Answer sheet, Versions 1-3*
- *Electrician Apprentice Training, Event Recorder Systems Exam 1 Answer Key, Versions 1-3*

## Practical Exercise(s):

*Listed by craft.*

- *Practical Exercise 1, ERS Inspection and Download, Instructions (Apprentice Electrician)*
- *Event Recorder 92-Day Inspection and Download, Form RC99068CC (Apprentice Electrician)*

- *Instructor Review Checklist, ERS Inspection and Download*  
(Apprentice Electrician)



Review *Workforce Education Delivery Standards* to prepare yourself to teach the course.

**Course Recommended Timeline**

<b>Duration</b>	<b>Activity</b>	<b>Training Strategy (DO)</b>	<b>Materials/References/Tools</b>
5 min	<ul style="list-style-type: none"> <li>Welcome</li> </ul>	<ul style="list-style-type: none"> <li>Greet participants.</li> <li>Ask participants to sign in.</li> <li>Confirm registered participants.</li> </ul>	Sign-in Sheet Note paper Pencils Highlighters Name tents
5 min	<ul style="list-style-type: none"> <li>Safety Briefing</li> </ul>	Review these items: <ul style="list-style-type: none"> <li>Meeting location.</li> <li>Exits.</li> <li>Telephone.</li> <li>Fire.</li> <li>CPR and First Aid.</li> <li>AED.</li> <li>Special Needs.</li> <li>Emergency Escort.</li> </ul>	<i>Office Meeting Safety Briefing</i>
10 min	<ul style="list-style-type: none"> <li>Introductions</li> <li>Ice breaker</li> </ul>	<ul style="list-style-type: none"> <li>Introduce yourself.</li> <li>Facilitate participant introductions.</li> <li>Housekeeping (e.g., cell phone use, facility amenities).</li> </ul>	
5 min	<ul style="list-style-type: none"> <li>Safety Rule</li> </ul>	<ul style="list-style-type: none"> <li>Select/read/discuss Safety Rule pertaining to the course subject.</li> </ul>	<i>Safety Rules and General Procedures Manual</i>
10 min	<ul style="list-style-type: none"> <li>Introduce Course</li> <li>Course Objectives</li> </ul>	In this course, you will learn how to operate the Event Recorder Systems (ERS) in: Gallery 8400/8500/8600 series cab cars; Highliner 1500/1600/1200 series EMU cars; and locomotives HL2, MP36PH_Elec, and EMD-F40PH-3, in compliance with _____. At the end of the course, you must be able to identify ERS components, understand the basic operation of the ERS, perform ERS data download, understand basic troubleshooting of ERS fault conditions, and perform ERS 92-day inspection and download.	

Duration	Activity	Training Strategy (DO)	Materials/References/Tools
<b>Lesson 1: Event Recorder Overview</b>			
X min	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>	<ul style="list-style-type: none"> <li>• Transition to first lesson.</li> <li>• Follow course guide; use video file to illustrate the types of events that the event recorder captures.</li> <li>• Alternate between students reading from the course guide, and Instructors reading from the course guide and expanding on the information.</li> </ul>	<p><b>Lessons 1 - 4</b></p> <ul style="list-style-type: none"> <li>• Course guide: <i>Event Recorder Systems Electrician Training</i></li> <li>• Presentation: <i>ERS Electrician Training.pptx</i></li> </ul> <p><b>Lesson 1 only</b></p> <ul style="list-style-type: none"> <li>• Video file: <i>Engineer driving locomotive</i></li> </ul>
<b>Lesson 2: Event Recorder System Components and Operation</b>			
X min	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>	<ul style="list-style-type: none"> <li>• Follow course guide.</li> <li>• Alternate between students reading from the course guide, and Instructors reading from the course guide and expanding on the information.</li> <li>• Relate course guide information to the schematic handouts, encouraging students to follow the path of the electrical signals.</li> </ul>	

Duration	Activity	Training Strategy (DO)	Materials/References/Tools
<b>Lesson 3: Basic Troubleshooting</b>			
X min	<ul style="list-style-type: none"> <li>Lecture</li> </ul>	<ul style="list-style-type: none"> <li>Follow course guide.</li> <li>Alternate between students reading from the course guide, and Instructors reading from the course guide and expanding on the information.</li> </ul>	<p><b>Lessons 3 - 4</b></p> <ul style="list-style-type: none"> <li><i>Maintenance Practice 19 Event Recorder System Download Instructions for Metra Form RC99068CC, Metra Gallery Cab Car, Cab Car Nos. 8400-8478, 8501-8608 (Apprentice Electrician)</i></li> <li><i>Maintenance Practice 19, Highliner 1200 Series Maintenance Practices, Event Recorder System Download Instructions for Metra Form RC99068H-1200, Metra 1200 Series Highliner, Highliner Nos. 1201-1226 (Apprentice Electrician)</i></li> <li><i>Maintenance Practice 19 Event Recorder System Download Instructions for Metra Form RC99068L, Metra Locomotive (Apprentice Electrician)</i></li> </ul>

