

Union Pacific Railroad

**Rail Train
Operating Instructions**

REVISED: March 8, 2010

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Rail Train Operating Instructions

Introduction

Rail replacement is an important part of Union Pacific's track maintenance program. Each year, new Continuous Welded Rail (CWR) is unloaded system wide for installation. Likewise, secondhand CWR and bolted rail is picked-up by Rail Trains, and is either transported to system rail plants, or cascaded to other secondhand curve rail projects. System trains used in this process consist of two rail unloading cars, and four to five rail car pick-up units for secondhand rail.

Compliance with these instructions will ensure the safe and efficient operation of all Rail Train operations. The Manager Track Maintenance (MTM) or appointed supervisor will assist the Rail Train Supervisor (RTS) during all Rail Train operations.

Local management is responsible for:

- 1) Reviewing project plans before the Rail Train's arrival to ensure the efficient unloading of rail.
- 2) Obtaining and communicating the proper exclusive track occupancy (Form B, Form C, single-tracking and flag protection) to all interested parties as required. Coordinate moves with Maintenance-of-Way Operations Control (MWOC), Corridor Manager, and other Maintenance-of-Way gangs working in the area.
- 3) Providing the Rail Train Supervisor with a copy of General Orders and information about the territory that may affect the operation (i.e., location of bridges, signals, switches and other obstructions). Each RTS must have access to a complete set of System General Orders.
- 4) Assisting the Rail Train Supervisor in assigning the most capable employees for the more demanding jobs.

- 5) Arranging all aspects of train crew activities -- including calling the work train, ensuring a 3-person crew is available, scheduling meals, and transportation per local agreements.
- 6) Ensuring all required tools for Rail Train operations are inspected and safe to use.
- 7) Ensuring sufficient material is on hand (i.e., joint bars, bolts and oxygen / acetylene, propane, and wooden blocks as required).
- 8) Ensuring a welder and mechanic is available in the event of a major breakdown.

Job Briefing

A. The local MTM and/or respective ARASA Supervisor are responsible for reviewing the project plan and determining when the Rail Train will arrive on their territory. Prior to the Rail Train's arrival, a Safety Meeting must be held to review and familiarize all employees on safe rail unloading / loading operations.

Employees assigned to any Rail Train unloading / loading operation must first attend a Safety Meeting to review the following Safe Rail Train operations video programs:

- (E-248-02) Safe Rail Train Operations
- (E-269-03) Safe Rail Train Operations – Loading
- (E-270-03) Safe Rail Train Operations – Unloading

The Rail Train Supervisor is responsible for ensuring that **Course Code V236** is entered into each employee's training history, documenting their review of the video program(s).

(The review of all Safe Rail Train Operations videos must occur within one calendar year prior to working on a Rail Train.)

NOTE: Video programs may be obtained through UP's E-Procurement System. When placing an order, use the Item Number left of each program title shown above.

B. Prior to movement or performing any unloading / loading operations, the RTS and local manager will conduct a thorough Job Briefing with all personnel -- including members of the train crew. When traveling with personnel that are riding on the Rail Train, **do not exceed 30 mph.** All aspects of rail unloading / loading operations will be discussed along with an in-depth briefing of the type of On-Track Safety that will be used that day. Remember, employees should never dismount or place themselves between the rail and the train.

Conduct additional meetings and Job Briefings as conditions, methods or procedures change.

When track centers are 19 feet or less, the RTS is responsible for ensuring that the in/out box chains on unloaders are attached to the stationary connection on the unloader. This will prevent boxes from fouling the adjacent track by restricting their outer / horizontal movement.

Rail Train Crew

- C. The RTS and local manager will conduct a thorough Job Briefing with the rail train crew to explain the roles and responsibilities of all personnel involved in the Rail Train unloading / loading operation (i.e., the What, Why, When, Where, How and Who will perform each task).

During Rail Train loading or unloading operations, a crew member (i.e., **Conductor or Brakeman**) will protect the rear of the train – by riding in a SAFE designated area on the Rail Train, or Rail Train equipment, as directed by the RTS.

The designated crew member will approve all shoving moves and is required to be on the ground when the train is shoving within 5 cars of any signal device, road crossing, or switch. The designated crew member (Conductor or Brakeman) will also protect the movements for all reverse moves (**unloading or pick-up operations**) when clearing for trains, or tying-up.

Before any Rail Train activity is undertaken – including all reverse moves -- a Job Briefing must first be conducted with all train crew members.

