National Transportation Safety Board
Washington, D.C. 20594

Addendum Report Date: January 31, 2014

Hazardous Materials Group Chairman's Factual Report - Addendum

A. Accident Identification

Carrier: Consolidated Rail Corporation (Conrail)
Train No.: FC4230
Location: Paulsboro, New Jersey
Date/Time: November 30, 2012, at 6:59 a.m. EST
NTSB No.: DCA-13-MR-002

B. Hazardous Materials Group Members

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C. Post-Accident Events

i. Emergency Response Activities (First Day)

Police Activities

During an interview with the NTSB, Sergeant 205 explained that his radio call at 7:30 a.m.[1] stating that the fog was "non-toxic" was made based on his knowledge that liquefied petroleum gas (LPG) had been released during the accident. Sergeant 205 stated that he obtained the information about the released commodity from the train conductor. Sergeant 205 did not become aware that vinyl chloride had released until just before the first meeting at St. James Church at approximately 8:30 a.m.

On the first day of the NTSB's two-day investigative hearing on this accident[2], the Paulsboro Police Captain stated:

> One of my officers came across the train personnel, one being the conductor. The conductor relayed to the officer that they were carrying hazardous material but it was still -- we were unaware or the officers were unaware what had been released, if anything. We were still unsure if it was breached/it wasn't breached, if there was a release.
>
> As this was going on, the cloud formed. It was obvious or apparent to the officer that something had happened, and he asked the conductor, well, what are we smelling right now? What's in the air? And the conductor relayed to him that what you were smelling was liquid petroleum, or better known as LP.
>
> As this was going on, as we were cordoning off the area, we added additional units, other officers from another town outside the zone, on Route 44. It just so happened a passerby stopped and advised the officer that this person had worked in the industry and he saw the cloud on top of the water, and he believed it was LP as well. Where they formed that knowledge or why they came up with that is unbeknown to me. But that officer radioed to our officers that, hey, someone just stopped me and told me this may be LP, and I believe that's how our officers got that.

According to the Paulsboro Police Captain, early in the incident "…there was no direct contact or communication…" between the Paulsboro Fire Department and the Paulsboro Police Department. He also told the NTSB that Paulsboro Police officers "…are trained ...[to] a hazmat awareness [level] biannually by our academy, our local academy. It's just an awareness, a Level 1…" The officers carry a copy of the DOT Emergency Response Guidebook in their vehicles.

[1] On November 30, 2012.
[2] Held on July 9 and 10, 2013.

Fire Department and Hazardous Materials Units Activity

During the NTSB investigative hearing, the Paulsboro Fire Chief was asked about a statement he had made to investigators regarding not having the resources to evacuate the civilian population that was located in the area of the accident. He was asked to elaborate on the challenges he was referring to when he made that statement. The Paulsboro Fire Chief explained:

> We have two buses in Paulsboro. We have no handicap bus. It was -- and for that day, again, local knowledge, the Army-Navy game was that weekend, most of the hotels were filled. We would have had to find transportation to be able to move people, their animals, their households. And again, having a large transient population that are walkers, the challenges of trying to moving thousands of people. I think our last -- 6,000; 6100 people in Paulsboro. If they say evacuate for a half mile, you're probably talking 3,000 of those people.
>
> And logistically just trying to move 3,000 people, the safer bet was to keep them where they were, with their children, to make sure that they were not out in it, and that's again, sorry, but local knowledge says that that's the easiest way to control what's going on, is to have them where we know where they're at, so if there is a catastrophe or something else happens, we know where they're at and we can take on those challenges of moving them at that time.

According to the Paulsboro Fire Chief, the resources available for an evacuation of Paulsboro include:

> Our police department, which is staffed with 17 police officers at the current time, our fire department, which is about 25 personnel, and a couple buses. We have one local bus and I believe one school bus. That's what we have for resources to move people out of Paulsboro. Additional resources would have to be called in, either from other towns through mutual aid agreements or through the county.

According to Annex F – Evacuation, Section IV.B.2 of Paulsboro's 2006 approved EOP[3]:

> Hazardous Materials (Transportation)
> a. Paulsboro has many routes used in the transportation of hazardous materials daily. These routes have been identified in the HazMat Annex of the Paulsboro EOP. The percentage of evacuation would depend on the route location and time of day. Evacuation percentage would range from 0-99.9% of the population.

