FEATHER RIVER RAIL SOCIETY



# WESTERN PACIFIC RAILROAD MUSEUM



# **BRAKEMAN'S GUIDEBOOK**

Brakeman Guidebook

# Brakeman

**Description:** Brakemen are volunteers whose primary responsibility is to assist the Conductor in the safe operation of trains. They must be proficient in operating railroad equipment within the Western Pacific Railroad Museum at Portola.

They must know and be able to give hand (day) and lantern (night) signals. Brakeman will operate switches, couple and uncouple cars, make air line and brake tests, and assist the Conductor in any way to assure safety in the operation of any train.

Brakemen will be familiar with proper equipment operation and assist in the on-going inspection of cars. During the operation of the train they will also act as car attendants whenever possible. They are expected to observe the operations of other members of the Train Crew in order to prepare for advancement. They are directly responsible to and shall receive directions from the Conductor.

## Brakeman's duties include:

- 1. Attending the daily operations Safety Briefing, and all other Safety Briefing(s) that take place for any work they will perform.
- 2. Signing in and out of the daily duty log.
- 3. Reading the bulletin book for any bulletins and/or changes in operating requirements.
- 4. Displaying professional behavior and attitude at all times while on the property.
- 5. Providing public relations with museum visitors.
- 6. Completing volunteer report of work for any work performed in behalf of the museum.7. Following the instructions in the current revision of the FRRS/WPRM Brakeman's Guidebook.
- 8. Being responsible to and taking direction from the Conductor.
- 9. Assisting in the boarding and detraining of passengers.
- 10. Monitoring their assigned train/car to ensure that passengers are riding in a safe manner.
- 11. Ensuring that passengers remain orderly at all times that the train is moving.
- 12. Communicating with the passengers during the run when safe to do so.
- 13. Giving clear hand or lantern signals to train crew members.
- 14. Operating switches.
- 15. Coupling and Uncoupling cars.
- 16. Helping Conductor perform brake tests.
- 17. Riding the first car behind the locomotive (Head Brakeman). A second Brakeman may be assigned to the crew as needed.
- 18. Riding the point of the leading locomotive as it is proceeding around the track without cars to communicate signals to the Engineer.

#### **Requirements:**

## All positions require that the Crew Member have passed the FRRS "General Code of Operating Rules" Rule Book Test. Attendance at the annual Training Meeting is required to maintain status as a Crew Member.

All Student and Qualified Brakemen must be current members of the FRRS in good standing and must have signed a current annual liability release on file with the museum.

All Student and Qualified Brakemen must complete all requirements shown in the "Operating Department Entrance and Service Requirements"

# NOTHING IN THIS GUIDE BOOK TAKES THE PLACE OF THE GENERAL CODE OF OPERATING RULES

# **RULE 108**

"In case of doubt or uncertainty, the safe course must be taken"

# **Student Brakeman**

Must be at least 18 years old. (Minors [16 & 17 year olds] may become students, providing they meet the provisions spelled out in the operating department requirements) MUST read and understand the Rule Book with special emphasis on RULE "C". MUST attend safety meetings, special crew meetings and crew training. MUST learn the hand and lantern signals. MUST learn Train and Air Brake operations.

The MINIMUM number of hours of training to become a Qualified Brakeman is 36 hours.

The MAXIMUM time to qualify for Brakeman is 96 hours. If anyone is unable to qualify within the 96 hour time limit, the Student Brakeman will receive a verbal and written termination notice from the Superintendent of Operations thanking them for their interest and time. Both the verbal and written notice will include the reason(s) for non-qualification.

All Student Brakemen MUST have a MINIMUM of 4 hours of yard switching, which is to be included in the 36 hour minimum qualifying time.

This will be followed by a "practical factors" demonstration with certification of competence by the Superintendent of Operations (or designee).

# **Qualified Brakeman**

MUST have completed Student Brakeman training.

MUST read and understand the Rule Book.

MUST attend safety meetings, special crew meetings and crew training.

MUST know the hand and lantern signals.

MUST know Train and Air Brake operations.

MUST serve as a Brakeman for a MINIMUM of 24 hours before starting training as a Student Conductor or Student Fireman. This time MUST include 6 hours of training a Student Brakeman, after 12 hours of Qualified Brakeman service.

A Brakeman must work as a Brakeman for a MINIMUM of 24 hours in 2 consecutive years including 8 hours of yard service to maintain Qualified Brakeman status.

A Brakeman who has not completed the MINIMUM service time in 1 operating season will be able to continue working towards the MINIMUM service time the following operating season.