NOTE: Conduct additional Job Briefings as conditions, methods or procedures change.

Work Assignments / Red Zones / Personal Safely Practices

- D. The MTM shall consider the most qualified employee when making specific work assignments. When necessary, the MTM and/or RTS should walk employees through their workstations to ensure the employee understands their specific role and responsibilities.

- E. The RTS will describe the job function, potential hazards and Red Zones associated with the employee's work assignment.

RED ZONE

That area within an arm's length of the track, or any position, which places the employee in a life-threatening situation.

Train must be "Set and Centered" per Rule 81.5.4, before entering Red Zone.

- F. Most Red Zones on a Rail Train are marked with red paint. However, those areas where it is not possible to physically mark as a Red Zone will be identified in a Job Briefing before any employee is assigned to these areas.

Comply with these safety practices when working on and around Rail Trains.

1. When riding on a Rail Train, employees will ride in locations designated by the RTS. Personnel must maintain a 3-point stance (4-point, where possible) and be prepared for sudden stops or erratic movement.
2. Stay clear of the edges of all cars, when possible.
3. Watch point and rail for unexpected movements (used by communication with the RTS.)
4. When installing or removing joint bars and the point, use lockout / communication with the RTS.
5. Before getting on or off Rail Train on the "LIVE TRACK" side, verify that no traffic is on the adjacent track before ascending or descending the Rail Car.
6. Within 10 feet of rail movement, especially at joint bars if rail becomes hung up on stanchions.
7. Use ladder and / or grab irons when ascending and descending the Crib Car.
8. Use ladder when ascending and descending the crow's nest on Crib Car – and access leading to the ladder, especially where no side platform is available.
9. The entire Crib Car is a **RED ZONE!**

When performing tie-down operations in Red Zones, exercise extreme caution.

- When tying-down rail on the train -- rail is moving toward tie-down.
- Remain alert for unexpected movement within 10 feet of any moving rail.
- Avoid tripping hazards from pneumatic, hydraulic or hand tools.
- When using ladder ascending and descending the Tie-Down Car, as well as access going to the ladder -- especially where no side platform is available.
- Remain alert to fall zones that are 6 feet or higher -- especially near entrance / exit areas where no barriers or railings exist, except for a chain, on top of Tie-Down Car and other elevated locations.
- Use the Tie-Down Car's ladder and / or grab irons from ground when ascending or descending the car.
- The authorization to enter **RED ZONES** will be received from the Rail Train Supervisor – **NO EXCEPTION!**
- Before entering **RED ZONES**, the train must be "Set and Centered" per Rule 81.5.4.

G. Employees must remain alert for Rail Train equipment defects, (e.g., bad decking, worn cables or any defect that may create an unsafe working condition). Report defects to the RTS immediately.

H. Direct all questions regarding Rail Train operations to the RTS.

The proceeding sections relate to specific operations and recommended work procedures. By reviewing these instructions prior to the arrival of the Rail Train, the Engineering Department Supervisor and the Rail Train Supervisor can produce a safe and efficient operation.

Manpower

Field personnel are responsible for being at the job site when needed. The recommended manpower requirements for both Rail Distribution and Rail Pick-Up operations are:

Rail Distribution (10)

<u>No.</u>	<u>Position</u>
1	Rail Train Supervisor on Power Car
1	Engineering or field force's supervisor
2	Employee on Tie-Down Car
2	Employee on Breaker Car (one torch-qualified)
2	Employee picking-up hook-up chains, fish plates and handling cables
1	Backhoe (operator)
1	Truck Driver (pick-up chains/cables)

Rail Pick-Up (16)

<u>No.</u>	<u>Position</u>
1	Rail Train Supervisor on Power Car
1	Foreman to assist on Crane Car
1	Assistant Foreman to assist on Breaker Car
2	Employees on Tie-Down Car
2	Employees walking point
2	Employees on Breaker Car (one torch-qualified)
4	Employees on Crane Car (one torch-qualified and one crane-qualified)
2	Employees on Speed Swing (operator and helper)
1	Truck Driver -- Transport Point Men when Right-of-Way roads are accessible. When roads are inaccessible, driver will assist on the Breaker Car.

Communication

Good communication is essential to the safe and efficient operation of the Rail Train. The RTS has been assigned seven company-issued radios which are distributed, on an as needed basis, to personnel assigned to Rail Train operations. Local forces are also encouraged to provide radios assigned to them. Company-issued radios are distributed according to the type of Rail Train operation, (i.e., Rail Distribution vs. Rail Pick-Up).

