

***On-the-Job Training Standards
For
Signal System Maintenance Personnel***

March 30, 2023

Foreword

The OJT tasks identified below assumes a continuous and ongoing positive conversation between the designated instructor / qualified person and trainee. It means enough opportunity for conversational feedback before, during, and after any task is undertaken. The purpose of this conversation is to ensure learning transfer occurs. Depending on task complexity and learner skill level, most adults gain mastery of new skills through practice and repetition. OJT standards provide the basis for measuring mastery of new skills in a fair and objective manner. It is understood that many of the tasks below are presented in a manner that may suggest non-complying conditions must be present for the trainee to demonstrate proficiency. That is not the case and it is for this reason that a positive conversation between teacher and learner is encouraged throughout the OJT process.

Please also note that there is no obligation under 49 CFR Part 243 for employers to train safety-related railroad employees on skills they will never apply in connection with their duties. For example, if an employee will not be required to perform duties in passenger service, no training on those tasks is required.

On-the-Job Training Roles and Responsibilities – Example Template

1. The **designated instructor** serves as the overall coordinator of the specific OJT program and is primarily responsible for:

- Acting as the principal point of contact for the process, and ensuring the process is properly implemented.
- Ensuring that all trainees and qualified persons involved in the OJT process have received hard copies of the OJT program or electronic copies of the checklist.
- Providing guidance to both the trainee and qualified person in the process once they have received the OJT program.
- Ensuring that trainees have access to all the supporting publications listed in this OJT program.
- Ensuring the trainee has successfully completed all safety-related tasks to become a qualified member of an occupational category or subcategory.

2. The **qualified person** (sometimes referred to as a peer trainer) may serve as the mentor/coach for trainees. The qualified person must be qualified and has a duty to communicate with the trainees to ensure OJT is properly administered throughout the process. The qualified person will also provide daily briefings at the beginning and end of each day regarding the specific tasks focused on during that day. The trainee may perform OJT under the direct onsite observation of any qualified person, provided the qualified person has been advised of the circumstances and is capable of intervening if an unsafe act or noncompliance with Federal railroad safety laws, regulations, or orders is observed. **However, the trainee must demonstrate OJT proficiency to the satisfaction of the designated instructor to become a qualified member of an occupational category or subcategory.** A designated instructor and qualified person can be the same person.

3. The **trainee** (new hire) has the responsibility to pay close attention to the qualified person providing OJT, and to take advantage of the knowledge and experience he or she has to offer. Tracking progress of the OJT is essential and is the trainee's responsibility. Trainees should be aware of, and abide by, the following:

- The designated instructor and/or qualified person will provide practical information and advice on the requirements and responsibilities of assigned duties.
- Trainees are responsible for completing any narrative and self-study assignments outside the scope of this OJT program. Additional assignments are an integral part of the training experience and must be completed before being deemed qualified by the employer.
- To gain the maximum benefit from the OJT experience, trainees should:
 - Remain alert and involved in the training activities.

- Ask questions and learn from feedback.
 - Take notes and apply previous lessons.
 - Complete all required assignments.
 - Become familiar with and comply with FRA regulations, railroad safety rules, and other procedures mandated as a condition of employment by the employer.
 - Develop and maintain a learning attitude.
- The OJT experience is designed to be much more than following a qualified person around and watching what he or she does. Trainees must take an active role in the OJT and thoroughly engage in the various job tasks outlined in this OJT program.
 - Expect the qualified person to say, “Here, you give it a try.” Remember, while progressing through the OJT program, trainees can learn skills, to develop knowledge, and to adopt work habits and routines that will last throughout a railroad career.
 - Tracking and documenting OJT progress is an essential process step.

Guidelines for On-the-Job Training Program Coordination and Administration

In most cases, the first week or so of employment will involve administrative details and an overall orientation. Although it is understood that a trainee’s duties may overlap with other organizational requirements, each day of OJT should focus on one of the major duties of the OJT program to the extent possible. Once the tasks have been selected, there should be both an initial briefing on the tasks to be completed at the beginning and end of each day.

- The purpose of the debriefing is to go through the day’s activities, and to focus on each of the tasks associated with the task selected.
- There is no required sequential order for completing the OJT associated with any task, and no attempt is made to prioritize any tasks. Although OJT should be focused on a task, it is anticipated that the task standards will be accomplished based on available training opportunities.

Important Note: Although OJT is a critical aspect of 49 CFR Part 243, FRA will consider, on a case-by-case basis, alternate approaches to OJT in lieu of the traditional approach (*see 49 CFR § 243.5- On-the-job training*). For example, some employers or training organizations may have access to state of the art indoor/outdoor training facilities that permit students to practice tasks that require neuromuscular coordination to learn in a controlled environment with minimal or no risk of personal injury. Other approaches may include; classroom practical exercises, role play, lab simulation, virtual reality (VR), and other emerging technologies. While FRA does encourage alternate approaches to OJT to lessen the risk of personal injury exposure to students, enough detail must be included in the submission and satisfy the regulatory requirements of 49 CFR § 243.101(d) (1-3).

**49 CFR 236 – RULES, STANDARDS, AND INSTRUCTIONS
GOVERNING THE INSTALLATION, INSPECTION, MAINTENANCE, AND
REPAIR OF SIGNAL AND TRAIN CONTROL SYSTEMS, DEVICES, AND
APPLIANCES**