Section IV.C of the EOP continues to state:

> The number of people in Paulsboro, including special needs persons who will require transportation will largely depend on the incident at hand, the time of day, and season of

[3] This EOP required recertification in 2010, but it had not been submitted for recertification at the time of the accident in 2012.

the year. It can be estimated that anywhere from .5% up to 99% of the population may require this service.

When asked whether the Borough of Paulsboro had the resources necessary to evacuate their residents as outlined in the 2006 approved EOP, the Paulsboro Fire Chief told the NTSB:

> No, we would have had to call other resources. Again, we don't -- Paulsboro alone and as well as most of the towns around us, do not have the resources. We all depend on mutual aid or memorandum of understandings with our neighboring communities to gather those resources.

New Jersey Department of Environmental Protection Activity

During the NTSB investigative hearing, the New Jersey Department of Environmental Protection (NJDEP) senior ranking representative at the Incident Command Post on the first day of the accident told the NTSB that he had no knowledge that a representative from his Agency was providing information at the press conference that was held at 10:45 a.m. He stated that he was unaware that a NJDEP spokesperson would report that the airborne hazard had dissipated. According to the NJDEP senior ranking representative, "…I had no knowledge of that press conference, and around that time frame is when I asked my staff, directed my staff to go out and put together a plan. Up until then, I really did not have any handle or confidence on who was doing what with air monitoring and where that information was going."

D. New Jersey Public Employee Occupational Safety and Health (PEOSH) Program

According to the New Jersey Department of Health, a total of 120 total inspections under NAICS 922160, local fire protection, were conducted. They were categorized as follows: 89 as initial inspections, 24 follow-up inspections, and 7 monitoring inspections. Out of the 89 initial inspections, 21 facilities were cited for violations of the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 CFR 1910.120; a total of 33 violations were issued.

During the NTSB investigative hearing, PEOSH was asked to provide information regarding how their inspection findings, and specifically the HAZWOPER compliance rates, in the local fire protection industry within the State of New Jersey compared to federal OSHA inspection and national HAZWOPER compliance rates. The requested information has not been provided to the NTSB.

A review of the PEOSH enforcement history for the Paulsboro Fire Department indicated that PEOSH received an unsigned complaint letter dated November 28, 2011, that alleged several health and safety violations at the fire department. The letter stated that fire personnel and officers "enter hot zones with no [self-contained breathing apparatus] SCBA protection." It also alleged that "… Chief Officers are found to be wearing little to no [protective] gear while at incidents." PEOSH reclassified this complaint case from an informal complaint to a general programmed inspection (Inspection Number 316088327) and

an onsite inspection was conducted on January 17, 2012. The inspection found two violations of occupational safety and health standards. On March 9, 2012, the Paulsboro Fire Department was issued a citation for the violation of 29 CFR 1910.120(q)(6)(ii) which stated "employees did not receive training based on the duties and functions to be performed by each employee during a hazardous materials operation." The second citation was issued for a violation of 29 CFR 1910.1030(h)(1)(ii)(B) which addresses hepatitis B vaccination recordkeeping.[4]

The Occupational Safety and Health Administration's (OSHA) standard at 29 CFR 1910.120(q)(6)(ii) states:

> First responder operations level. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:
>
> A. Knowledge of the basic hazard and risk assessment techniques.
> B. Know how to select and use proper personal protective equipment provided to the first responder operational level.
> C. An understanding of basic hazardous materials terms.
> D. Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
> E. Know how to implement basic decontamination procedures.
> F. An understanding of the relevant standard operating procedures and termination procedures.

In a letter dated May 10, 2012, the Paulsboro Fire Department Assistant Fire Chief[5] sent a notice of abatement to PEOSH that stated that the fire department held a hazardous materials awareness and operations drill at their station on April 10, 2012, to address the identified training deficiency. The training drill was conducted by the head instructor of the Gloucester County Fire Training Academy. PEOSH accepted the abatement action and closed out the citation.

PEOSH Performance Plan

The PEOSH five-year strategic plan for fiscal years (FY) 2009 through 2013 consisted of three strategic goals. Goal number one was the reduction of overall injuries, illnesses, and

[4] OSHA's Bloodborne Pathogens standard
[5] Who is now the Deputy Fire Chief.