# **1.0 INTRODUCTION**

This Brakeman's Guidebook is intended to provide the basic information needed to perform the duties of a Brakeman.

Appearance is important. Brakeman must be neatly dressed and groomed. **You must at all times wear your volunteer's name badge.** It is preferred, but not mandatory, that a Brakeman be dressed in the typical FRRS/WPRM uniform: a museum logo shirt, jeans or overalls, a FRRS/WPRM cap and jacket or coat when required by the weather. New safety shirt or vest is MANDATORY!

Prescribed FRRS/WPRM Operating Department t-shirt and cap are available at the Gift Shop.

Proper footwear is an important factor in safety and is required. Wear work boots/shoes with soles and heels firmly attached and heels that are not excessively worn with tops covering the ankles for support. Suitable footwear around shops, tracks, and moving equipment does NOT include high-heeled boots or shoes, sandals, low quarter slip-on shoes or tennis shoes.

# You MUST carry your FRRS/WPRM "Operating Department Entrance and Service Requirements" book at all times while on duty. Any Supervisor or Proper Authority may ask at any time to verify your qualifications.

# 2.0 SUMMARY OF BRAKEMAN'S DUTIES

It is the Brakeman's duty to assist the Conductor and help to provide a safe and pleasant experience for the passengers. This is accomplished by making sure that the environment is safe, that the passengers behave in a safe manner, and that the passengers are reasonably comfortable and informed.

## Know where the First Aid Kits and Fire Extinguishers are at all times.

# 2.1 PRIOR TO FIRST RUN

The Brakeman must attend the Safety Briefing scheduled by the Supervisor of the Day.

It is the Brakeman's responsibility to participate in preparing the train for the day's use. Carry a flashlight or lantern to aid in performing these inspections at night.

# If you find any problems with the train, notify the Conductor immediately. If the Conductor is not available, notify the Engineer or the on duty supervisor.

- A) All doors through which any portion of the train will pass must be fully open to the maximum of their travel and the operating chain secured with a keeper or a door block shall be used. (Engine house or shop building)
- B) All switches must be aligned with the track occupied by the locomotive.
- C) Help Conductor to align all track switches with the proper track.
- D) Assist in preparing the train for Operations.
  - 1. Look for any dragging equipment or any debris lodged in the undercarriages.
  - 2. Make sure that all brake lines are properly connected and that angle cocks are in the proper position.
  - 3. Check couplers and verify that all pins are in the locked position.
  - 4. Inspect the brakes and oil the journal boxes as needed.
  - 5. Verify that all wheel chocks and skates have been removed.
  - 6. All hand brakes except for the rear caboose should be released after the locomotive is tied on.
- E) Aid in the coupling of the engine to the train.
- F) Assist in making the brake test.
- G) Operate switches, uncouple and couple the locomotive from and to the train.
- H) Prepare the train for passengers.
- I) Assist, the Conductor in making the first stretch of the caboose train prior to the start of operations.

This process shall have all caboose hand brakes released, except the last caboose in the train. The Conductor shall observe the joint between the last two cabooses. When the train is stretched, observe the couplers between the two cabooses indicating the couplers are set. The movement shall be stopped as soon as this joint is stretched. This process will allow the couplers to be checked in locked position on all cabooses and prevent sliding of the wheels.

# 2.2 LOADING PASSENGERS

- A) When instructed by the Conductor to begin the boarding, assist passengers onto the step and instruct them to hold the hand rail as they climb the steps.
- B) If a passenger might have difficulty negotiating the stairs, offer to assist them, and offer the use of a foot step.
- C) When needed, assist other crew members in loading passengers.
- D) Observe what people are carrying, and if consumables other than water are noted, inform the passengers that only water is allowed to be consumed aboard the train.
- E) Just before the train leaves, make sure that all passengers are seated, and in the case of the open platform car that the car crossover plates are raised and secured.
- F) Passengers should remain seated while the train is in motion; however, it is very difficult to control people with out a car attendant in every car.

# 2.3 DURING THE RUN

- A) Make sure that the passengers keep their arms and heads inside the car.
- B) Make sure that passengers are seated whenever the train is moving.
- C) Punch tickets for each rider. (Should tickets be used) Observe colored wrist bands for the color of the day. (Museum entry ticket).
- D) Talk to the passengers. Encourage everyone to visit the Gift Shop. Provide the information outlined in Section 4 of the Car Attendant Guidebook. If there are any questions you can't answer, see if you can find someone who can answer them.
- E) Make sure that all passengers follow the safety instructions as given to them.