On-the-Job Training Standards for Signal Maintenance Personnel

March 30, 2023

| | All Systems Subpart A | | Automatic Block Subpart B | | Interlocking Subpart C | | Traffic Control Subpart D | | ACS, ATS, ATC Subpart E | |
|----------------------------------|-----------------------------------|--------------------------|---------------------------------|-----|--|-------------------------------------|---------------------------------|--|-------------------------------|-----|
| General | 1 18 2 3 4 | 5 9 11 17 | | | | | 401 426 | | 566 567 568 | |
| Signals | 102 21 22 23 | 24 25 13 14 | 201 202 204 205 | 206 | 301 303 310 311 | 329 335 330 334 342 | 402 403 404 405 | | 504 511 512 514 | 534 |
| Switches | 103 6 7 12 | 13 14 | 203 | | 306 327 328 329 | | 410 | | 528 | |
| Electric Switch Locks | 105 10 | | 207 | | 314 | | | | | |
| POSM* | | | | | 382 | | 382 | | | |
| Track Circuits | 51 59 52 60 53 104 | 55 56 57 58 | 202 | | 309 | | | | 562 | |
| Route Locking | | | | | 302 | | 408 | | | |
| Approach Locking | | | | | 305 | | 407 | | | |
| Time Locking | | | | | | | 407 | | | |
| Indication Locking | | | | | 307 | | | | | |
| Mechanical Locking | | | | | 304 340 308 341 326 335 | 336 337 338 339 | | | | |

| | All Systems Subpart A | Automatic Block Subpart B | Interlocking Subpart C | Traffic Control Subpart D | ACS, ATS, ATC Subpart E |
|--|----------------------------------|--|---|--|---|
| Inspections and Tests | 101 107 108 | | 376 380 384 377 381 386 378 382 387 379 383 | 476 | 586 590 587 588 589 |
| Electromagnetic Devices (e.g. relays) | 106 109 8 | | | | 556 |
| Records | 110 | | | | |
| Locomotive Elements | | | | | 501 552 560 505 553 563 515 555 564 551 557 |
| Roadway Elements | | | | | 526 532 527 529 531 |
| Other | 71 73 74 76 | | 312 | | 513 560 516 516 557 |

*Power Operated Switch Machine

NOTE: Standards for dragging equipment detectors, slide detectors, and other similar devices are found in Subpart F.

NOTE: Definitions pertaining to 49 CFR 236 are found in Subpart G.

NOTE: Standards for processor-based signal and train control systems are found in Subpart H.

NOTE: Standards for positive train control systems are found in Subpart I.

49 CFR 236 is organized to include standards, (System design and installation standards), and rules and instructions for the inspection, testing, maintenance, and repair of signal and train control systems, devices, and appliances. Generally, on-the-job training standards only apply to the latter category, with a few exceptions. In those rare case where a design and installation standard exist without a corresponding inspection or test an OJT standard has been written.

| 49 CFR 236 – OJT Worksheet | Other | OJT |
|--|--------------|------------|
| 236.0 – Applicability, minimum requirements, and penalties | X | |
| Subpart A – Rules and Instructions: All Systems | | |
| General | | |
| 236.1 – Plans, where kept | X | |
| 226.2 - Grounds | X | |
| 236.3 – Locking of signal apparatus housings | X | |
| 236.4 – Interference with normal functioning of device | X | |
| 236.5 – Design of control circuits on closed circuit principle | X | |
| 236.6 – Hand-operated switch equipped with switch circuit controller | X | |
| 236.7 – Circuit controller operated by switch-and-lock movement | X | |
| 236.8 – Operating characteristic of electromagnetic, electronic, or electrical apparatus | X | |
| 236.9 – Selection of circuits through indicating or annunciating instruments | X | |
| 236.10 – Electric locks, force drop type; where required | X | |
| 236.11 - Adjustment, repair, or replacement of components | X | |
| 236.12 – Spring switch signal protection; where required | X | |
| 236.13 – Spring switch; selection of signal control circuits through circuit controller | X | |
| 236.14 – Spring switch signal protection; requirements | X | |
| 236.15 – Timetable instructions | X | |
| 236.16 – Electric lock, main track release circuit | X | |
| 236.17 – Pipe for operating connections, requirements | X | |
| Roadway Signal and Cab Signals | | |
| 236.18 – Software management control plan | X | |
| 236.21 – Location of roadway signals | X | |
| 236.22 – Semaphore signal arm; clearance to other objects | X | |
| 236.23 – Aspects and indications | X | |
| 236.24 – Spacing of roadway signals | X | |
| 236.26 – Buffing device, maintenance | X | |
| Track Circuits | | |
| 236.51 – Track circuit requirements | X | |
| 236.52 – Relayed cut section | X | |
| 236.53 – Track circuit feed at grade crossing | X | |
| 49 CFR 236 – OJT Worksheet | Other | OJT |
| 236.54 – Minimum length of track circuit | X | |
| 236.55 – Dead section, maximum length | X | |
| 236.56 – Shunting sensitivity | X | |
| 236.57 – Shunt and foul wires | X | |
| 236.58 – Turnout, fouling section | X | |
| 236.59 – Insulated rail joints | X | |
| 236.60 – Switch shunting circuit, use restricted | X | |
| Wires and Cables | | |
| 236.71 – Signal wires on pole lines and aerial cable | X | |
| 236.73 – Open-wire transmission line; clearance to other wire | X | |
| 236.74 – Protection of insulated wire; splice in underground wire | X | |
| 236.76 – Tagging of wires and interference of wires or tags with signal apparatus | X | |