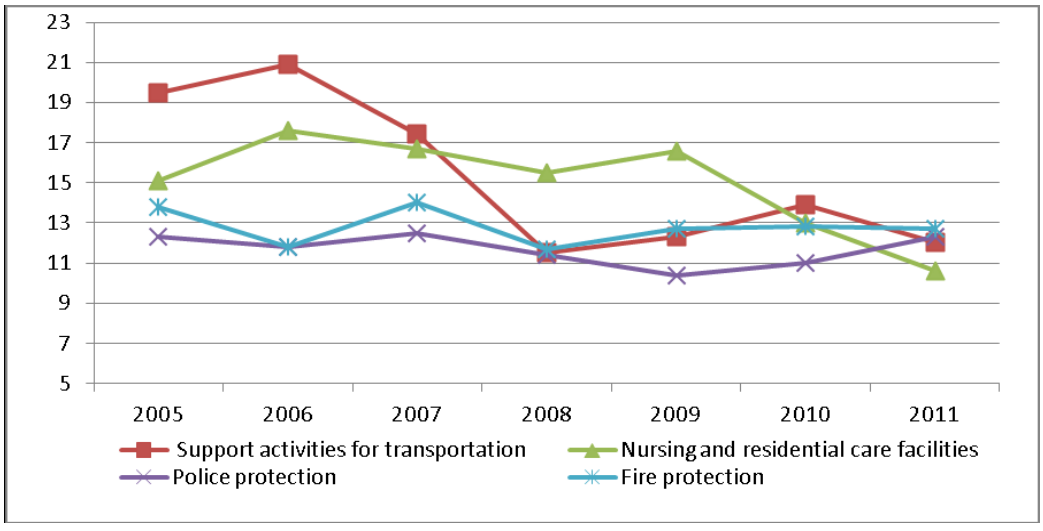
fatalities by 1 percent per year from FY 2009 through FY 2013 totaling 5 percent for the 5-year Strategic Plan in the following industries:

- State agencies for Transportation Support Services (NAICS 488).
- State Nursing and Residential Care Facilities (NAICS 623)
- Local Fire Protection (NAICS 92216).
- Local Police Protection (NAICS 92218).

While the OSHA Region II Federal Annual Monitoring Evaluation (FAME) Report for October 1, 2010, through September 30, 2011, stated that PEOSH did not meet its goal to reduce non-fatal injuries and illnesses by 2 percent in the local fire protection sector (9.4 percent increase over the 2008 baseline), the OSHA Region II FAME Report for October 1, 2011, through September 30, 2012, stated:

> The baseline to be used is the 2009 NAICS 92216 incidence rate of nonfatal occupational injuries and illnesses of 12.7 total recordable cases (Source the NJDLWD, Division of Program Planning, Analysis and Evaluation). A five percent decrease from the baseline of 12.7 will result in a rate of 12.1 total recordable cases.
>
> The latest Division of Program Planning, Analysis and Evaluation data is for the year 2011. The 2011 total recordable cases for Fire Protection decreased from 12.8 to 12.7.
> *National Institute of Occupational Safety and Health (NIOSH) statistics for the fire service identify cardiac arrest and motor vehicle accidents as the predominant cause of firefighter injuries/illnesses and fatalities which are largely beyond the control of NJ PEOSH's enforcement capabilities.*

The report provides a graphical representation of PEOSH's progress toward reducing the Non-Fatal Occupational Injury and Illness Incident Rates for the Industry Sectors Covered by the PEOSH 5-Year Strategic Plan Goal #1.



E. Paulsboro Fire Department

The Paulsboro Fire Department has 25 volunteer firefighters who are mostly trained to the firefighter level I.[6] The department has one rescue and two pumper vehicles. The Paulsboro Fire Chief told the NTSB that the department performs only defensive hazardous materials response since it has no offensive response capabilities. Firefighters are required to be trained to the hazardous materials awareness and operations level.[7] If offensive hazardous materials response capabilities were needed, the Borough through its mutual aid agreements, requests assistance from the Gloucester County CBRNE or the Paulsboro Refining Company HAZMAT team.