The RTS, local supervisor, and train crew are responsible for determining the safest radio

channel to be used for rail unloading and loading operations. Before any unloading or pick-up operations commence, a radio check must be performed with all company-issued radios – with special attention given to the radios assigned to Point Men assigned to the Rail Pick-Up operations.

All communications must be channeled through the RTS. All personnel have the authority to **STOP** the Rail Train when necessary. The train will be referred to as the “Rail Train.” When it is necessary to **STOP** the Rail Train, the phrase “**STOP THE RAIL TRAIN**” will be used.

Radio instructions must be clear during Rail Train operations and all radio instructions must be acknowledged. Communications should be kept to a minimum with no unnecessary radio communications. The RTS will monitor all communications and overall operations to ensure the safety of personnel.

Rail Distribution Operation (4)

<u>Radio(s)</u>	<u>Location</u>
1	RTS on Power Car
1	Tie-Down Car
1	Breaker Car
1	Spare (extra)

Rail Pick-Up Operation (7)

<u>Radio(s)</u>	<u>Location</u>
1	RTS on Power Car
1	Crane Car
1	Breaker Car
2	Point Men
1	Tie-Down Car
1	Spare (extra)

All company-issued radios distributed must be returned to the RTS end of each day for recharging. Radio equipment problems should be reported immediately to the RTS.

Train and Equipment Consist

The Rail Train and equipment consist includes:

- A. Two, 6-axle locomotives with 6,000 horsepower capacity are necessary for traction while the train is being pulled with the air set to reduce the slack action and improve handling.
- B. Equipment for handling CWR, or continuous lengths of bolted rail, consists of power equipment (unloading units and/or pickup units) and permanently-coupled flat cars. Couplers are blocked against slack action and are highly susceptible to damage from rough handling. When equipment is loaded with rail, a buffer is used at each end. The buffer car must not be a car containing hazardous materials, an occupied caboose or camp car. The end of the buffer car must be at least as tall as the top row of rail to restrain the rail. However, the RTS may authorize loaded equipment to be operated without a buffer to and from an unloading / loading site.
 - 1. Inspect all Rail Trains for missing slack adjusters. Before loading Rail Trains, Welding Plant personnel and / or RTS must perform an inspection – replacing missing parts to ensure safe operations. When four or more slack adjusters are missing on either side of the tie down, no rail may be loaded until the slack adjusters are replaced.
 - 2. Welding Plant and Rail Train Supervisors must ensure that rail ends are a minimum of 12-feet from the nearest support of stretched train. When necessary, rail must be adjusted prior to allowing train to move unattended between work sites.
 - 3. Welding Plant and Rail Train Supervisors are responsible for ensuring that Rail Trains comply with these instructions before allowing the train to move unattended.

- C. The RTS will determine which end of the train the power will be placed -- taking into consideration the terrain, obstructions and the type of work being performed.
- D. To unload or load rail, buffer cars may be switched to the opposite end on which the rail will be unloaded/loaded.
- E. The RTS is responsible for ensuring these switch moves occur under his direct supervision.
- F. The RTS must accompany all Rail Train movements when rail is left treaded through Power Cars.

NOTE: The Manager Track Maintenance (MTM) or appointed ARASA Supervisor will assist the RTS during all phases of rail unloading.

Unloading rail without approval from the RTS is PROHIBITED.

Rail Unloading Operations

Complying with the following instructions will ensure safe and efficient rail unloading operations.

UNLOADING OPERATION

- A. A recommended 10 employees are required to perform rail unloading. Local management is responsible for ensuring adequate employee staffing is on hand to perform rail unloading operations – in addition to ensuring the most capable employees are placed into the safety-sensitive positions.

Prohibited

Switching a Rail Train without the verbal permission from the Rail Train Supervisor is prohibited.

Only two employees may instruct the Engineer to move the Rail Train while in the process of unloading rail. Crib Car while making joints and RTS for all other movements.