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| Inspections and Tests, All Systems | | |
| 236.101 – Purpose of inspection and tests; removal from service of relay or device failing to meet requirements | | X |
| 236.102 – Semaphore or searchlight signal mechanism | | X |
| 236.103 – Switch circuit controller or point detector | | X |
| 236.104 – Shunt fouling circuit | | X |
| 236.105 – Electric lock | | X |
| 236.106 - Relays | | X |
| 236.107 – Ground tests | | X |
| 236.108 – Insulation resistance tests, wires in trunking and cables | | X |
| 236.109 – Time release, timing relays and timing devices | | X |
| 236.110 – Results of test | | X |
| Subpart B – Automatic Block Signal Systems | | |
| Standards | | |
| 236.201 – Track-circuit control of signals | X | |
| 236.202 – Signal governing movements over main track switch | X | |
| 236.203 – Hand operated crossover between main tracks; protection | X | |
| 236.204 – Track signaled for movements in both direction; requirements | X | |
| 236.205 – Signal control circuits; requirements | X | |
| 236.206 – Battery or power supply with respect to relay; location | X | |
| 236.207 – Electric lock on hand-operated switch; control | X | |
| Subpart C – Interlocking | | |
| Standards | | |
| 236.301 – Where signals shall be provided | X | |
| 236.302 – Track circuits and route locking | X | |
| 236.303 – Control circuits for signals; selection through circuit controller operated by switch points or by switch . . . | X | |
| 49 CFR 236 – OJT Worksheet | | |
| | Other | OJT |
| 236.304 – Mechanical locking or same protection effected by circuits | X | |
| 235.305 – Approach or time locking | X | |
| 236.306 – Facing point lock or switch-and-lock movement | X | |
| 236.307 – Indication locking | X | |
| 236.308 – Mechanical or electric locking or electrical circuits; requisites | X | |
| 236.309 – Loss of shunt protection; where required | X | |
| 236.310 – Signals governing approach to home signal. | X | |
| 236.311 – Signal control circuits, selection through track relays or device functioning as track relays and through . . . | X | |
| 236.312 – Movable bridge, interlocking of signal appliance with bridge devices | X | |
| Rules and Instructions | | |
| 236.326 – Mechanical locking removed or disarranged, requirement for permitting train movement through . . . | X | |
| 236.327 – Switch, movable point frog or split-point derail | X | |
| 236.328 – Plunger of facing-point lock | X | |
| 236.329 – Bolt lock | X | |
| 236.330 – Locking dog of switch-and-lock movement | X | |
| 236.334 – Point detector | X | |
| 236.335 – Dog, stops and trunnions of mechanical locking | X | |
| 236.336 – Locking bed | X | |
| 236.337 – Locking faces of mechanical locking; fit | X | |
| 236.338 – Mechanical locking required in accordance with locking sheet and dog chart | X | |
| 236.339 – Mechanical locking, maintenance requirements | X | |
| 236.340 – Electromechanical interlocking machine; locking between electrical and mechanical levers | X | |
| 236.341 – Latch shoes, rocker links, and quadrants | X | |
| 236.342 – Switch circuit controller | X | |

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| Inspections and Tests | | |
| 236.376 – Mechanical locking | | X |
| 236.377 – Approach locking | | X |
| 236.378 – Time locking | | X |
| 236.379 – Route locking | | X |
| 236.380 – Indication locking | | X |
| 236.381 – Traffic locking | | X |
| 236.382 – Switch obstruction | | X |
| 236.383 – Valve locks, valves, and valve magnets | | X |
| 236.384 – Cross protection | | X |
| 236.386 – Restoring feature on power switches | | X |
| 236.387 – Movable bridge locking | | X |
| | | |
| 49 CFR 236 – OJT Worksheet | Other | OJT |
| Subpart D – Traffic Control Systems | | |
| Standards | | |
| 236.401 – Automatic block signal system and interlocking standards applicable to traffic control systems | X | |
| 236.402 – Signals at control points | X | |
| 236.403 – Signals at control point | X | |
| 236.404 – Signals at adjacent control point | X | |
| 236.405 – Track signaled for movements in both directions, change of direction of traffic | X | |
| 236.407 – Approach or time locking, where required | X | |
| 236.408 – Route locking | X | |
| 236.410 – Locking. Hand-operated switch; requirements | X | |
| Rules and Instructions | | |
| 236.426 – Interlocking rules and instructions applicable to traffic control systems | X | |
| Inspections and Tests | | |
| 236.476 – Interlocking inspections and tests applicable to traffic control systems | X | |
| Subpart E – Automatic Train Stop, Train Control and Cab Signal Systems | X | |
| Standards | | |
| 236.501 – Forestalling device and speed control | X | |
| 236.502 – Automatic brake application, initiation by restrictive block conditions stopping distance in advance | X | |
| 236.503 – Automatic brake application, initiation when predetermined rate of speed exceeded | X | |
| 236.504 – Operation interconnected with automatic block signal system | X | |
| 236.505 – Proper operative relationship between parts along roadway and parts on locomotive | X | |
| 236.506 – Release of brakes after automatic application | X | |
| 236.507 – Brake application; full service | X | |
| 236.508 – Interference with application of brakes by means of brake valve | X | |
| 236.509 – Two or more locomotive coupled | X | |
| 236.511 – Cab signals controlled in accordance with block conditions stopping distance in advance | X | |
| 236.512 – Cab signal indication when locomotive enters block where restrictive conditions obtain | X | |
| 236.513 – Audible indicator | X | |
| 236.514 – Interconnection of cab signal system with roadway signal system | X | |
| 236.515 – Visibility of cab signals | X | |
| 236.516 – Power supply | X | |
| Rules and Instructions; Roadway | | |
| 236.526 – Roadway element not functioning properly | X | |
| 236.527 – Roadway element insulation resistance | X | |
| 236.528 – Restrictive condition resulting from open hand-operated switch; requirements | X | |