Paulsboro Fire Department Hazardous Materials Training

During the NTSB investigative hearing, the NTSB requested the Paulsboro Fire Department Deputy Chief to provide a training certificate documenting his completion of HAZWOPER training. He did not produce a copy of a certificate. He also stated that he did not attend the April 10, 2012, Paulsboro Fire Department hazardous materials awareness and operations drill.

F. Borough of Paulsboro Emergency Operations Plan (EOP)

As stated earlier, the 2006 EOP provided that 99.9 percent of the population of Paulsboro may need to be evacuated during a transportation incident. However, the EOP only listed 3 buses with a total capacity for 105 individuals as available municipal resources for conducting an evacuation. It provided that additional resources, if needed, would have to be coordinated with the county. According to the Paulsboro Fire Chief and the Paulsboro Emergency Management Coordinator, only two buses are available in the municipality for the movement of over 6,000 residents. According to the Gloucester County HAZMAT Chief:

> Primarily, the entire county from a municipality standpoint… would have to draw to the county to get resources in there for any type of evacuation. There is, to my knowledge, no municipality within Gloucester County that would be able to evacuate their entire municipality … within a quick period of time. It's going to take some time, and it's going to take transportation issues with Paulsboro, with mutual aid, including the county, and potentially going through state DOT for assistance with that as well.

During the NTSB investigative hearing, the NJSP-OEM representative was asked to explain the New Jersey EOP review process. He stated:

[6] Training requirements and criteria are outlined in the New Jersey Administrative Code (NJAC).
[7] Subchapter 4, Chapter 3 of Title 5 of NJAC. [N.J.A.C. 5:73-4.3]

> They're [EOPs] certified for four years. Before the conclusion of that four-year certification, they are to be submitted initially to the county office of emergency management for review and comment, if necessary, for any revisions and then ultimately forwarded to our office for recertification.
>
> Back about 1989 is when the initial guidance was put out. The state essentially forwarded the federal guidance, which at that time, I believe, was SLG 101. That guidance provided texts for a base plan. And at that time it was, I believe, 15 functional annexes, which has subsequently been expanded out to 16 to include a terrorism annex. And there also was a checklist that was developed to assist in the review of those respective annexes.

The NTSB asked the NJSP-OEM representative to explain how the capabilities and resources that are mentioned in a municipality's EOP are verified. He stated:

> Well, frankly, our office is not positioned to get into the weeds on every municipal plan. We have to rely heavily on our county partners. The county is essentially the clearinghouse, where that level of thorough review takes place. And frankly, the county office understands the unique sensitivities to each of their respective municipalities, challenges, risks, hazards. So, you know, it's still an effective process. The level of review is still very thorough, and again, it's following that guidance, which has now been expanded to include the comprehensive plan and guide. So they can use -- currently under the directive, they can use either of those SLG or CPG guidances.

The NJSP-OEM representative confirmed that NJSP-OEM accepts and approves EOPs based on the recommendation and approval of the county emergency management. He was also asked if NJSP-OEM conducted any audits or verifications of the specific capabilities mentioned in an EOP. He stated that for his region of the state[8]:

> We're not positioned to do that. We have a small, eight-person unit. At the time of the incident, we had -- our area of responsibility included ten counties and 268 municipalities. We're a response bureau, and frankly, we're just not positioned to be able to support, you know, reviewing every local plan.

He reiterated that "… I have confidence that -- again, that level of review takes place at the county level."

During the accident investigative hearing, the NTSB asked the NJSP-OEM representative about the steps, controls or processes that are in place to monitor the status of the EOP review process to ensure timely reviews of these plans. The NJSP-OEM representative stated:

> The counties actually have sent -- in the occasions where we've had lapsed plans, the counties will send -- they'll maintain a paper trail where they send correspondence to municipalities that are in that situation where they have a plan that's lapsed. So again, there's some reliance on our county partners to do some of

[8] South Region.

> that oversight. And in this particular case [with the Paulsboro EOP that was 2 years past due recertification], I know that there was at least one letter that was sent to the municipality.
>
> As a corrective action in our office, we have developed a letter now that goes out to municipalities and counties 90 days in advance of an expiration date and also a letter that is sent out upon expiration. It's been effective. When we sent those letters out, it has assisted in increasing the compliance rate.

