BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

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April 10, 2014

Mr. Paul Stancil
Investigator In Charge
National Transportation Safety Board
490 L'Enfant Plaza
Washington, DC 20594

Sent via UPS Overnight Mail

Re: NTSB Accident No. DCA-12-MR-002

Dear Mr. Stancil:

Enclosed please find the Brotherhood of Locomotive Engineers and Trainmen's Final Submission regarding the above-captioned incident.

If you have any questions regarding same, please do not hesitate to contact my office.

Very truly yours,

[redacted]

National Secretary-Treasurer
National Chairman – Safety Task Force

Enclosure

cc: R. Tomaszewski, Party Spokesman – FRA
L. Fiorenzo, Regional Administrator – FRA
W. Bates, UTU/SMART Safety Team Member
R. Keating, Party Spokesman – Conrail
N. Ferrone, Chief Risk Officer – Conrail
A.D. McKisic, Senior Director-Product Development – Trinity Rail
G. Pearson, Assistant Director Emergency Management – NJ DOPE
D.R. Pierce, BLET National President
E.L. Pruitt, BLET First Vice President
S.J. Bruno, BLET Vice President
T. Hebert, BLET STF – Party Spokesman
C.W. Fields, BLET STF – Coordinator

BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

A DIVISION OF THE RAIL CONFERENCE
INTERNATIONAL BROTHERHOOD OF TEAMSTERS

SAFETY TASK FORCE

CLEVELAND, OHIO

BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD

NTSB Accident Number: DCA-12-MR-002
Class: Major

November 30, 2012

Proposed findings, probable cause, and safety recommendations, in connection with the Consolidated Rail Corporation train derailment, and subsequent hazardous release with evacuation, in Paulsboro, New Jersey.

FINAL SUBMISSSION

William C. Walpert, BLET-Safety Task Force, National Chairman
Thomas F. Hebert, BLET-Safety Task Force, Party Spokesman

Accident Synopsis

On November 30, 2012 at approximately 6:59 a.m., southbound Conrail freight train FC4230, (CSXT 8817), consisting of two (2) leading locomotives and eighty two (82) cars, derailed at about Milepost (MP) 13.7 on the Penns Grove Secondary track in Paulsboro, New Jersey.[1] Seven (7) cars derailed while traversing over the Paulsboro Movable Bridge, four (4) of which fell into the waterway of Mantua Creek. Conrail reported one (1) of the tank cars released approximately 20,000 gallons of vinyl chloride into Mantua Creek. Eyewitnesses reported seeing a vapor cloud rise from the scene immediately following the accident. Twenty-two (22) people, as well as the train's engineer and conductor, were transported to a local hospital. Everyone was treated and released at the hospital later that day. The initial damages totaled $450,654.00, which does not include response and remedial costs.

Figure 1: Derailed cars with vapor cloud

[1] All times noted in this document are Eastern Standard Time

Accident Narrative

The train crew of Conrail train FC4230 (Job No. CA11), which consisted of a Locomotive Engineer and Conductor, went on duty at 3:00 a.m. in Pavonia Yard near Camden, New Jersey. The crew assembled their train from three (3) separate yard tracks, and performed the required airbrake test prior to departure. After departing Pavonia Yard, the Conductor contacted the train dispatcher to obtain a Form D to proceed from Control Point (CP) Woodbury (MP 9) to CP Deep (MP 30).[2] As the train crew proceeded south, they passed an Approach Restricting signal, then a subsequent Stop signal at the Paulsboro Movable Bridge.[3] [4] According to statements from the Engineer, he proceeded to tone in the command from the radio keypad for the bridge to close, and the signal to change to a favorable indication. After several attempts to close the bridge by radio command failed, the Conductor dismounted the locomotive and proceeded to visually inspect the bridge per NORAC Rule 241(d).[5] Once the Conductor confirmed that the bridge was lined and safe for movement, the engineer called the train dispatcher to receive permission to proceed past the Stop signal. Once authority to proceed was granted by the train dispatcher, the train crew began traversing over the bridge at approximately 8 miles per hour (mph), then experienced an emergency application of the brakes.