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| 236.529 – Roadway element inductor; height and distance from rail | X | |
| 236.531 – Trip arm; height and distance from rail | X | |
| 49 CFR 236 – OJT Worksheet | Other | OJT |
| 236.532 – Strap iron inductor; use restricted | X | |
| 236.534 – Entrance to equipped territory; requirements | X | |
| Rules and Instructions; Locomotives | | |
| 236.551 – Power supply voltage; requirements | X | |
| 236.552 – Insulation resistance; requirements | X | |
| 236.553 – Seal; where required | X | |
| 236.554 – Rate of pressure reduction; equalizing reservoir or brake | X | |
| 236.555 – Repaired or rewound receiver coil | X | |
| 236.556 – Adjustment of relay | X | |
| 236.557 – Receiver; location with respect to rail | X | |
| 236.560 – Contact element, mechanical trip type, location with respect to rail | X | |
| 236.562 – Minimum rail current required | X | |
| 236.563 – Delay time | X | |
| 236.564 – Acknowledging time | X | |
| 236.565 – Provision made for preventing operation of pneumatic brake-applying apparatus by double-heading . . . | X | |
| 236.566 – Locomotive of each train operating in train stop, train control or cab signal territory; equipped | X | |
| 236.567 – Restrictions imposed when device fails and/or is cut out en route | X | |
| 236.568 – Difference between speeds authorized by roadway signal and cab signal; action required | X | |
| Inspection and Tests; Roadway | | |
| 236.576 – Roadway element | | X |
| 236.577 – Test, acknowledgement, and cut-in circuit | | X |
| Inspection and Tests; Locomotive | | |
| 236.586 – Daily or after trip test | | X |
| 236.587 – Departure test | | X |
| 236.588 – Periodic test | | X |
| 236.589 - Relays | | X |
| 236.590 – Pneumatic apparatus | | X |
| Subpart F – Dragging equipment and slide detectors and other similar protective devices | | |
| Standards | | |
| 236.601 – Signals controlled by devices; location | X | |
| Subpart G – Definitions (Not Applicable – Definitions only) | X | |
| Subpart H – Standards for processor-based signal and train control systems | X | |
| 236.901 – Purpose and scope | X | |
| 236.903 – Definitions | X | |
| 236.905 – Railroad Safety Program Plan (RSPP) | X | |
| 236.907 – Product Safety Plan (PSP) | X | |
| 236.909 – Minimum performance standards | X | |
| 49 CFR 236 – OJT Worksheet | Other | OJT |
| 236.911 – Exclusions | X | |
| 236.913 – Filing and approval of PSPs | X | |
| 236.915 – Implementation and operation | X | |
| 236.917 – Retention of records | | X |
| 236.919 – Operations and maintenance manuals | | X |
| 236.921 – Training and qualification program. General | X | |
| 236.923 – Task analysis and basic requirements | X | |
| 236.925 – Training specific to control office personnel | | X |
| 236.927 – Training specific to locomotive engineers and other operating personnel | | X |

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|---|---|---|
| 236.929 Training specific to roadway workers | | X |
| Subpart I – Positive train control systems | X | |
| 236.1001 – Purpose and scope | X | |
| 236.1003 – Definitions | X | |
| 236.1005 – Requirements for Positive Train Control systems | X | |
| 236.1006 – Equipping locomotives operating in PTC territory | X | |
| 236.1007 – Additional requirements for high-speed service | | |
| 236.1009 – Procedural requirements | X | |
| 236.1011 – PTC Implementation Plan content requirements | X | |
| 236.1013 – PTC Development Plan and Notice of Product Intent content requirements and Type Approval | X | |
| 236.1015 – PTC Safety Plan content requirements and PTC System Certification | X | |
| 236.1017 – Independent third-party Verification and Validation | X | |
| 236.1019 – Main line track exception | X | |
| 236.1021 – Discontinuances, material modifications, and amendments | X | |
| 236.1023 – Errors and malfunctions | X | |
| 236.1027 – PTC system exclusions | X | |
| 236.1029 – PTC system use and failures | X | |
| 236.1031 – Previously approved PTC systems | X | |
| 236.1033 – Communications and security requirements | X | |
| 236.1035 – Field testing requirements | | X |
| 236.1037 – Records retention | | X |
| 236.1039 – Operations and Maintenance Manual | | X |
| 236.1041 – Training and qualification program, general | X | |
| 236.1043 – Task analysis and basic requirements | X | |
| 236.1045 – Training specific to office control personnel | | X |
| 236.1047 – Training specific to locomotive engineers and other operating personnel | | X |
| 236.1049 – Training specific to roadway workers | | X |

FOREWORD

These On-the-Job Training (OJT) Standards have been written with an assumption that the employee performing each task has the requisite understanding of basic electricity, ability to operate a volt-ohm-milliamp meter (and other electric/electronic test equipment) and the ability to correctly interpret its readings. The employee must also be able to read and interpret circuit plans and track and location plans, have an understanding of the basic operating principles and the fundamental concepts of operation of railroad signal systems.

OJT is an important facet of individual development and traditionally occurs in the workplace (e.g., the employee learns the job while doing the job). OJT provides the opportunity for an employee to apply the concepts learned in the classroom by developing skills through practice and repetition; and to demonstrate personal mastery of critical safety tasks. An employee may perform these tasks under the direct onsite observation of any qualified person, provided the qualified person is a member of the same occupational category. However, the qualified person must be advised that they are accepting responsibility for the action of the observed employee and must be capable of recognizing and intervening if an unsafe act or act of non-compliance with

Federal railroad safety laws, regulations, or orders occurs. These tasks must only be performed after measures are taken to ensure for the safe operation of trains, on-track equipment, roadway workers, and the public.

Warning: 49 CFR §236.4 Interference with the normal function of device is always in affect.

49 CFR §236.4 Interference with the normal function of device.

Safety of train operation must be provided before interfering with the normal function of any device.

The following skills are critical to the safety of the public and railroad employees:

Apply 49 CFR Part 236

| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
|---|--|--|
| <p>Task 1-1 Purpose of inspections and tests; removal from service of relay failing to meet test requirements. Demonstrate the ability to safely remove a relay from service and restore the system to normal operation. (236.101)</p> | <p>Given a relay that has failed to function within the manufacturer's design parameters, specification and/or railroad's condemning limits the employee must be able to demonstrate the ability to:</p> <p>NOTE: This task is seldom required to be performed, but when it must be performed it must be accomplished with 100 percent accuracy. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Safely remove the relay from service and restore system operation by installing a new relay.</p> <p>The employee must complete this task and the results properly recorded no less than three (3) times with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.8 and 236.110.</p> |