- B. When CWR will be laid in road crossings for a project, crossings must be prepared to receive the rail by first removing the outside crossing boards or roadbed material. To eliminate any unnecessary torch cutting of rail and expedite unloading, ensure asphalt (cold mix) or ballast is available to fill-in the road crossing.
- Note:** Comply with all Local / State government permit and notification requirements prior to removing a road crossing from service. Conduct a thorough Job Briefing to address road crossings and ensure personnel are present to provide protection while a crossing is OUT OF SERVICE.
- C. The majority of Rail Trains are designed to untie rail from top outside pockets working toward the middle pockets. On custom welded trains, tie-down personnel will untie the rail and follow the sequence as instructed by the RTS.
- D. On other trains, when a rail is removed and the adjacent rail is to be tied-down, a “Dutchman” or “Half Plate” must be added to provide the proper tightening surface for the adjacent rail.
- E. The employees working on the Breaker Car will pull out the winch cables on each side of the Unloading Car and attach hook cables to the appropriate rails. All employees must exercise caution and stand clear of the cables as the RTS begins pulling the rail down through all threader boxes.
- F. All walkways, except those between cars, will be picked-up and placed in the travel position.
- G. Rail must be cabled to the track -- preferably to a secure anchored crib with pull-off cables. Once securely attached, employees must maintain a 30 foot minimum distance from the cables before the Rail Train is allowed to move.
- Note:** When extra rail anchors are used, they should be applied to the field side of the track.
- H. When plows are used to create a furrow on the track shoulder for rail placement, all employees on the Tie-Down and Breaker Cars should remain alert for obstructions in the direct path of the plows, (e.g., bridges, flange oilers, crossings, switches, long

ties and other objects). Alert the RTS immediately of obstructions to ensure plows are moved into the clear.

- I. Exercise caution when releasing tension on drag line cables to prevent cables from rolling or sliding downhill.

When the free rail end passes through the Tunnel Car, ensure no train movement is present on the adjacent track until the rail end is placed on the ground.

- J. When establishing a new rail joint on the Crib Car, employees must stand either on top of, or on the side of the Crib Car, until rail movement is stopped.
- K. When “Fish plates” or “Stabber Chains” are connected, employees must move to a place of safety by returning to the top of the Crib Car before rail is moved. Always use the ladder and/or grab irons when moving up or down the Crib Car.
- L. Ensure OXYGEN /PROPANE or ACETYLENE cylinders are safely secured (tied-down) in an upright position at all times. After installing cylinder gauges, hoses and torch, perform a thorough daily inspection and leak test prior to use.

When Oxygen /Acetylene or Propane cylinders equipped with outlet valves are not in use, all cylinder outlet valves must be kept fully closed. During transport, tie-down cylinders, remove regulator assemblies with gauges and apply cylinder caps - - unless valves require a DOT approved safety cap. Properly store and secure regulator assemblies to prevent damage, and theft.

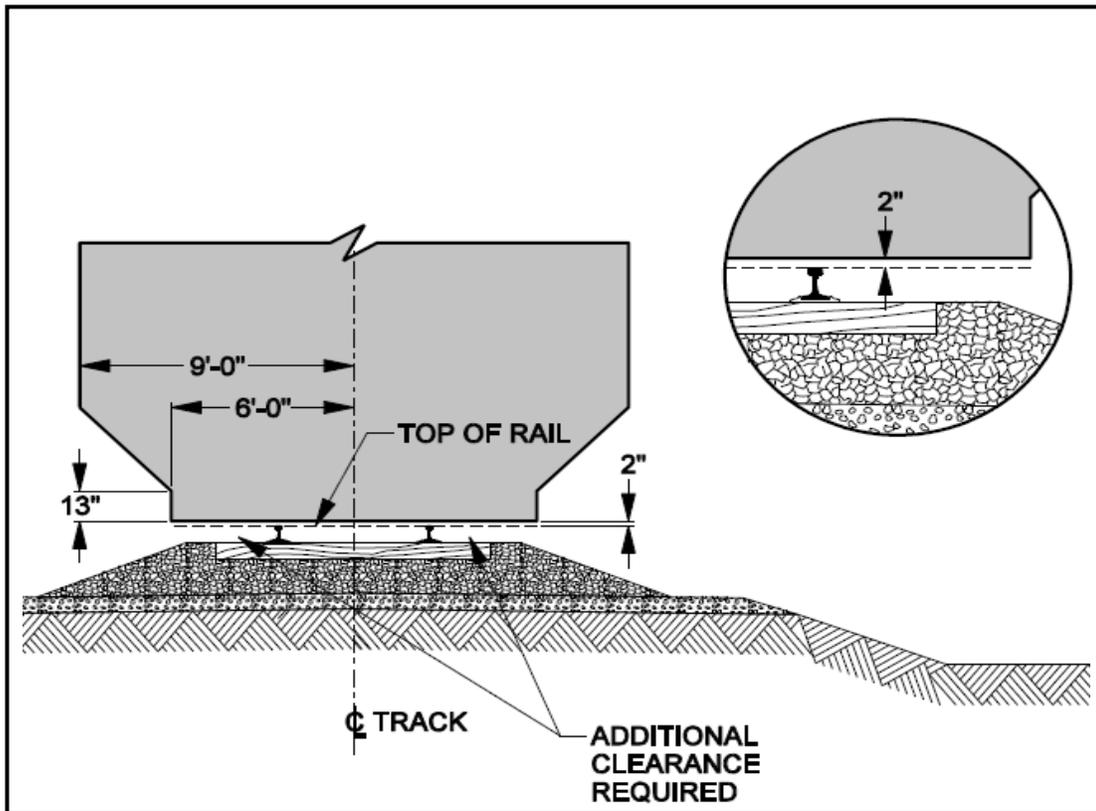
- M. Employees must keep their work area clean and clear of obstructions, (i.e., OTM, ballast, tools, etc). Tools and equipment must be secured to prevent falling off the Rail Train.
- N. Upon the completion of daily rail unload operations, employees must ensure that:

