Santa Clara County

Local Fire Service and Mutual Aid Plan

Appendix 18: Railroad Response Plan

Adopted: June 2023

Purpose

The purpose of this plan is to provide information to improve the safety of first responder operations in and around railroad emergencies. This plan contains general railway safety guidelines and resources for working around railroads found in Santa Clara County.

Contact Information

Emergency Railway shutdown Contacts:

Fire Agency's Dispatch is the primary point of contact.

BART: (510) 834-1297 BART Operations Control Center (OCC) Manager

Heavy Rail (Caltrain/Amtrak/Union Pacific/ACE)**:** (408) 271-4967 # not for public use/access

VTA Light Rail: (408) 546-7688 # not for public use/access

Union Pacific Hazardous Response Resources: 888-877-7267

General Railway Safety Information

PPE (minimum)

- Turnouts, roadway vest, helmet, gloves and eye protection

Approach

- Use caution, do not park on or near rail.
- Apparatus, personnel and supply lines should stay clear of tracks whenever possible.
- Use caution for high voltage on approach to any railway emergency.
- Heavy Rail lines often have overhead power lines and underground gas lines following the path of tracks.
- Stay 25' from switch points. (can move and crush extremities at any time)
- Identify type of cargo including passenger or possible hazmat.
- Follow ERG guidelines

Working on or around tracks

- Confirm On Track Safety (OTS) Protection by posting a "Lookout" for **both directions**. Do not rely on warning systems.
- Establish a 15' hot zone around the immediate incident area. Hot zone is for first responders and equipment that are directly involved with the railway emergency. This is to help ensure a safe working area and route of egress for responders.
- Weather and type of train can dampen incoming train noise.
- Train speeds of up to: BART 80mph, Heavy Rail 79mph, Light Rail 55mph.

Communication

- Establish Liaison: Heavy Rail (Conductor), Light Rail (Operator), BART (BART Representative)

Secure electrical power.

Power off (unconfirmed shutoff). Safe clearance (confirmed shutoff)

- **BART:** 1000v 3rd rail
  - Power off options: Contact OCC or Platform trip
  - Safe clearance: Confirmed by BART electrician
- **Light Rail:** 700v, 6000amp Overhead Catenary lines/ Car Pantograph tower
  - Power off options: Contact OCC or Manual lowering of Pantograph
  - Safe clearance: Confirmed by VTA tech & ground straps in place.
- **Heavy Rail:** Overhead PGE power lines. 480 Volts may be present near the batteries at each end of any car or any locomotive. Battery switch location varies, see reference material.

Fire operations

- **BART:** FDC's available to pump station sprinklers and or under train deluge system.
- **Light Rail:** If hose lines must be laid across the tracks, contact the OCC and have them immediately stop rail traffic in the area.
- **Heavy Rail:** During long-term brush or structure fire responses, consider contacting the dispatch center to obtain clearance to remove the ballast and feed the hose under the tracks to allow both safe firefighting and safe train operation.

Doors/Window access

- **Heavy Rail:** Peel rubber and remove window. High strength windows. Consider overhead/roof access.
- **Light Rail:** Emergency power operates doors. "Crew" key unlocks hatch from manual door operations. Emergency exit windows, accessed from inside (Tempered glass windows).
- **BART:** Emergency "T" handle. Train door key (Barrel Key) for operator cab. Windows: Operator cab (high strength glass), Side windows (tempered)

Evacuation

- Safest place is inside the car.
- **Heavy Rail:** Exit to adjacent car, stay minimum 15' from rail.
  - Do not step on rail (slippery, trip hazard)
- **Light Rail:** Exit to platform. Can use middle of affected track.
  - Do not step on rail (slippery, trip hazard)
- **BART:** Exit to rescue train, platform, or aerial ladder.
  - Do not touch 3rd rail
  - Do not step on rail (slippery, trip hazard)

Emergency Stoppage of Trains

General Background and Safety

Stopping distances for trains vary with the train type (e.g., light rail, commuter, and freight), speed, weight and percent of grade. According to the Department of Transportation, an average freight train traveling 30 mph on level ground requires a minimum distance of ½ mile to completely stop. An average freight train traveling 60 mph on level ground requires a minimum distance of 1½ miles to stop.

The sound of an approaching train is diminished when one is standing directly in front of it, when compared to standing off to the side.

First Responders **should not** attempt to actuate railroad block signals to stop trains in an emergency.

All First Responders must be cognizant of the inherent dangers associated with stopping trains, and shall ensure that their actions are consistent with sound safety practices.

Communication

When it is necessary to stop railway traffic (if time permits), advise the dispatch/communications center of the name of the railroad, nature of the problem, and location. Upon receiving the aforementioned information, dispatch/communication center personnel are to immediately notify the appropriate railroad dispatcher.

Universal Signals

Hand Signals/Normal Stop

When flagging, personnel must travel in both directions from the incident site. The distances that personnel must travel are based upon authorized train speeds.