Apply 49 CFR Part 236

| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
|--|---|--|
| <p>Task 1-2 Signal mechanism Demonstrate the ability to inspect and test semaphore or searchlight signal mechanism. (236.102)</p> | <p>Inspect a Semaphore/Searchlight Mechanism: Given a semaphore signal or searchlight mechanism the employee will demonstrate the ability to:</p> <p>NOTE: This inspection is required every six months.</p> <hr/> <p>Test a Semaphore/Searchlight Mechanism: Given a semaphore signal or searchlight mechanism, the appropriate test equipment, and the manufacturer's operating characteristics and condemning limits the employee will demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Inspect a semaphore signal for adequate clearance from foreign obstructions and freedom of armature movement; dirty, broken, chipped, or cracked roundels; dirt or foreign material within the mechanism; that any buffer mechanism does not allow a more permissive aspect to be displayed than intended; and ensure that the signal is aligned properly for the track that it governs.</p> <p>Inspect at least five (5) searchlight mechanisms for improperly installed or burnt ribbons and contacts; freedom of armature movement; dirty, broken, chipped, or cracked roundels or lenses; dirt or foreign material within the mechanism; ensure that the signal is aligned properly for the track that it governs and record the results with 100 percent accuracy.</p> <hr/> <p>Test a minimum of five (5) semaphore signal and/or searchlight mechanisms to ensure that the device is functioning within the manufacturer's recommended operating parameters and record the results with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.4, 236.8, 236.11, 236.21, 236.22, 236.26, and 236.110.</p> |

Apply 49 CFR Part 236

| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
|---|--|--|
| <p>Task 1-3 Switch circuit controller or point detector Demonstrate the ability to inspect and test switch circuit controller or point detector. (236.103)</p> | <p>Given a switch location equipped with a switch circuit controller or point detector and an appropriate switch obstruction test gage the employee with demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This inspection and test is required every three (3) months.</p> | <p>Determine if five (5) switches equipped with a switch circuit controller connected to the switch point, or with a facing-point lock and circuit controller indicated to the signal system that the switch is open when the switch point is opened one-fourth inch or more on a facing-point switch, or three-eighths inch or more on a trailing point switch and record the results with 100 percent accuracy.</p> <p>Employee must ensure that track or control circuits will be opened or shunted or both and if equipped with facing-point lock with circuit controller, switch cannot be locked.</p> <p>Employee must inspect the physical location to ensure that on each hand-operated switch, switch circuit controllers, facing-point locks, and switch-and-lock movements that all connections are securely fastened in place, and contacts maintained with an opening of not less than one-sixteenth inch when open. Furthermore, the employee must successfully conduct a general inspection to determine the serviceability of cam bearings, shunt wires, wiring, gaskets, etc.</p> <p>This inspection and test applies to all switch circuit controllers and point detectors in all systems as requires by 49 CFR §§236.6, 236.13, 236.51, 236.57, 236.202, 236.203, 236.334 and 236.342.</p> <p>Referenced or associated rules: 49 CFR §§236.6, 236.7, 236.11, 236.13, 236.60, and 236.110.</p> |

Apply 49 CFR Part 236

| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
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| <p>Task 1-4 Shunt fouling circuit Demonstrate the ability to inspect and test shunt fouling circuit. (236.104)</p> | <p>Given a switch location equipped with a shunt fouling circuit and a tape measure the employee will demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This inspection is required every three (3) months.</p> <hr/> <p>Given a switch location equipped with a shunt fouling circuit and a 0.06 ohm track shunt the employee with demonstrate the ability to:</p> <p>NOTE: This inspection test is required every three (3) months.</p> | <p>Inspect three (3) Shunt fouling locations to ensure that shunt wires and fouling wires consist of at least two discrete conductors, and each shall be of sufficient conductivity and maintained in such condition that the track relay will be in de-energized position, or device that functions as a track relay will be in its most restrictive state, when the circuit is shunted and record the results with 100 percent accuracy.</p> <p>Inspect the location to ensure that no track circuit dead-sections exist that exceed 35 feet, (where the wheel base of a locomotive operating over the dead section is less than 35 feet the length of the dead section cannot exceed the length of the outer wheelbase of the locomotive).</p> <p>This inspection should determine the condition of insulated rail joints, bond wires and fouling wires are applied in compliance with 49 CFR §§236.51, 236.56, 236.57, and 236.58 at the proper locations, are intact and in good condition.</p> <hr/> <p>Test the shunt fouling circuit to ensure that the track relay will be in de-energized position or device that functions as a track relay will be in its most restrictive state, when the circuit is shunted by a 0.06 ohm shunt at no less than (3) switch locations and record the results with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.11, 236.55, 236.57, 236.58, 236.59, and 236.110.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 1-5 Electric lock Demonstrate the ability to inspect and test electric lock mechanism. (236.105)</p> | <p>Given the appropriate relay test device and the appropriate manufacturer's design specification and condemning limits, the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>Note: This test is required every 2 years only for non-force drop type electric switch lock mechanisms.</p> | <p>Test the electromagnetic coils of a five (5) electric switch lock mechanism to ensure that they are operating within the manufacturer's design parameters (if applicable). This test includes pick-up, release, and working values and record the results with 100 percent accuracy. They may be recorded in either voltage or current values.</p> <p>Note: This requirement only applies to non-force drop type electric switch lock mechanisms.</p> <p>Note: Completion of Task 1-6 as required by 236.106 satisfies the requirements of this task.</p> <p>Referenced or associated rules: 49 CFR §§236.8 and 236.110.</p> |

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| <p align="center"><u>Performance Tasks</u></p> | <p align="center"><u>Conditions Tools, Equipment, Documents, Practice</u></p> | <p align="center"><u>Standards Time, Completeness, or Accuracy</u></p> |
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| <p>Task 1-6 Relay Demonstrate the ability to inspect and test relays. (236.106)</p> | <p>Given the appropriate relay test device and the appropriate manufacturer's design specification and condemning limits, the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>Note: This test is required:</p> <p>Every 4 years for dc relays,</p> <p>Every 2 years for ac relays, and</p> <p>Every year for ac centrifugal relays.</p> <p>Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Test at least five (5) dc relays to ensure that they are operating within the manufacturer's design parameters (if applicable).</p> <p>Test at least five (5) ac vane-type relays to ensure that they are operating within the manufacturer's design parameters (if applicable).</p> <p>Test at least five (5) ac centrifugal relays to ensure that they are operating within the manufacturer's design parameters (if applicable).</p> <p>This test includes pick-up, release, and working values. They may be recorded in either voltage or current values.</p> <p>If a relay fails to function in accordance with the manufacturer's design parameters, remove the device from service per 236.101.</p> <p>Employee should observe the relay for improperly installed or burnt ribbons and contacts, broken glass, and for moisture or foreign materials inside the relay.</p> <p>The employee must complete this task on at least five (5) relays of each type and record the results with 100-percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.8, 236.101 and 236.110.</p> |