Duration	Activity	Training Strategy (DO)	Materials/References/Tools
<b>Lesson 4: Inspections</b>			
X min	<ul style="list-style-type: none"> <li>Lecture</li> </ul>	<ul style="list-style-type: none"> <li>Follow course guide.</li> <li>One half of the class reads the Daily Inspection instructions, while the other half reads the 92-Day Inspection instructions. Then, each half of the class presents the material to the other half.</li> </ul>	<ul style="list-style-type: none"> <li><i>Cab Car Event Recorder 92-Day Inspection and Download Form – Form RC99068CC (Apprentice Electricians)</i></li> <li><i>Highliner 1200 Series Event Recorder 92-Day Inspection and Download Form – Form RC99068H-1200 (Apprentice Electricians)</i></li> <li><i>Locomotive Event Recorder 92-Day Inspection and Download Form – Form RC99068L (Apprentice Electricians)</i></li> </ul>
<b>Assessment</b>			
X min	<ul style="list-style-type: none"> <li>Exam</li> </ul>	<ul style="list-style-type: none"> <li>Go over testing rules (e.g., removing all items from desk, storing cell phones).</li> <li>Make sure tests are not identical; use different versions if available.</li> <li>Distribute Exam 1, Event Recorder Systems, Versions 1-3, and Mechanical Apprentice Training, Event Recorder Systems Exam 1 Answer Sheet, Versions 1-3, to Apprentice Electricians.</li> </ul>	<ul style="list-style-type: none"> <li><i>Exam 1, Event Recorder Systems (Versions 1-3)</i></li> <li><i>Mechanical Apprentice Training, Event Recorder Systems Exam 1 Answer Sheet (Versions 1-3)</i></li> <li><i>Electrician Apprentice Training, Event Recorder Systems Exam 1 Answer Key (Versions 1-3)</i></li> </ul>

Duration	Activity	Training Strategy (DO)	Materials/References/Tools
<b>Practical Exercise</b>			
X min	<ul style="list-style-type: none"> <li>Performance observation</li> </ul>	<ul style="list-style-type: none"> <li>Ensure availability of Gallery Cab Training Simulator.</li> <li>Allow time (approx. 1 hour) for each participant to complete the practical exercise (performance observation) for the Cab Car Event Recorder 92-Day Inspection and Download.</li> <li>Allow participants to review course materials while waiting for their turn to perform the Practical Exercise (performance observation).</li> </ul>	<ul style="list-style-type: none"> <li>Clipboards, pencils</li> <li><i>Practical Exercise 1, ERS Inspection and Download, Instructions (Apprentice Electrician)</i></li> <li><i>Instructor Review Checklist, ERS Inspection and Download (Apprentice Electrician)</i></li> </ul>



## Summary of Course Objectives

As a result of this course, you now have the knowledge to operate the Event Recorder Systems in compliance with \_\_\_\_\_ and can perform the following actions:

### Lesson 1: Event Recorder Overview

Describe basic event recorder unit operations.

- Describe the purpose of an event recorder at Metra.
- Identify the two types of event recorders that Metra uses, and explain the key differences between them.
- Explain how an event recorder works.

### Lesson 2: Event Recorder System Components and Operations

Describe how various ERS components work.

- Identify the components of a basic ERS System.
- Identify and describe the function of the major internal components of an event recorder.
- Identify and describe the function of the major external components of an event recorder.
- Describe the purpose of a Crew Alert System and how it works.
- Describe how an air manifold works.
- Identify the location of ERS components in Gallery 8400/8500/8600 series cab cars and Highliners 1200 series cars vs. Highliner 1500/1600 series cars.
- Describe how the speed indicator system works.
- Identify and describe the function of the components of Portable Test Equipment (PTE).

### Lesson 3: Basic Troubleshooting

Describe the basic troubleshooting process.

### Lesson 4: Inspections

Conduct daily inspections and 92-Day Inspection and Download tasks for the ERS according to Maintenance Practice 19.