According to statements made by the train crew, the Locomotive Engineer initiated the necessary emergency radio transmissions to the train dispatcher. Upon looking in the locomotive side view mirror, it became evident to the train crew that a major derailment into the waterway had occurred, and that a vapor cloud began to form. The train crew dismounted the locomotive and went to warn the public to evacuate the area.

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[2] A Form D is a movement permit which authorizes train movement in NORAC Form D Control System (DCS) Rule territory.
[3] See Attachment A for signal aspect and definition at the end of this report.
[4] See Attachment A for signal aspect and definition at the end of this report.
[5] See Attachment B for complete definition at the end of this report.

Figure 2: Aerial view of the derailment site

Method of Operation

Train FC4230 was operating on the Conrail's Penns Grove Secondary Track, which is governed by the Northeast Operating Rules Advisory Committee (NORAC) Operating Rules 10th Edition. This territory is non-signaled, and governed by NORAC DCS rules. A NORAC Movement Permit Form D allows the train main track authority between a specified limit.

The Paulsboro Movable Bridge is protected by absolute signals on both the north and the south ends. Trains operating under Form D authority will pass a distant signal permanently displaying an Approach Restricting aspect, which indicates to the crew to approach the absolute signal at the bridge prepared to stop. These signals pertain exclusively to the bridge. The Conrail train dispatcher does not have control over these signals, nor does the dispatcher have an indication as to the condition of the bridge locking mechanism.

NORAC Rule 241d states:

d. Stopped at a Signal Protecting Moveable Bridge

Under the following conditions, a qualified employee must determine that the rails are properly lined and the bridge is safe for movement before verbal permission is given to pass the signal:

1. When the signal cannot be displayed for the first movement over a bridge after the bridge has been closed, regardless of bridge lock indication.

OR

2. At any time a bridge unlock indication is received. [6]

It is common practice to have the Conductor walk and inspect the bridge to ascertain if the bridge is lined and locked, and then relay their findings of the visual inspection to the train dispatcher prior to permission being given to pass the stop signal.

Conrail 2012, Dispatcher & Operator Book of Rules Training, Lesson Plan

The Train Dispatchers & Operators Lesson Plan stipulates on page 13, pertaining to Rule **241**

Passing a Stop Signal:

Focus = Train or track car must be stopped at signal before permission given

- Part 'a' - Review this entire section
- Part 'c' - Simply read this section

-Part 'd' - a qualified employee can be a trainman, if he'll take the responsibility. If crewmember determines that rails or locks do not align, then call trouble desk.

- Part 'e' - Simply read this section"

Training of Conductor on Train FC4230 (CA11):

[6] See complete definition in Attachment B at end of report.

The Conductor began employment with Conrail in September 2008. After completing the classroom portion of instruction, he began his on the job training (OJT), which is approximately one year in duration. This training is conducted by having the student observe and assist the conductor in the duties performed. When asked if he had been instructed on the inspection of the Paulsboro Movable Bridge, the Conductor stated he was shown the slide locks on one occasion during his OJT, which was four (4) years prior to the accident. The Conductor also stated that he had never been involved in an opportunity to observe the slide locks disengaged, and that the day of the accident was his first time inspecting the bridge.