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| <p align="center"><u>Performance Tasks</u></p> | <p align="center"><u>Conditions Tools, Equipment, Documents, Practice</u></p> | <p align="center"><u>Standards Time, Completeness, or Accuracy</u></p> |
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| <p>Task 1-7 Ground tests Demonstrate the ability to conduct the ground test to detect circuit ground(s). (236.107)</p> | <p>Given a Volt-Ohm-Milliamp VOM meter, and the applicable circuit plan, the employee must be able to demonstrate the ability to:</p> <p>WARNING: A current reading must not be taken when a train is approaching or passing the location.</p> <p>WARNING: A VOM meter or other test equipment must not be left unattended when connected to the energy bus and ground.</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> | <p>Determine which circuits affect the proper function of the signal system.</p> <p>Detect any circuit ground or combination of grounds that permit a current flow of 75 percent or more of the release value of any relay or electromagnet device in the circuit.</p> <p>Troubleshoot, locate, and eliminate the ground or grounds.</p> <p>Alternatively, if the ground(s) cannot be eliminated or reduced to less than 75 percent of the release value of any relay or electromagnet device in the circuit, take appropriate action(s) to warn highway traffic and railroad employees.</p> <p>This test is to be made at each energy bus that feeds signal system components and circuits. The test shall be made by measuring the voltage potential between each energy bus and ground. If a voltage potential is detected between an energy bus and ground, a current reading will be taken to determine compliance with 49 CFR §236.2.</p> <p>This task must be complete at least five (5) times and record the results with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.2, 236.8, and 236.110.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 1-8 Insulation resistance tests, wires in trunking and cable Demonstrate the ability to conduct test to determine Insulation resistance of wires in trunking and cables. (236.108)</p> | <p>Given a megohmmeter (Megger) or other high voltage resistance checking device the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: Test must be made when wires, cable, and insulation are dry.</p> <p>NOTE: Track wires, line wires, and case wiring are excluded from the requirements of this test.</p> <p>NOTE: This test is required every ten years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Determine if wires, cables, and insulation are dry.</p> <p>Determine the insulation resistance value of at least ten (10) conductors, between each other and between each conductor and ground.</p> <p>Take action to repair or replace any wire or cable whose resistance between any wires or between any wires and ground is less than 500,000 ohms.</p> <p>Immediately remove from service any wire or cable with an insulation resistance between wires or between any wire and ground is less than 200,000 ohms.</p> <p>If the trunking or cable fails to function as required above, make the necessary repair, or replacement, or take action as required by §236.108.</p> <p>This task must be successfully completed on at least two (2) trunking or two (2) multi-conductor cables and the results properly recorded with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §235.110.</p> |

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| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
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| <p>Task 1-9 Time releases, timing relays and timing devices Demonstrate the ability to test time release, timing relays and timing devices. (236.109)</p> | <p>Given a watch or other accurate timing device and the location circuit plans the employee must be able to demonstrate the ability to:</p> <p>This standard must be successfully completed on at least three time release, timing relays and timing devices for each type of application that requires a time delay. If three time release, timing relays and timing devices are not available the task must be completed three times on the same time release, timing relays and timing devices on three different inspections.</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This rule requires that the predetermined time interval that the device must operate be indicated on the circuit plan or marked on the device.</p> | <p>Determine that timing relays and timing devices are maintained such that the timed interval are not less than 90 percent of the value as indicated on the circuit plans.</p> <p>If the timing relay or timing device fails to function as intended, make the necessary adjustment, repair, or replacement, or take action other actions to ensure the safety of motorists and pedestrians.</p> <p>This test is required to determine the length of time that a time release, timing relay, or timing device will run before the circuit locking is released.</p> <p>The test shall be conducted by starting the time release, timing relay, or timing device and measuring the length of time from when the device started operating until the circuit locking is released.</p> <p>Release time must not be less than 90 percent of the value indicated on the circuit plans or on the device.</p> <p>The test must be completed and the results properly recorded for five (5) timing devices with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.8, and 236.110.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-1 Mechanical locking Demonstrate the ability to test mechanical locking. (236.376)</p> | <p>Given a mechanical interlocking, the corresponding Dog Sheet and track and location plan the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that once a route is established through the interlocking plant that no switches in the route can be moved and that no opposing or conflicting signals can display a signal indication more favorable than "Stop". This task needs to be completed with 100 percent accuracy for at least three (3) separate routes.</p> <p>Referenced or associated rules: 49 CFR §§ 236.110, 236.304, 236.208, 236.326, 236.335, 236.336, 236.337, 236.338, 236.339, 236.340, and 236.341.</p> |