# 2.4 END OF THE RUN

- A) Provide information on any special activities or displays occurring at the museum. Encourage people to join the Feather River Rail Society and give them details of the current operating schedule. Invite everyone to visit the museum and gift shop.
- B) Once the train has stopped, the brakes have been set, and the engine has been uncoupled from the train, attend to anything that is needed to help the passengers safely detrain. (Head Brakeman will remain with locomotive)
- C) Be at the foot of the stairs to assist passengers down the steps. Remind them to use the hand rails. Offer your hand to anyone who might need it.
- D) When all passengers have disembarked, inspect the car for forgotten items and for cleanliness.
- E) Invite those waiting for the next train to board any car they choose.

# 2.5 SWITCHMAN/SWITCH TENDER

- A) Maintain an awareness of train movement and assure that switches are properly aligned and secured for routine and safe operation.
- B) Make "roll-by" inspections of the train and signal the Conductor and/or enginemen if any defect is seen.
- C) Make visual inspections of the track in proximity of switches and signal the Conductor and/or enginemen if any problem is seen.

D) Assure that people are away from the right-of-way and caution them to remain so.

# 2.6 UNCOUPLING THE LOCOMOTIVE (Head Brakeman)

- A) Be certain that the train has stopped and that the Engineer has set the brakes. Set the handbrake on the caboose connected to the locomotive. You detrain to uncouple the locomotive from the train.
- B) With permission from the Engineer step into position to close the angle cock on the locomotive. Position yourself so that you are visible to the Engineer, lift the cut lever and then signal the Engineer to proceed. Once the train has parted you may stop the engine to step aboard the locomotive and ride the point to the switch where you will stop the locomotive and throw that switch so that the locomotive can proceed.
- C) Once the locomotive has made its entire movement through the switches and is on the intended track, you should return the switch to its normal position and/or have it set and locked for the next safe operation.
- D) Ride the locomotive to the west end of the train, watching for the Conductor's signal to couple the locomotive to the train (when approaching the train). Stop the locomotive one car length before the train and make sure it is safe to couple to the train.
- E) Once the locomotive is coupled to the train, watch for signals from the Conductor to stretch the train. (The Conductor shall follow the procedure for stretching the train. See item 2.1 (I))
- F) Once the joint is stretched, signal the Engineer to enter the RED ZONE (when safe), attach the air hoses and open the angle cock.

# 2.7 OPERATING THE WHEELCHAIR LIFT (When it is available for service)

- A) The wheelchair lift is stored at the passenger loading and uploading area.
- B) When the lift is needed, position it on the platform opposite the side door of the caboose that is equipped to handle wheelchairs.
- C) Follow the directions printed on the lift itself. Be sure that the lift is located as closely as possible to the opening on the car.
- D) Call on other crew members to aid the passenger safely onto and off the lift. Remember that the lift will be used to help the passenger to detrain as well.

# 2.8 AFTER THE LAST RUN

- A) All Brakeman and Train Crew will be assigned to ensure that all trash is picked up, trash cans emptied and any other items that may be in need of attention have been taken care of.
- B) All Brakeman and Train Crew will be assigned to ensure that all doors and windows of all passenger cars are securely closed.
- C) The Brakeman will stop the locomotive over the oil drip pan area for storage.
- D) Help other crew members with necessary duties.
- E) Return to meeting area for follow-up Safety meeting.
- F) Record your volunteer hours for the museum's records.
- G) Have your record book updated by the Conductor.

## **2.9 ELECTRONIC DEVICES**

The Federal Railroad Administration has issued final order in Part 220.305 regarding the use of electronic devices by train operating crews while on duty. Though our operation is not governed under rules of the FRA, adoption of this rule enhances safety of crews and passengers and as such is made part of our operating rules.

- A) These rules are effective when on a moving train, when duty requires any crewmember to be on the ground, when a crewmember is riding rolling equipment during a switching operation and when any other employee of the railroad is assisting with the preparation of the train.
- B) Hearing aids and digital watches are permitted.
- C) Personal electronic/electrical devices **MUST** be turned off with any earpiece removed from the ear. This includes, but is not limited to, cell phones, audio players and video players. Any of these devices located in the locomotive cab not only must be turned off but also stored.
- D) Exceptions:
  - 1. In the event of an emergency or other problem the Conductor, Supervisor or his/her designee may use a cell phone to contact Emergency Services or museum staff. This cell phone should remain on but is for duty use only.
  - 2. These devices may be used while on a designated breaks and lunch break.
  - 3. As long as it does not interfere with the performance of their other duties crewmembers may take pictures using a digital camera.
  - 4. These devices may be used if all crewmembers have been notified that operations have been suspended.
- E) The FRRS/Western Pacific Railroad Museum does not supply any electronic/electrical devices for use during train operations with the exception of two-way radios for communications between crew members and the working staff.
- F) The FRA has provided the attached flow-chart for your information



## FRA EO 26 – Electronic and Electrical Device Flow Chart

Use of Personal or RR supplied electronic/electrical devices may NOT interfere with RR operating employees performance of safety related duties



\*Means a person performing duties subject to 49 U.S.C. 21103, "limitation on duty hours of train employees."

