DCA13MR002
Conrail - Shared Assets
Derailment/Hazardous Material Release
Paulsboro, New Jersey
November 30, 2012

Hazardous Materials

Group Factual Report

ATTACHMENT 45 - SAFE WORK PLAN

Safe Work Plan

For

Tank Car Field Transfer

Car# OCPX80234
Vinyl Chloride, Stabilized (VC)

Conrail
Derailment Site Location
Mantua Creek Bridge
(near N.Commerce Street Crossing)
Paulsboro, New Jersey

Plan Review Date: 12/01/12
Prepared by: Drew McCarty - SPSI

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Background, Scope, and Objective

A DOT105J300W tank car in Vinyl Chloride, Stabilized (VC) service was involved in a recent derailment accident and was punctured during the accident. The car was loaded when the accident occurred, and the resulting damages and incident conditions have left the subject tank car with a large hole in it and approximately 3,000-5,000 gallons of what is now a mixture of VC and water in its low end.

The remaining VC in the car presents a safety and operational challenge to this site, and the scope of this Safe Work Plan (SWP) is to document the safe handling methods and contingencies that shall be executed to achieve the objective of this VC transfer operation.

The objective of this particular VC transfer operation is to remove as much VC/water mixture from the breached tank car as possible in its liquid form prior to implementing follow-up tank car purging operations. This SWP is specific to the liquid transfer operation from breached tank car OCPX80234.

Status of the Breached VC Tank Car

The breached car is derailed off a railroad bridge and partially submerged into Mantua Creek. Another derailed car is in to the breached car, thus partially obstructing the breach opening for access.

Access to the breach in the car is limited to personnel approaching by boat on Mantua Creek.

The breached car contains approximately 3,000-5,000 gallons of VC and water mixture, and it is not clear at this time if there is, or is not, a second breach in the car below the water line.

The car is resting securely against the bridge, wedged under an A-frame steel structure, and is pinned in place by the car that punctured it.

Pre-transfer Preparations

Prior to executing these field transfers, several pre-transfer preparations will take place. Such preparations will include the following:

- Preparation of a Job Specific Safe Work Plan (SWP)
- Review & Job Safety Briefing of this SWP with all crew members participating in these field transfers.
- Site preparations
- Receiving tank car preparations
- Deployment of site support equipment
- Deployment of VC transfer equipment

Each of these pre-transfer preparations is presented below.

Preparation of a Job Specific Safe Work Plan (SWP)

As this is a unique operation with unique hazards, this SWP has been developed to address safety and operational issues, Personal Protective Equipment (PPE), and contingencies associated with these field operations.

Personnel Operational and Job Safety Briefings

Prior to site work, all personnel will participate in a meeting that will review all aspects of this safe work plan including the incident background, site orientation, work plan scope and operational details, etc.

This SWP shall be presented and reviewed to ensure that all personnel working on this project understand the contents contained within this document and have all agreed to work within its framework.

Site Preparations

The site conditions have changed slightly since the time of the derailment during emergency response operations. Deluge quantities of water have been applied to the derailment site which has improved health and safety working conditions at the site. Likewise, in order to facilitate this field transfer operation, standing cars from the derailed train have been pulled away and six (6) receiving tank cars have been placed on the good tracks between N. Commerce Street crossing and Mantua Creek.

Prior to this field transfer, some additional site preparation will include the installation of a grounding field(s) to ensure that all tank cars are able to be grounded and bonded, and also portable light plant units shall be placed as necessary to improve safety lighting during night time working conditions.

In addition to the preparations on land, this planning process shall also ensure that the personnel access via boat has contingencies in place for boat securement, spare SCBA bottles on the boat for extended time working during the transfer, LEL and VOC monitoring while working on the water and at the breach point of the subject tank car, and a water rescue boat and personnel on hand.

Preparations of the Receiving Tank Cars

To enhance operational options and safety during these operations, six (6) receiving tank cars have been prepared into a vacuum condition prior to their arrival at the work site.

The cars under vacuum will be utilized as follows:

- One of the cars will be designated as the primary car to receive the VC/water mixture from the breached car
- One of the cars will be designated for use as a car to assist with system clearing following the transfer operations.
- The other four cars under vacuum will be utilized to capture vapor pressure from this VC transfer operation.
- A contingency use for the other four cars under vacuum will be to enhance liquid transfer operations if pumping conditions need to be adjusted in the field. For example, if the primary liquid receiving car builds pressure to a level that causes the flow rate to fall off in the pump performance, we may choose to route liquid into one of the other receiving cars under vacuum in order to keep liquid moving efficiently. This decision will be made based on field conditions at hand.

Each of the receiving tank cars will be inspected as per FRA regulations and a pre-loading inspection checklist(s) shall be completed for each tank car. A post-loading checklist(s) will be completed as each car is buttoned up and properly secured for movement in transportation from the job site.

Deployment of Site Support Equipment

A grounding field(s) will be installed at the site and proven to less than 25 ohms resistance using an earth ground resistance tester.

A nitrogen tube trailer shall be spotted near the work area to provide a bulk quantity of nitrogen that will be utilized to replace atmosphere in the tank car as the liquid is being pumped from the car.

Light plant generators will be placed to enhance safety lighting.

Deployment of VC Transfer Equipment

All tank cars will be grounded to the grounding field(s) and bonded together with each other to relax all static energy to ground and equalize all of the residual energies in each car. Painted and/or rusty surfaces on each tank car will be sufficiently removed to ensure continuity in each connection, and an ohms resistance tester will be utilized to prove each connection is proving good contact.