Figure 2: Bridge Slid Locks North End

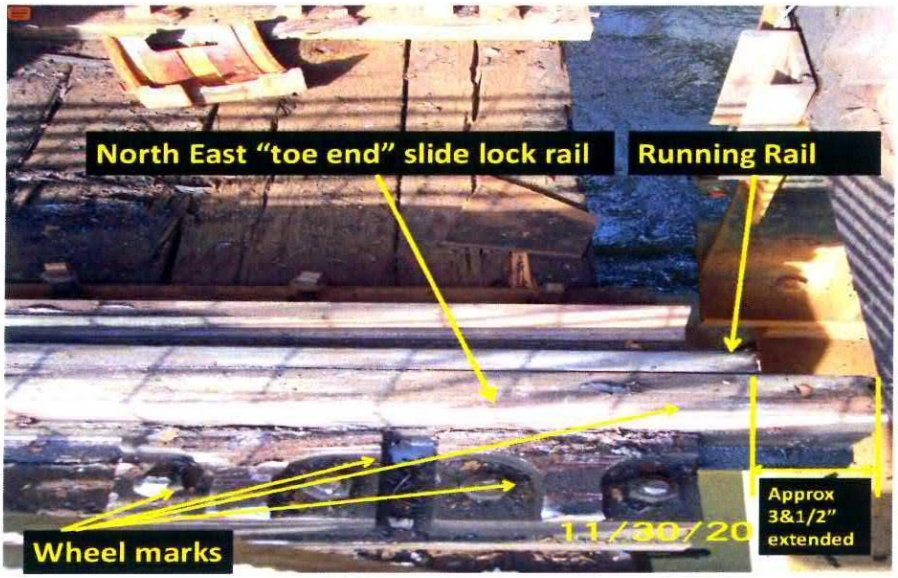
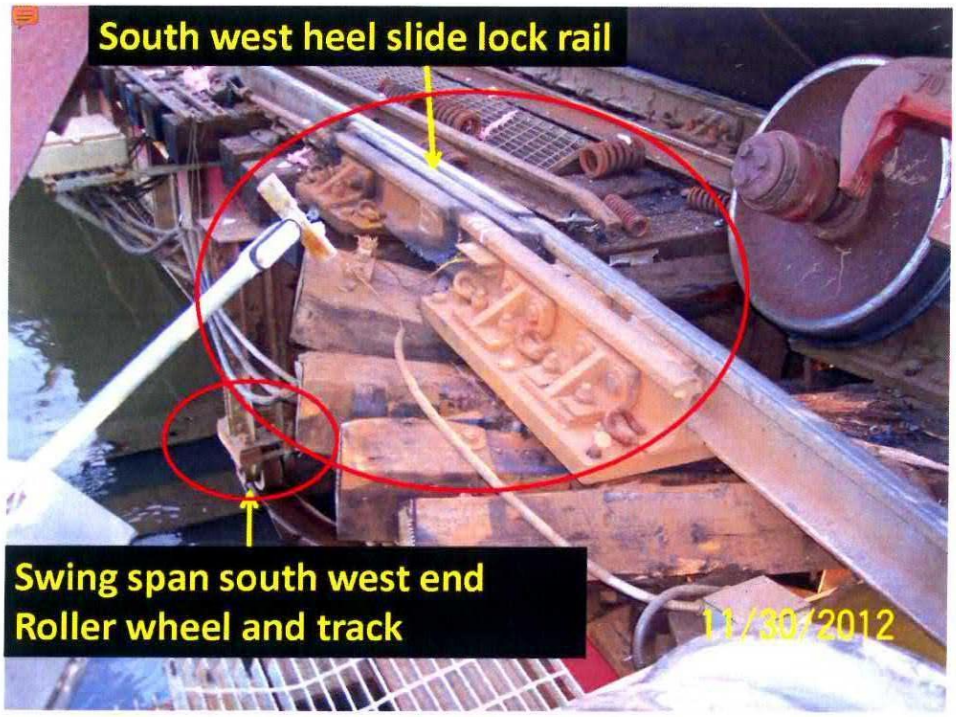


Figure 3: Bridge Slid Locks South End



After completing a review of the employee's annual qualification and rules testing, it was determined by this Organization that no specific training was provided by Conrail on the operation and inspection of any movable bridges on Conrail's property. In an interview with Conrail's Director of Operating Practices, it was asked if the employees receive formalized training and testing in the operation and inspection of movable bridges. The Director responded that the operation and inspection was "common knowledge" and later acknowledged that training provided by the railroad did not provide formal instruction.

Paulsboro Movable Bridge

Records pertaining to the Paulsboro Movable Bridge were reviewed, and it was discovered that there were twenty-three (23) problems reported to the train dispatcher in the eleven (11) months preceding the accident. Nearly half - eleven (11) of them - occurred during the thirty (30) days immediately prior to the accident.

Statements made by the engineer of train FC4230 indicate that the bridge was transmitting conflicting messages, such as once receiving a Clear signal indication and yet, while traversing

the bridge, the system announced "bridge failed to operate" and that this defect was reoccurring more frequently in the three (3) months prior to the accident. On the morning of the accident, while the Engineer was requesting permission to pass the Stop signal, the bridge transmitted the "bridge failed to operate" message. The Engineer reported to the dispatcher that he received the message, and that the bridge had been inspected and was lined and locked. The train dispatcher then gave the train permission to pass the Stop signal in accordance with NORAC Operating Rule 241-d.