# 2.10 STANDARD CLOCK

The Standard Clock is in the Operation Office. This railroad runs on Pacific Time. You should adjust your watch to be within one minute of the Standard Clock. Compare your watch with that of the Conductor. Use of a digital watch is permitted.

# **2.11 EXCEPTIONS**

All of the above describe the regular activities of an ordinary day's operation.

# There is *never* an ordinary day's operation.

Be prepared for changes in your work necessitated by safety concerns, a different routine (such as Santa Train or night operation), different equipment or the needs of the museum.

# **BE SAFE - BE FLEXIBLE**

#### **3.0 TRACK SWITCHES**



## 3.1 STANDARD COMPLETE TRACK SWITCH

#### **Definitions:**

FACING POINT MOVE: To proceed through a switch from the point end toward one of the connecting tracks.TRAILING POINT MOVE: To proceed through a switch from the frog end toward the points of the switch.PICK A POINT: To have a wheel flange run into a switch point when making a facing point move.RUN THROUGH A SWITCH: To make a trailing point move when the switch is thrown for the other track route.

A train approaching from the left side of this diagram is making a facing point move over this switch. A train coming from either of the right side approaches is making a trailing point move over this switch. If the switch is thrown for the curve and a gap is present between the switch point on the outside of the curve and the

straight stock rail, the flange of an engine or car wheel can pick the point of the switch as the train approaches the switch from the facing point. A metal casting can be applied to the rail in front of the switch point in an attempt to prevent the picking of the switch point. Switch Point Protectors increase the service life of switch points by absorbing the impact of passing car wheels. The protector momentarily deflects the wheel flange so it misses the tip of the switch point. The protector is bolted to the inside of the straight stock rail leading into the switch.

If the switch is thrown to permit a train to pass through from one of the two trailing point directions and the train approaches from the other of those directions it will run through the switch. In the illustration above, with the switch thrown as is indicated, a train approaching from the curved (lower) leg of the switch would run through the switch.

Often running through a switch may result in the derailment of all or part of the train. It **WILL** damage the Switch and the Switch Stand.

All Train Crew members are responsible for checking the alignment of switches and all Train Crew members will be required to help repair any switch that has been run through.

# Under NO circumstances should a switch be thrown while a train is passing over it.

# 3.2 A FEW NOTES ABOUT FRRS/WPRM TRACK NOMENCLATURE

(See the map on the following page.)

- 1. The track between Switch # J and the gate is known as the West Pass.
- 2. The track between Switch # R and the RIP switch going out the gate is known as the Ramp Track.
- 3. The track Between Switch R and J is known as Malfunction Junction.
- 4. The track from Switch RIP to end of tracks is known as RIP Tracks (numbered) Repair In Place tracks
- 5. The circle of track from Switch # J to Switch Millward Switch is known as the Balloon Track.
- 6. The track between Switch # IB/DP to Switch V is known as the Inside Balloon Track.
- 7. The track between Switch # DP to end of track is known as Dodgepole Siding.
- 8. The track between Switch # 1 (South Side of Yard) to Milward Switch is known as the East Lead.