The VC transfer pump shall be placed as close to the breached car as possible on an accessible piece of land nearest the bridge and at the lowest possible elevation not influenced by changing tidal conditions of Mantua Creek.

The Corken vapor compressor shall be placed between the primary receiving tank car and the next extra car in vacuum coupled up to it.

Hydraulic powerpack units driving the VC transfer pump and Corken vapor compressor units will be positioned at least 50 feet away from the transfer equipment.

VC transfer hoses and valves shall be deployed in accordance with the transfer layout found in Appendix A of this SWP. The entire transfer system will be purged with nitrogen to remove any air, moisture, etc from the system, and the nitrogen will be used to pressure up the transfer system to a pre-transfer leak testing inspection pressure of 50 psi. Bubble leak testing solution will be applied to all connections to ensure that the system is leak free prior to any VC transfer operations. If any leaks are discovered during this leak testing procedure, the system will be de-pressured, the leak issue will be resolved, and the system will be re-tested. This pre-transfer leak testing procedure will be completed as many times as necessary to ensure that all connections, valves, etc are leak free prior to any VC handling.

Air monitoring units shall be in operation throughout the transfer operations via the CTEH air monitoring program at this site.

The Nitrogen delivery regulator and hoses will be deployed from the nitrogen tube trailer to the railroad bridge near the tank car. The nitrogen will be utilized as replacement atmosphere gas as we unload the tank car, and it will also be used in the transfer system purging, leak testing, and post-transfer system clearing operations.

The tactical deployment of this equipment has included considerations for pump priming, shut down valve locations in case of any emergency, system clearing and purging, and minimizing the potential VC impact as related to any and all aspects of these operations, including, and not limited to, final hose and fittings disconnections.

VC Transfer Operations

One person will be assigned to the top of the primary liquid receiving tank car.

Personnel will also be assigned to two (2) of the other receiving tank cars to begin the operation, and as operational conditions evolve, those two technicians will be able to move from car to car in their assignments with the vacuum cars.

One person will be positioned at the breached tank car to install the liquid eduction pipe and hose into the breached car and to monitor the liquid level in the car through the transfer.

In addition to the personnel assigned to the tank cars as noted above, one person shall be positioned at the bridge to control VC liquid and nitrogen ground control valves near the breached tank car, one person will operate the hydraulic powerpack units that drive the VC pump and the Corken vapor compressor, one person shall control the nitrogen tube trailer supply, and the SPSI transfer manager shall direct the VC transfer.

A minimum of eight (8) personnel will be staffed with specific duties facilitating this VC transfer operation. SPSI and Hepaco personnel shall cover this staffing requirement in this regard.

Once it is time to initiate the transfer of VC from the breached car, the process shall be executed with the primary objective of getting all remaining liquefied VC/water mixture from the breached tank car into the first, primary receiving tank car.

To initiate flow of product, the liquid line valve on the receiving tank car will be opened to draw VC from the breached car through the VC pump to initiate flow to the receiving car under vacuum condition and also to prime the pump. Once the pump has been primed, it shall be engaged to help enhance the transfer flow rate.

As the receiving tank car vapor pressure begins to transition from vacuum condition to a pressure condition, the Corken vapor compressor shall be operated to pull vapors from the receiving tank car into any one, or more, of the remaining five tank cars under vacuum condition. The objective of this is to keep the vapor pressure inside the receiving tank car as low as possible while the VC pump is moving product.

As conditions change, the transfer manager will make field adjustments as needed to ensure that this transfer operation gets as much material out of the breached tank car as possible under this methodology.

One tank car in vacuum will be utilized to help clear the entire transfer system following the transfer. Once we have removed all that will come out of the breached car, we will continue to vacuum-clear the transfer system as long as possible while the car still has vacuum condition to offer. This will not only clear the transfer system, it will also enhance internal atmospheric conditions in the breached car by pulling VC vapors from the breached car for a while immediately following the transfer.

In addition to having the benefit of the extra tank car(s) under vacuum, nitrogen pressure (70psi) will also be utilized to purge and clear the transfer system from the unloading car ground control valve purge point to the receiving car, and/or to the chosen final vacuum car for purging the system clear.

The nitrogen sweeping will continue for a period of approximately 10 minutes, or until the vacuum car approaches zero pressure/vacuum. Periodic inspections of vapors from the transfer system will be performed via the purge point valve locations and once the air monitoring data indicates the system is containing less than 5 ppm, we will consider the system clear enough to stop the nitrogen purging and disconnect from the tank cars.

As VC transfer hoses are disconnected from the tank cars, special attention will be on air monitoring conditions at the time of each line break. If any vapor clouding exists, line disconnection will be temporarily suspended to observe the duration of the fuming. If it subsides, then line breaking will continue. If fuming persists, the line will be tightened and additional nitrogen purging will be performed until the lines are clear to disconnect.

In addition to contingencies for drips, leaks, system failure, or other emergencies, operational contingencies have also been considered in case the VC pumping needs adjusted while in progress. If product does not flow, or stops flowing during the transfer, this SWP includes an immediately available option to open up an additional vacuum car(s) to siphon VC as long as possible.

APPENDIX A

VC Transfer Layout

OCPX80234

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APPENDIX B

Personal Protective Equipment (PPE)

Task	Dermal	Respiratory
Working at Breach in tank	Nomex, Personal Floatation Device	SCBA
Boat Operations in Support of Breach Area Work	Nomex, Personal Floatation Device	SCBA
Transfer Operations Other Than the work near Breach	Nomex	Full Face, Air Purifying Respirators
Nitrogen Tube Trailer Technician	Nomex	Level D with APR on hand if conditions change