On November 29, 2012, at approximately 11:00 p.m., the last train to operate over the bridge prior to the accident reported to investigators that they had problems as well. After arriving at the bridge and requesting it to close, it worked as intended and the train proceeded north. Once the train was approximately one mile away the crew heard the bridge announce "bridge failed to operate." Four (4) minutes later the bridge announced "Paulsboro Bridge Closed" and finally, after six (6) additional minutes the bridge announced "bridge failed to operate." When asked if the crew had reported the messages, they replied that they had not.

It is our Organization's conclusion that the Paulsboro Movable Bridge had become so prone to problems, that a culture of normalization of deviance was introduced with respect to the bridge's operations. This would account for under-reporting of problems, and lack of extensive trouble-shooting to identify and correct the problem.

Paulsboro Fire Department

The Paulsboro Fire Department has twenty-five (25) volunteer firefighters that are mostly trained to firefighter level I, hazardous material awareness, and hazardous material operations level.

Hazardous Waste Operations and Emergency Response (HAZWOPER) Standards:

The Occupational Safety and Health Administration's (OSHA) standard at 29 CFR §1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER), applies to "emergency

response operations for releases of, or substantial threats of releases of, hazardous substances.[7] The standard defines emergency response as "response efforts by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence of an uncontrolled release of a hazardous substance.[8] Paragraph (q) of the standard covers the specific requirements applicable to emergency response operations to hazardous substance releases.

The OSHA standard requires the establishment of an emergency response plan (ERP) that addresses several elements such as pre-emergency planning and coordination with outside parties, personnel roles and lines or authority, emergency recognition and prevention, safe distances and places of refuge, site security and control, and PPE and emergency equipment. [9]

The OSHA standard also outlines requirements and procedures for handling emergency response.[10] The standard specifies that an incident command system (ICS) must be used. Additionally, it requires the incident commander to identify all hazardous substances and perform a site analysis, implement appropriate emergency operations, and assure that appropriate PPE is used. For workers engaged in "emergency response and exposed to hazardous substances presenting an inhalation hazard or potential inhalation hazard," the standard requires these workers to "wear positive pressure self-contained breathing apparatus while engaged in emergency response, until such time that the individual in charge of the ICS determines through the use of air monitoring that a decreased level of respiratory protection will not result in hazardous exposures to employees.[11]

The OSHA standard specifies the required training levels and qualifications for workers engaged in response operations.[12] The required training levels are based on worker duties and functions. The levels of training qualification are: first responder awareness, first responder operations, hazardous materials technician, hazardous materials specialist, and on-scene commander. Both initial and annual refresher training are required for each level of worker qualification.

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[7] 29 CFR § 1910.120(a)(1)(v).
[8] 29 CFR § 1910.120(a)(3)
[9] 29 CFR § 1910.120(q)(1) and (2)
[10] 29 CFR § 1910.120(q)(3)
[11] 29 CFR § 1910.120(q)(3)(iv)
[12] 29 CFR § 1910.120(q)(6)

National Fire Protection Association (NFPA) 472 standard:

Appendix E of 29 CFR §1910.120 provides non-mandatory training curriculum guidelines. These guidelines reference the knowledge competencies covered in the National Fire Protection Association (NFPA) 472 standard, Standards for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.

NFPA 472, Chapter 4 part (1)(c), Core Competencies for Awareness Level Personnel, in part states that awareness level personnel must be able to perform the following:

> (c) Collect hazard information from the current edition of the DOT Emergency Response Guidebook.

Department of Transportation Emergency Response Guidebook (ERG):

The ERG is a standard reference tool afforded to both first responders and railroad personnel. It is available in both a printed and electronic version and is updated every four (4) years, with the most recent edition being 2012. Had the first responders on-site referenced and abided by its initial warning, the ERG recommends that for a large spill of vinyl chloride, evacuation occur within a radius of at least one-half (1/2) mile from the spill in all directions. However, the first responders on-site, under the command of the Paulsboro Assistant Fire Chief, initially evacuated within a fifty (50) yard radius. From data collected, we have established that it wasn't until approximately 10:46 a.m. (some 3 hours and 45 minutes post-accident) that the ERG radius recommendation was complied with.