# **3.3 SWITCH NUMBERS AND NAMES**

# (from East to West)

- 1. East Switch # 1 (Between East # 1 Rail and East lead)
- 2. East Switch # 2 (Between East # 2 Rail and East lead)
- 3. East Switch # 3 (Between East # 3 Rail and East lead)
- 4. East Switch # 4 (Between East # 4 Rail and East lead)
- 5. East Switch # 5 (Between East # 5 Rail and East lead)
- 6. East Switch # 6 (Between East # 6 Rail and East lead)
- 7. East Switch # 8 (Between East # 7 Rail and East lead)
- 8. RIP Switch # D (Between East RIP Switch D and to end of track Dock Track)
- 9. RIP Switch # R1 (Between East RIP # 1 Track and East RIP # 2 Track)
- 10. RIP Switch # R2 (Between East RIP # 2 Track and East RIP # 3 Track)
- 11. RIP Switch # R3 (Between East RIP # 3 Track and East RIP # 4 Track)
- 12. RAMP Switch # Ramp (Between the RIP Tracks and the RIP Switch (West))
- 13. RIP Switch # RIP (Between Switch R and Ramp Switches)
- 14. R Switch # R (Between J switch and the 2/3 Switches (West))
- 15. J Switch # J (Between the R Switch and the West Pass)
- 16. West Switch # 1/2 (Between West tracks # 1 and # 2)
- 17. West Switch # 3/4 (Between West tracks # 3 and # 4)
- 18. West Switch # 2/3 (Between West tracks # 2 and # 3)
- 19. V Switch # V (Variable Switch) (Between track # 4 and the Inside Balloon track)
- 20. IB/DP Switch # IB/DP ( Between Switch V (inside balloon) and Milward Switch and Dodgepole Siding)
- 21. Milward Switch # Milward Switch (Between Balloon Track and Inside Balloon Track)

# EAST END OF YARD



WEST END OF YARD

### **Hand Signals**

Use BIG hand signals. You will often be trying to communicate over the entire length of a train. If possible (and safe!) use both hands to signal.

During daylight hours, use hand signals for train and engine movement. During nighttime hours, use lantern signals for train and engine movement.

When practicable, signals should be given on the Engineer's side of the track. Always face the Locomotive Engineer, on the Engineer's side of the train when giving signals. If this is not possible, make sure the Fireman can see you and/or make sure if on a curve, there is another crew member to relay the signal.

SIGNAL DISAPPERARANCE: If a person disappears who is giving the signal to back or shove a train, engine, or car; or the light being used disappears, employees must **<u>STOP</u>** the movement unless the way is seen or is known to be clear, the movement is directed by radio or controlled by tail hose.

#### Red Zone Indication:

Both arms fully extended thumbs up. The movement continues around in a circular motion, moving the hands inward with the thumbs rotating to a downward facing position above the head. This signal will be acknowledged by the Engineer, with a thumbs down out the window when the reverser has been centered and the independent brake set. (The generator field switch may also be turned off as an additional precaution)

When the Red Zone is clear, the person requesting the Red Zone will signal the Engineer by having their hands open and down. The Engineer will acknowledge the clear signal with a wave of one hand out the window.

Red Zone signal may be indicated by radio communications between the person requesting the Red Zone and the Engineer.

Example: If the Red Zone was called by radio, A "Red Zone Clear" is to be called on the radio by the person originally calling the Red Zone. If the "Red Zone" was called by hand signal, clearance of the Red Zone can be achieved by verbal confirmation of clearance to the Engineer. The Engineer shall acknowledge the verbal confirmation.

The Red Zone signal is not a relayable signal. Only the person requesting the Red Zone shall signal the Engineer.

# Daytime Use Hand Signals for Train and Engine Movements



Come to Me As if motioning a person to come toward you.



Go Away From Me As if motioning a person to go away from you.



Easy Hands are actually held above the level of the head and one cycle of a rocking motion is made. An engineer receiving an "Easy" signal will reduce speed by one half.



Swing arms at a right angle to the line of sight of the engineer or engine crew member receiving your signals. For an emergency stop, swing arms violently.



Cutting in the Air/Connecting Air Hoses This signal is given OVER the level of the head, at a right angle to the line of sight of the engineer or engine crew member receiving your signal, and with the thumbs pointing downward. Before going between cars or engines, you MUST wait for an acknowledgement of this signal from the engineer or engine crew member receiving your signal.



Set the Brakes One hand is moved back and forth in a straight line as if "setting a table." This signal is usually used to conduct a brake test prior to a train being moved.



One hand is moved up and down.

Night Time Lantern Signals for Train and Engine Movements



Lantern is raised and lawered vertically 2 times. The person giving this signal must know which direction the engine is focing before giving the signal.



Night Time Lantern Signals for Train and Engine Movements







Stop Lantern is swung at a right angle to the track. For an emergency stop, swing violently.

#### CAR AND CABOOSE NOMENCLATURE:



"A-end" and "B-end" of a car

The end of the car upon which the brake shaft is located shall be known as the "B-end" and the opposite end shall be known as the "A-end". If the car has two brake shafts, there shall be an "A-end" and "B-end" stenciled on the respective car ends, on both sides, near the each end.



Located in Northern California's Feather River Country

Rev	Changes	Ву	Date
Number			
1	Initial Issue	Kerry Cochran General Superintendant	12-27-11