Stand no closer than 15' from the closest rail, with the tracks on your right. Having the tracks on your right, while facing an approaching train, you will be placed on the Engineer's side of the tracks. A thirty-minute road flare must be lit from this position immediately after hearing or seeing a train.

To stop a train, slowly swing a lit, thirty-minute road flare, or a visible object (e.g., flag, handkerchief, emergency yellow blanket, flashlight) horizontally, in a back and forth motion at knee to hip height, at a right angle to the track. In addition, the person giving the signal can be observed more readily by moving about rather than remaining stationary. The locomotive engineer will acknowledge this signal with two whistle blasts and stop the train as quickly as practical. During hours of darkness, the hand signal should be given with a flare, flashlight, or other lighted object.

Hand Signals Full/Emergency Stop

This signal is the same as that for a normal stop, except that it is given with a more rapid movement. Use a full emergency stop only when a train cannot be signaled at a sufficient distance from the hazard to permit a normal stop. Be aware that full emergency stops may endanger passengers, train crews, property, and equipment.

Unattended Flare

If time and access allows, place one thirty-minute flare, between the rails, at least two miles in advance of the rail-highway grade crossing or hazard, in both directions of travel. Do not place flares directly on a wooden railroad tie (be aware of flammable materials such as grass, weeds, wood timbers, oil and grease).
If a train approaches a lighted flare burning on or near its track, the locomotive engineer is required to stop the train at or near the flare.

If an unattended lighted flare is placed beyond the closest rail of an adjacent track, the flare does not apply to the track on which the train is moving.

After Stopping Train

Immediately after the train comes to a stop, contact a train employee, preferably the conductor, and advise him/her of the hazard.

Definitions

Ballast: Gravel used on rail beds

BART: The Bay Area Rapid Transit District (BART) is a 107-mile, automated rapid transit system serving the San Francisco Bay Area.

BART Representative: BART official personnel that will assume IC prior to FD arrival. If no representative or BART IC present on arrival, Fire Department IC is to request a BART representative to respond to the scene to act as a liaison to the OCC.

Cantenary lines: The electrical overhead wire system that provides power to the ALRV through the pantograph.

Crew Key: VTA Light Rail specific key, + shaped, to open hatch for manual door operation.

Heavy Rail: Santa Clara County Railway tracks that carry freight and passenger trains/cars including Caltrain/Amtrak/ACE/Union Pacific.

Hot Zone: A 15' area around immediate railway incident. The hot zone is for first responders and equipment that are directly involved with the railway emergency. It is to help ensure a safe working area and route of egress for working responders.

Lookout: (watchperson): personnel in charge of providing warning to responders on the tracks

OCC: Operations control center, railway "dispatch center", not to be confused with Fire Agencies Dispatch Center.

On Track Safety (OTS) Protection: On-track safety is the freedom from the danger of being hit by a train or other on-track equipment. It is your responsibility to know your protection if you are working within 4 feet of the nearest rail.

Pantograph tower: The articulated power pick-up mechanism on top of an electrically powered rail vehicle. The top of the pantograph slides along the bottom of the catenary wire.

Third Rail: (1,000 V DC) The third rail is a steel and aluminum composite I-beam mounted on ceramic insulators and a metal base bolted to the trackway or cross ties. All third rail sections are shielded by fiberglass coverboards, which are rated to support 200 pounds (when new).

Train/Car: Refers to railway vehicle carrying passengers or unspecified cargo.

VTA Light Rail: Santa Clara County Light Rail Transit (SCLRT) is a medium capacity electric powered system, with overhead wires, and steel wheels running on steel tracks.

Power off (unconfirmed shutoff)

> **BART Power off**: A condition where the Operations Control Center has indications on their display board through remotely monitored equipment that circuit breakers are open and a sensor attached to the third rail is annunciating a power off status. Activities that may contact the third rail or other normally energized components should not be attempted with power off status. In a power off status, limited fire suppression and life safety activity can be accomplished.
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> **VTA Light Rail Power off:** Also known as Immediate Power shutdown: OCC will not guarantee that power is down, but only report a power off indication on their control panel. There is no visual way for on scene personnel to tell if the overhead wires are charged or not.

Safe clearance (confirmed shutoff)

BART Safe clearance: BART will dispatch Electricians to establish an electrical safe clearance upon request. An electrical safe clearance ensures that the remotely controlled circuit breakers are physically disabled by racking them out and tagging them. A ground clamp is then placed between the third rail and the running rail.

VTA Light Rail Safe clearance: Also known as Immediate Power shutdown confirmed: A test probe has been used and grounding cable has been attached to the wires by a VTA technician.

Rescue train

BART: In the event of an incident on the BART system, the OCC will off load passengers from the closest revenue train(s) and stage trains for fire department personnel at stations adjacent to the incident.

VTA Light Rail: A train positioned ahead, behind, or alongside the other train on either track to help passengers to be carried to safety. It may be possible to move the passengers to a part of the damaged train that can be moved, or to another train (the rescue train).

Associated Railway Manual and Resources

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