According to NJSP-OEM, a 90-day EOP warning letter is now mailed to local/county entities 90 days in advance of their EOP expiring. NJSP-OEM also created a warning letter that is mailed when an EOP has expired. The letter is mailed to the local OEM Coordinator, Mayor, and County OEM. Additionally, all EOP (local/county) re-certification dates and status are managed by NJSP-OEM via a spreadsheet that was developed by NJSP-OEM. On a daily basis, the spreadsheet auto-calculates when both the EOP expiration and 90-day warning dates have been exceeded. The database automatically flags these EOP's and NJSP-OEM generates the appropriate letter and mails it. Also, when NJSP-OEM receives an EOP re-certification request from a County OEM, the NJSP-OEM Region Representative reviews the plan.

NJSP-OEM provided the NTSB with a summary of both county and municipal EOP review compliance rates.[9] The three regions (North, Central, and South) in the state have 100 percent compliance from counties; however, the municipality compliance rates for each region are 80 percent for the North Region, 84 percent for the Central Region, and 89 percent for the South Region.

G. Tank Car Damages

The Hazardous Materials Group determined the orientation of each tank car based on automatic equipment identification (AEI) information and aerial photographs. The orientation of each tank car was captured by the Paulsboro North AEI reader. The table below lists the leading end (either A or B-end) of each of the derailed tank cars.

LINE NUMBER	REPORTING MARK	LEADING END (A or B)
8	UTLX 207398	A
9	OCPX 80323	B
10	OCPX 80234	B
11	UTLX 908097	B
12	UTLX 98041	B
13	OCPX 80305	B

The NTSB was unable to examine the tank cars at the accident site due to the hazardous materials release and emergency response activities on-scene. Conrail documented the

[9] Group 7, Exhibit N in the NTSB accident docket.

accident scene and provided collected photographs and video footage of the scene before any tank cars were moved.

Figure 1: Photograph of the derailment with tank car ends labeled.

The derailed tank cars were examined on January 30, 2013, after they were emptied of their contents, cleaned, purged, and moved to Conrail's Camden Yard. Several of the tank car jackets sustained damage as a result of crane lifting operations. However, this crane cable damage was easily discernable from the damage to the tank cars that resulted from accident impact forces. See figure 2.

Figure 2: Example of discernable damage (highlighted in red) to tank car jackets as a result of crane lifting cables.

Tank car UTLX 207398 (line number 8), that contained denatured ethanol, derailed and rolled over onto its B-left side, on the eastside of the railroad tracks. The tank car landed on the shore embankment, with approximately half of it submerged under water. On the B-left

shell ring 4[10], the tank car sustained a large oblong-shaped dent centered on the tank car's centerline (at the 9 o'clock location[11]). See figures 3 and 4. The dent's dimensions were 90 inches in length by 84 inches in width (from top to bottom). The dent's depth was approximately 4 inches. A second smaller oblong-shaped dent was found above the larger dent in shell ring 4 (at the 11 o'clock location). See figures 3 and 4. A third dent (at the 7 o'clock location) was found that traversed shell rings 2 and 3. See figure 4. This dent was approximately 33 inches in length by 18 inches in width and 2.25 inches in depth. The B-end top striker plate and stub sill were torn upwards. See figures 5 and 6. The tank car service equipment suffered minimal damage with no loose closures. The bottom outlet valve was not damaged in the accident. There were several other smaller dents and scrapes in the shell, but no damage resulted in a breach.

Figure 3: Scrapes above A-left body bolster and two oblong dents (highlighted in red) on tank car UTLX 207398.

[10] Tank car is made of 6 ring shells. The numbering begins from the B-end.
[11] All locations in relation to the B-end, up-right orientation.

Figure 4: Three dents (highlighted in red) found on the left side of tank car UTLX 207398.

Figure 5: Damage to B-end striker plate on tank car UTLX 207398.

Figure 6: Damage to B-end striker plate and stub sill from a different angle.

Tank car OCPX 80323 (line number 9) derailed and fell into Mantua Creek during the accident. The tank car's B-end was submerged in the water with the A-end supported by bridge components. The A-end stub sill and body bolster impacted tank car OCPX 80234. The B-right jacket sustained buckling adjacent to the head shield/jacket seam. See figures 7 and 8. Scrapes in the B-right side of the head shield indicate where the tank car came to rest on the bottom of the creek.