1. All tie-down plates are returned and secured in place by installing the nut or bolt.
2. All tools, equipment and hoses are safely secured by lock to prevent theft.
3. All Stabber Chains, Fish Plates and Drag Line Cables are returned to their respective cars on the Rail Train.
4. Walkways between Unloader Cars are picked-up and secured for travel.
5. The ends of CWR placed on the ground, are separated to prevent the rail from bunching and avoid potential fouling or interfering with rail traffic.
6. Rail laid across open deck bridges is secured either by spiking rail to bridge timbers, tying-off with wire rope or chain. When rail is unloaded, ensure all rail ends do not come in contact with one another. Place wooden blocks to separate rail ends and prevent rail end to rail end contact. Ensure an adequate quantity of wooden blocks is on hand for the project.

Note: If rail is not properly secured, place a 25 mph Slow Order on the track. Place rail out of the way in walking areas such as yards and other switch locations. Ensure train dispatcher issues a Form C, "Bad Footing Order" – if necessary

7. When both locomotive power and the Rail Train are tied-up with rail threaded through the Power Cars, precautions must be taken to prevent unexpected movement without the RTS present.

Ensure rail that is unloaded does not foul the running rail per Track Maintenance Field Handbook, section 4.4.3 Rail Placement. (Refer to Engineering – Critical Incident Alert 14-2009, dated 11/24/2009.) When rail is unloaded at the end of ties, rail must be at least 2-inches lower than top of the running rail. Where high ballast or other obstructions exist, place rail at least 6-feet from the track center to alleviate this rail from fouling the running rail. Ensure unloaded rail is properly prepared to not interfere with the running rail if temperature changes. Place rail a sufficient distance from the running rail to ensure rail ends do not touch.



8. All company-issued radios are returned to the RTS for daily recharging.

If locomotive power may be required for higher priority trains, the RTS must advise the assigned crew to separate the Rail Train equipment from the locomotive power. Place Red Flags to protect Rail Train and equipment from movement. Prior to departing tie-up location, the RTS will brief the Yardmaster / Dispatcher or local Transportation Manager of train and equipment status.

Rail Pick-up Operations

Following new rail replacement or track abandonments, the Rail Train will load and transport the secondhand CWR and/or bolted secondhand rail removed from track. Comply with the following instructions to ensure the safety and efficiency of rail pick-up operations.

NOTE: During all phases of rail pick-up operations, the Manager Track Maintenance or an appointed ARASA Supervisor will assist the Rail Train Supervisor.

Under no circumstances, may rail pick-up operations proceed without the Rail Train Supervisor's direct supervision.

I. Rail Preparation (Rail Gangs / P811)

- A. Place rail in an upright position in the furrow created by the plow along the track shoulder.
- B. Rail should be placed on both sides of the track.
- C. Rail should be cut squarely at a 90-degree angle.
- D. Holes in rail ends must be drilled or torch-cut to specs (9-1/2" and 15-1/2").
- E. All rail anchors must be removed.
- F. Rail must be left together in strings and rail ends must be separated.