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| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
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| <p>Task 2-2 Approach locking Demonstrate the ability to test approach locking at a manual interlocking, traffic control point, automatic interlocking, and/or hand operated electrically locked switch. (236.377)</p> | <p>Given a manual or automatic interlocking plant, traffic control point, and/or hand operated electrically locked switch, the corresponding circuit plans and track and location plans the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that once a route has been established through the interlocking plant, traffic control point, or hand operated hand operated electrically locked switch with the signal governing movement over that route displaying a proceed aspect that if the signal is set to “Stop” the route will remain locked if a train is on the approach to that route. This task needs to be completed and the results properly recorded with 100 percent accuracy for at least five (5) separate routes for each applicable signal arrangement. (i.e., manual interlocking, traffic control point, automatic interlocking, and/or hand operated electrically locked switch).</p> <p>This test applies to both interlocking and traffic control systems. Applies to approach locking of both power operated devices and electrically locked hand-operated switches in both interlockings and traffic control systems.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.305 236.308 and 236.760.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-3 Time locking Demonstrate the ability to test time locking. (236.378)</p> | <p>Given an interlocking plant, the corresponding circuit plans and track and location plans the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that once a route has been established through the interlocking plant with the signal governing movement over that route displaying a proceed aspect that if the signal is set to "Stop" the route will remain locked for a predetermined amount of time as indicated on the circuit plans. This task needs to be completed with 100 percent accuracy and the results properly recorded for at least five (5) separate routes.</p> <p>Referenced or associated rules: 49 CFR §§236.109, 236.110, 236.305, 236.308 and 236.768.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-4 Route locking Demonstrate the ability to test route locking. (236.379)</p> | <p>Given an interlocking plant, the corresponding circuit plans and track and location plans the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that once a route has been established through the interlocking plant with the signal governing movement over that route displaying a proceed aspect that once a train enters that route the route will remain locked until the train has traversed the route. This task needs to be completed and the results properly recorded with 100 percent accuracy for at least five (5) separate routes.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.302, 236.308, 236.309 and 236.767.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-5 Indication locking Demonstrate the ability to test indication locking, (236.380)</p> | <p>Given an interlocking plant, the corresponding circuit plans and track and location plans the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that if any signal, switch, or other operative device fails to make a movement corresponding to the units controlling lever that any manipulation of levers that would result in an unsafe condition for train movements is prevented.</p> <p>Ensure that the operation of any signal, switch, or other operative device will not operate in case another unit which should operate first fails to make the required movement.</p> <p>This task needs to be completed and the results properly recorded with 100 percent accuracy for at least five (5) separate routes.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.307, 236.308 and 236.762.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-6 Traffic locking Demonstrate the ability to test traffic locking. (236.281)</p> | <p>Given an interlocking plant, the corresponding circuit plans and track and location plans the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every two years. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Ensure that the direction of traffic on a section of track cannot be changed while that section is occupied or while a signal displays an aspect for a movement to proceed into that section. This task needs to be completed and the results properly recorded with 100 percent accuracy for at least five (5) separate routes.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.308 and 236.769</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-7 Switch obstruction test Demonstrate the ability to conduct a switch obstruction test. (236.382)</p> | <p>Given a power operated switch machine location, a hand crank, and a switch obstruction gauge the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This rule applies to pipe-connected, mechanically operated switches; electric switches; electro-hydraulic switches; electro-pneumatic switches; and hand-operated switch machines with lock rods, where such hand-operated switch machines are located within interlockings or traffic control systems.</p> <p>NOTE: This test is required every month.</p> | <p>Ensure that the of lock rod of each power operated switch machine and the lock rod of each hand-operated switch equipped with switch-and-lock-movement is maintained so that it cannot be locked when the point is open three-eighths inch or more.</p> <p>This task must be successfully completed on at least five (5) separate switches and the results properly recorded with 100 percent accuracy. If five power operated switch machines are not available, the standard can be modified to allow five repetitions on those machines that are available on at least three consecutive days.</p> <p>Referenced or associated rules: 49 CFR §§236.7, 236.107, 236.110 and 236.327.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-8 Valve locks and valve magnets Demonstrate the ability to test valve locks, valves, and valve magnets. (236.383)</p> | <p>Given an interlocking plant equipped with a electro-pneumatic switch machine within an interlocking and the appropriate hand tools the employee must demonstrate the ability to test the “CP” and/or “D” values (or other pneumatic devices) for proper operation.</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every year. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>The purpose of the test is to ensure the proper functioning of critical pneumatic devices in an electro-pneumatic interlocking plant or traffic control point. This test must be completed with 100 percent accuracy and the results properly recorded no less than five (5) times.</p> <p>Referenced or associated rules: 49 CFR §§236.11, 236.110 and 236.837.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-9 Cross protection Demonstrate the ability to conduct a cross protection test. (236.384)</p> | <p>Given an interlocking plant equipped with cross protection, a variable resistor, a VOM, or other electronic test device, and appropriate hand tools the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This rule applies only to those interlockings provided with cross protection devices. This test insures that switches, signals, etc., do not respond when current is improperly applied to circuits.</p> <p>NOTE: This test is required every six months. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Conduct the necessary test to ensure that the cross protection at an interlocking is functioning properly to prevent the improper operation of a signal, switch, movable-point frog, or derail as the result of a cross in electrical circuits. This test must be accomplished and the results properly recorded with 100 percent accuracy on at least five (5) separate circuits provided with cross protection.</p> <p>Referenced or associated rules: §§49 CFR §§ 236.110 and 236.787.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-10 Restoring feature on power switches Demonstrate the ability to test the restoring feature on power switches. (236.386)</p> | <p>Given a power operated switch machine location and a hand crank employee must be able to demonstrate the ability to:</p> <p>Note: This rule applies only to electro-pneumatic switches.</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every three months.</p> | <p>Ensure that before the driving bar creeps sufficiently to unlock the switch the power is applied to restore the switch movement to full normal or to full reverse position in correspondence with the control lever. This test must be accomplished at least five (5) times and the results properly recorded with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§ 236.110 and 236.746.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 2-11 Moveable bridge locking Demonstrate the ability to test movable bridge locking. (236.387)</p> | <p>Given a moveable bridge that is interlocked with the signal system, applicable gauges, circuit plans, and a power operated switch machine location and a hand crank employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: This test is required every year. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Determine that a movable bridge is in the proper position and alignment and that all associated rail locks, bridge locks, bolt locks, circuit controllers, and electric locks used in providing interlocking protection at a movable bridge are functioning as intended. This task must be completed and the results properly recorded no less than five (5) time with 100 percent accuracy.</p> <p>Referenced or associated rules: §49 CFR §§ 236.110, 236.312 and 236.766.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 3-1 Roadway element Demonstrate the ability to check for positioning and alinement of roadway element. (236.576)</p> | <p>Given an automatic train stop, train control, or cab signal system equipped with roadway elements, such as electrical circuits, indicators, or trip arms the employee must be able to demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: Applies to automatic train stop only.</p> <p>NOTE: Alinement is checked every month.</p> <p>NOTE: Testing is required every six months.</p> | <p>Gauge the height and alinement of the roadway elements, test the device for functionality within this part and the manufacturer's or railroad's specification and properly record the results at least five (5) times with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.505, 236.526, 236.527, 236,529, 236,531, 236.532, 236.560 and 236.744.</p> |