Figure 7: Damage to the B-end head shield and jacket on tank car OCPX 80323.

Figure 8: Damage to the B-right side (including damage caused by crane operations – highlighted in red) of tank car OCPX 80323.

At approximately the 2 o'clock location on the A-right side jacket of tank car OCPX 80323, there was a slit-shaped puncture that was approximately 6 inches long. The crushed and crumpled jacket damage in the area surrounding this puncture was produced by crane lifting cables. However, below the tank car's A-right centerline there was a jacket tear (at the 4 o'clock location) that was 36 inches long and ½ inch wide. Slightly below this tear was another jacket fold. See figure 9. The B-left body bolster web was deformed inboard

(pushed away from B-end). See figures 10, 11, and 12. Additionally, there was a puncture in the jacket next to the B-left body bolster (approximately 1 foot from the B-end head shield/jacket seam) that was 4 inches long. See figures 11 and 12. After the accident, the B-end coupler and the B-right body bolster were found wedged inside the breached tank car (OCPX 80234). See figure 13. A mounting plate that is ordinarily welded to the draft sill next to the coupler was found inside tank car OCPX 80234 during the examination. See figure 14. The A-end double-shelf coupler was an SE60EE with a broken bottom shelf. See figures15 and 16. Despite the damage to the jacket and tank car components, the tank car was not breached.

Figure 9: Gouges (highlighted in red) in tank jacket on A-right side of tank car OCPX 80323.

Figure 10: B-left side of tank car OCPX 80323.

Figure 11: Close-up image of B-left body bolster and web deformation (labeled 1) and adjacent jacket puncture (labeled 2) in tank car OCPX 80323.

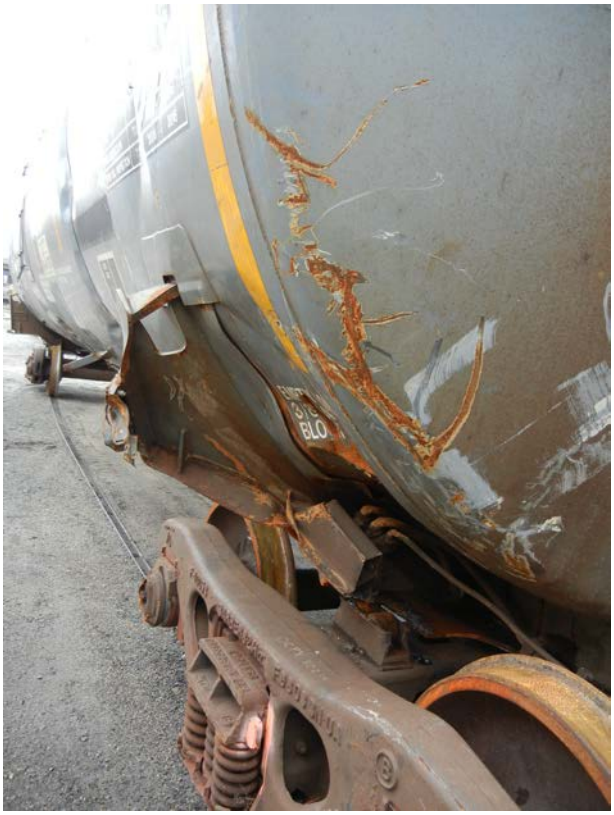


Figure 12: Scrapes on the B-head shield and damage to the B-Left side jacket of tank car OCPX 80323.