II. Initial First String Rail Pick-Up

- A. Position Crane Car near the end of the rail to start pick-up operation. Raise rail end using the Knuckle Crane to attach a starter point. Repeat procedure on both sides of the Crane Car.
- B. When train is advanced, rail is pushed through the telescopic boxes, stationary boxes, Companion Car boxes and pusher wheels. Once rail passes through the pusher wheels, the RTS will oversee pulling the rail through the rear Companion car boxes and Breaker Car boxes. Once this is accomplished, all rail movement is stopped. Remove starter points and attach grab handles and rail points. Move all employees into the clear -- either on the side or on the top of the Crib Car. Adjust rail boxes and guide rail into the rail pocket.

III. Operation

- A. As rail advances onto the Rail Train, position two employees -- one each side of the Crane Car -- to remove rail anchors attached to base of the rail and inspect rail joints. Employees must remain alert for loose or broken joint bars that, if not tightened or repaired, may allow rail to roll free in the train.
1. When the first rail section is picked-up, the Rail Train advances to the next rail section on the ground and the train is stopped near the rail end. Apply two joint bars to the rail end on the train.
 2. Using the Knuckle Crane, raise the rail end from the ground and align the two rail ends between the joint bars -- the RTS will coordinate moving the rail into position. Apply bolts (2 per rail end – 4 per joint) and tightened with an impact wrench.
NOTE: Joint bars connecting rail ends must conform to the proper design and dimension specifications for rail section.
 3. As rail strings are loaded on the Rail Train, they will resemble the shape of a pyramid. The two middle strings are loaded first, from the bottom tier to the top tier. Additional strings will be loaded from the outside up using the middle strings as guides.
- B. The Point Men are responsible for guiding rail through the train while maintaining continuous communication with the RTS. Point Men inform the RTS when:
1. Any situation that may interfere with the safe loading of rail through the pockets on the Roller Cars, (e.g., speed, obstructions and walkways).
 2. The rail approaches the tie-down and Breaker Car – RTS is provided a countdown to gauge speed and distance.

3. Rail is out of the crib on the Breaker Car – RTS is advised of rail's distance from the crib.

Once rail is loaded, the RTS will communicate the following instructions to tie-down employees:

- If no obstructions are present to prevent friction plates from being applied, tie-down personnel will tie-down the rail -- tightening bolts or nuts to refusal with an impact wrench or a ratchet and multiplier.
- If obstructions are present that prevent tie-down, (i.e., joint bars, field weld or field weld straps) the rail must be re-positioned before rail is tied-down.

- C. Once rail is spotted, employees on the Crib Car will remove joint bar nuts/bolts by torch cutting, or by torch cutting the rail.

NOTE: When this operation is undertaken, the hydraulic controls in the operator's cab will be lock-out to prevent rail movement.

1. Before making a cut, employees must ensure they position themselves between either the:
 - Joint bar and the crib; **or**
 - Joint bar and on the crib.

Employees will torch the bolts from above the joint -- at no time shall any employee place any of their body between two rails. Once bolts are cut, employees will remove joint bars by using a sledge hammer or bar.

NOTE: Employees must position themselves above the joint clear of falling joint bars and keep body parts out of pinch points.

2. Once grab handle and self-guiding point, or rail point, are attached, employees must move into the clear.
3. During loading operations, ground personnel cannot be more than 10-feet away from the 1st threader box on the Crane Car. In the event the rail

binds, rail could strike a person in a position that is greater than 10-feet from the 1st threader box.

4. Threader boxes are be adjusted and the rail is be slowly loaded into another pocket. All personnel on Breaker Car move into the clear on the Crow's Nest until the next string is started.
5. All employees are responsible for ensuring work areas are clean and clear of obstructions, (e.g., OTM, ballast and tools).

D. Upon completion of daily pick-up operation, employees must ensure:

1. Point Men communicate with the RTS about the location of the point and secure the point on the rail.
2. Crane Car: Pin adjustable boxes and secure walkways. Return tools and torches to the locked box. Secure joint bars, bolts and air/hydraulic hoses to prevent loss – falling off the Rail Train.
3. Breaker Car: Return wrenches and torches to the locked box. Secure points and handles to prevent loss – falling off the Rail Train.
4. Tie-Down Car: Return tools, air hoses and wrenches to the locked box. Secure tie-down plates, nuts and bolts to prevent loss – falling off the Rail Train.
5. All company-issued radios are returned to the RTS for recharging for the following day's operation.