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| <p align="center"><u>Performance</u> Tasks</p> | <p align="center"><u>Conditions</u> Tools, Equipment, Documents, Practice</p> | <p align="center"><u>Standards</u> Time, Completeness, or Accuracy</p> |
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| <p>Task 3-2 Test, acknowledgment and cut-in circuits Demonstrate the ability to test the function of test equipment, acknowledgement, and cut-in circuits. (236.577)</p> | <p>Given an automatic cab signals, automatic train stop, or automatic train control system with test acknowledgement circuits, and/or cut-in circuits and the appropriate test equipment or a locomotive equipped with on-board test equipment, the employee will demonstrate the ability to:</p> <p>WARNING: Tests should not be conducted while rail traffic is approaching or within the section to be tested.</p> <p>NOTE: The requirements of this subpart are different for different systems. The FRA Signal and Train Control Compliance Manual should be consulted for specific requirements.</p> <p>NOTE: This subpart requires that cut-in circuits, portable testers, and on-board test equipment be tested every year.</p> <p>NOTE: This test is required every year. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Test the function of test equipment, acknowledgement circuits and cut-in circuits to ensure proper operation of the automatic cab signals, automatic train stop, or automatic train control system. This test must be accomplished five (5) times on each type of unit and the results properly recorded with 100 percent accuracy for each type of system.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.505, 236.526, 236.527, and 236.744.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 3-3 Daily or after trip test Demonstrate the ability to conduct daily or after trip tests. (236.586)</p> | <p>Given a locomotive equipped with automatic train stop, automatic cab signals, or automatic train control the employee will demonstrate the ability to:</p> <p>NOTE: The requirements of this subpart are different for different systems. The FRA Signal and Train Control Compliance Manual and the manufacture's specifications should be consulted for specific requirements.</p> <p>NOTE: this test is required each calendar day that the locomotive is used in automatic train stop, automatic cab signals, or automatic train control territory.</p> | <p>Conduct and properly record the daily or after trip test with 100 percent accuracy on at least five (5) locomotives. The purpose is to ensure that each locomotive's on-board equipment is functioning properly prior to being dispatched into automatic train stop, automatic cab signal, or automatic train control territory.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.505, 236.514, 236.564.</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 3-4 Departure test Demonstrate the ability to conduct a departure test. (236.587)</p> | <p>Given a locomotive equipped with automatic train stop, automatic cab signals, or automatic train control and either an over track element, in track test circuit, portable test unit, or on-board test device the employee will demonstrate the ability to:</p> <p>NOTE: The requirements of this subpart are different for different systems. The FRA Signal and Train Control Compliance Manual and the manufacture's specifications should be consulted for specific requirements.</p> <p>NOTE: This test is required prior to a locomotive entering automatic train stop, automatic cab signals, or automatic train control territory.</p> | <p>Conduct a departure test and record the results with 100 percent accuracy on at least five (5) locomotives. The purpose is to ensure that each locomotive's on-board equipment is functioning properly prior to being dispatched into automatic train stop, automatic cab signal, or automatic train control territory.</p> <p>Referenced or associated rules: 49 CFR §236.110,</p> |

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| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
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| <p>Task 3-5 Periodic test Demonstrate the ability to conduct a periodic test. (236.588)</p> | <p>Given a locomotive equipped with automatic train stop, automatic cab signals, or automatic train control and a mechanical shop equipped to conduct such tests the employee will demonstrate the ability to:</p> <p>NOTE: The requirements of this subpart are different for different systems. The FRA Signal and Train Control Compliance Manual and the manufacture's specifications should be consulted for specific requirements.</p> <p>NOTE: This test is required on locomotives equipped with automatic train stop, automatic cab signals, or automatic train control at least once every 92 days.</p> | <p>Conduct a periodic test and record the results with 100 percent accuracy on at least five (5) locomotives.</p> <p>Referenced or associated rules: 49 CFR §§236.110, 236.513, 236.515, 236,516, 236.551, 236.552, 236.554, 236.555. 236.556, 236.557, 236.563, and 236.564.</p> |

Apply 49 CFR Part 236

| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
|---|--|---|
| <p>Task 3-6 Relays Demonstrate the ability to test a relay and determine its serviceability and disposition. (236.589)</p> | <p>Given a mechanical electrical, or signal shop equipped to inspect, clean, and test relays and the manufacturer's specifications the employee will demonstrate the ability to:</p> <p>NOTE: This test is required every six years for on-board relays and every two years for master or primary relays of the torque type. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Determine the serviceability of at least five (5) relays and properly record the results of each type that are part of an automatic train stop, automatic cab signal, or automatic train control system.</p> <p>Referenced or associated rules: 49 CFR §§236.8, 236.11, and 236.110.</p> |

Apply 49 CFR Part 236

| <u>Performance Tasks</u> | <u>Conditions</u> Tools, Equipment, Documents, Practice | <u>Standards</u> Time, Completeness, or Accuracy |
|---|--|--|
| <p>Task 3-7 Pneumatic apparatus Demonstrate the ability to test and determine the serviceability of pneumatic apparatus. (236.590)</p> | <p>Given a mechanical shop equipped to inspect, clean, and test pneumatic devices as per 49 CFR 229.29 and the manufacturer's specifications the employee will demonstrate the ability to:</p> <p>NOTE: This test is required at various intervals as per 49 CFR 229.29. Maintaining proficiency at this task may be problematic. Hence, retraining may be required before repeating this task.</p> | <p>Inspect, clean, and test and record the results on at least five (5) pneumatic devices of each type that are components of an automatic train stop, automatic cab signal, or automatic train control system with 100 percent accuracy.</p> <p>Referenced or associated rules: 49 CFR §§229.29(a), 229.33 and 236.110.</p> |

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