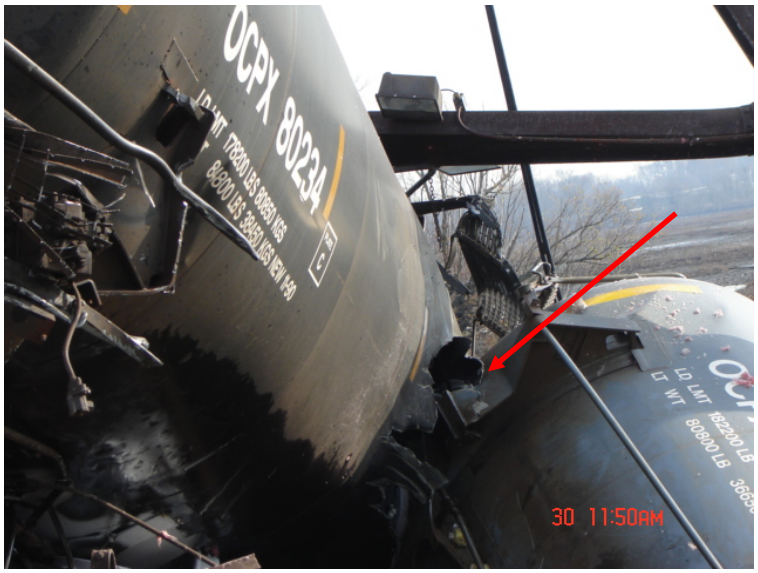


Figure 13: Breach in OCPX 80234 on November 30, 2012. (Photograph courtesy of the FRA)

Figure 14: Recovered mounting plate that is ordinarily welded to tank car sill.

Figure 15: Broken bottom shelf (highlighted in red) of A-end SE60EE double-shelf coupler on tank car OCPX 80323.

Figure 16: Another view of broken bottom shelf of A-end SE60EE double-shelf coupler on tank car OCPX 80323.

Tank car OCPX 80234 (line number 10) released vinyl chloride in this accident. A breach in the tank shell approximately 50 inches by 33 inches wide was produced during the accident. The breach occurred in the middle of the right side of the tank car at approximately the centerline. See figure 17. The examination of the breach shows that an object, about the size of a coupler, scraped against the outer jacket, then tore through it contacting the shell. The

object gouged the shell before digging in and puncturing the tank shell at or near the longitudinal seam weld between two shell rings. See figure 18. The tank shell was torn and curled into the tank car. There was a 22 inch folded piece of the shell rolled back into the tank.

(a) *(b)*

Figure 17: Breach in tank car OCPX 80234. Image (a) taken from the A-end and image (b) taken from the B-end.

(a) *(b)*

Figure 18: Gouges and initial breach in tank car OCPX 80234. Image (a) shows the entire gouge and image (b) shows the longitudinal seam weld and cracking.

A small portion of the top shelf of the B-end coupler (SE60DC coupler) was chipped off. Over the body bolsters, the jacket had extensive cable scoring due to crane lifting operations. The A-end stub sill exhibited downward deformation and was twisted clockwise. A

triangular tear in the jacket occurred on the bottom of the A-right side (near the bottom centerline) approximately one-third the length of the tank car (from A-end). See figure 19. Its dimensions were 25 inches long by 15 inches wide.

Figure 19: Triangular tear in the jacket at the bottom of the tank car OCPX 80234.

The B-right body bolster web experienced almost 90 degrees of inboard deformation and was torn. See figure 20. Next to this body bolster, there was a large crescent-shaped dent in the jacket.

Figure 20: Inboard deformation of B-right body bolster on tank car OCPX 80234.

At the B-left mid-top, there was a rectangular shaped dent where the bridge's A-frame was in contact with the tank car. On each side of this rectangular dent, there was a hole in the jacket at the point where the torn-off running board pads were attached. See figure 21. There was

also a 14 inch transversely oriented jacket puncture on the A-left side located approximately one-third the length of the tank car (from A-end). See figure 22.

Figure 21: Damage to the top of tank car OCPX 80234 caused by the bridge A-frame.

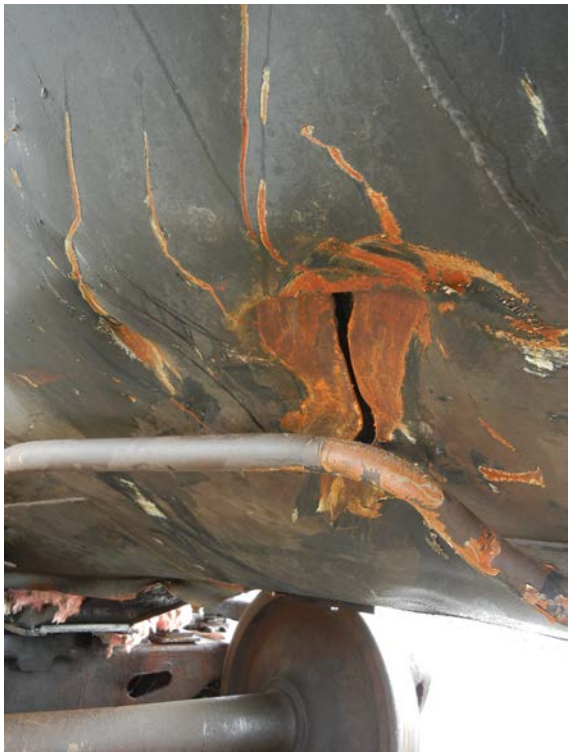


Figure 22: Line-shaped puncture of the jacket of OCPX 80234.

After the accident, tank car UTLX 98097 (line number 11) was found standing almost vertically in the creek with its B-end in in the water and A-end on the bridge. See figure 23. Its A-end stub sill was in contact with UTLX 98041.

Figure 23: Final resting position of tank cars UTLX 98097 and UTLX 98041 after the accident.

The inspection at Conrail's Camden Yard showed that the B-head of tank car UTLX 98097 sustained impact damage during the accident. On the upper left-side quadrant of the B-head above the half-height head shield, the jacket was torn in a triangular shape (approximately 39 inches in length and 24 inches in width). See figures 24 and 25. The shell was not punctured. The upper half of the B-head had a u-shaped dent centered on the head's center. The B-end stub sill was twisted clockwise and the striker plate was torn. See figure 26. The A-right end there was a crescent shaped tear in the jacket that was approximately 20 inches in length. See figure 27.

Figure 24: B-left side of tank car UTLX 98097.

(a) *(b)*

Figure 25: Images (a) and (b) of damage to B-head of tank car UTLX 98097.

Figure 26: Damage to the B-end stub sill and striker plate of tank car UTLX 98097.

Figure 27: Tear near A-right head of tank car UTLX 98097.

Tank car UTLX 98041(line number 12) derailed with its B-end to the west-side of the track. Its B-end was in contact with UTLX 98097. Its A-end right wheels were lifted off the track. The tank car was left coupled to OCPX 80305 to prevent it from tipping over and into Mantua Creek. Most of the damage to this tank car occurred to the B-head and B-right side (near the head). The top half of the B-head jacket (above the half-height head shield) had a dent that was approximately 7 feet wide. At the mid-top half of the B-head there was a vertical slit-hole approximately 16 inches in length and 5 inches in width. The jacket at the point of contact with UTLX 98097 had a triangular-shaped hole with the dimensions of 16 inches in length and 17 inches in width. The corner of the B-right head had a large dent/fold in the jacket that was 6 feet in length and 16 inches in width. The B-right body bolster web was bent inboard. The tank car's jacket experienced other dents that did not result in any shell breaches.

Two coupon samples from tank car OCPX 80234 and the coupler from tank car OCPX 080323 were collected for further examination at the NTSB Materials Laboratory in Washington, DC. The first coupon section contained the breach and measured 8 feet by 4 feet. See figure 28. The second coupon section was cut from the opposite side of the tank car and was centered about the same circumferential weld where the breach had occurred. This section contained undamaged weld and shell material on the A-end and B-end sides of the weld and measured 4 feet by 3 feet. The tank car coupler from the leading car, found inside the breached tank car, was sent to the laboratory as well.

Figure 28: Portion of tank shell from OCPX 80234 (marked in orange) that was cut and sent to the NTSB Materials Laboratory in Washington, DC.

ATTACHMENT 2 – TANK CAR DAMAGE ASSESSMENT NOTES

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ATTACHMENTS

ATTACHMENT 1 – FEDERAL ANNUAL MONITORING EVALUATION (FAME) REPORT FY 2012
ATTACHMENT 2 – TANK CAR DAMAGE ASSESSMENT NOTES

ERRATA

HAZARDOUS MATERIALS CHAIRMAN'S FACTUAL REPORT, DATED 6/17/2013

PAGE 15, FOOTNOTE 18 - OFFICER 217 IS MISTAKENLY IDENTIFIED IN THE FOOTNOTE AS SERGEANT 217.

PAGE 41 - "THAT ARE MOSTLY TRAINED" SHOULD BE "WHO ARE MOSTLY TRAINED"