Wireless Information System for First Responders (WISER):

WISER is a system designed to assist emergency responders in hazardous material incidents. WISER provides a wide range of information on hazardous substances, including substance identification support, physical characteristics, human health information, and containment and

suppression advice. This system is available electronically as a mobile phone application. After arriving at the initial Incident Command Post (ICP) and assessing the situation, the Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Lieutenant returned to his vehicle to conduct further chemical research using WISER on his phone.

Transportation Community Awareness and Emergency Response (TRANSCAER):

TRANSCAER (Transportation Community Awareness and Emergency Response) is a voluntary national outreach effort that focuses on assisting communities to prepare for and respond to a possible hazardous materials transportation incident. TRANSCAER members consist of volunteer representatives from the chemical manufacturing, transportation, distributor, and emergency response industries, as well as the government. They offer free outreach classes across the country, affording training to those who may encounter a rail transportation hazardous material incident. Seven months prior to the Paulsboro train derailment, TRASCAER offered a class in Woodbury, NJ approximately five (5) miles from Paulsboro. No one from the Paulsboro Fire Department attended the April 20-21st, 2012 class.

TRANSCAER is sponsored by the American Chemistry Council (ACC), Association of American Railroads, CHEMTREC®, The Chlorine Institute, Inc., The Fertilizer Institute, and Renewable Fuels Association.

Hazardous Materials Description and Information for Vinyl Chloride:

Vinyl chloride [CAS # 75-01-4] is a colorless gas with a mild, sweet odor that is used to make polyvinyl chloride (PVC). It is a gas at room temperature; however, it is shipped as a liquid under pressure. It is highly flammable and vapor/air mixtures are explosive. The odor threshold for detection is about 3,000 parts per million (ppm) in air. The Occupational Safety and Health Administration (OSHA) regulates occupational exposures to vinyl chloride under 29 CFR § 1910.1017. Paragraph (c) of the standard mandates that no employee may be exposed to vinyl

chloride at concentrations greater than 1 ppm averaged over any 8-hour period; no employee may be exposed at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes; and that no employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.[13] [14] [15] Due to the significant difference between the odor threshold and the acceptable occupational exposure levels, workers can easily be overexposed without becoming aware of vinyl chloride's presence. The odor threshold is too high to provide adequate warning for hazardous concentrations.

Routes of Exposure and Target Organs for Vinyl Chloride

Inhalation is the primary route of exposure to vinyl chloride. Other routes of exposure include ingestion and contact absorption. The target organs include the liver, central nervous system (CNS), blood, respiratory system, and lymphatic system.[16] None of the initial first responders wore respiratory personal protective equipment.

EMERGENCY RESPONSE:

A timeline of the events that occurred will be presented below; some of the times are approximations due to being obtained through interviews.

- 6:59 a.m., derailment occurs.
- 7:05 a.m., first emergency responder arrives (Paulsboro Police Officer), and an alert to Paulsboro Fire Department is called in.
- 7:09 a.m., Paulsboro Assistant Fire Chief whose residence is 50 yards from derailment site, acknowledges through the use of binoculars, one of the placards is UN 1086 (vinyl chloride). Established Incident Command Post (ICP) at his residence.
- 7:12 a.m., the initial Police Officer on-site is informed by train crew train is carrying ethanol and vinyl chloride.
- 7:20 a.m., Conrail Trainmaster arrives, secures train consist from conductor.
- 7:26 a.m., Paulsboro Police Department issue a 3-block evacuation radius.

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[13] 8-hour Time Weighted Average (TWA) Permissible Exposure Limits (PEL) - 29 CFR § 1910.1017(c)(1).
[14] Short Term Exposure Limit (STEL) - 29 CFR § 1910.1017(c)(2).
[15] 29 CFR § 1910.1017(c)(3).
[16] National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards

- 7:29 a.m., Paulsboro Fire Chief informed rail cars contain vinyl chloride and Paulsboro Police Department change evacuation to shelter-in-place (SIP), also, Conrail Trainmaster and Conrail Chief Risk Officer leave the ICP and go the site to assess where the breach is.
- 7:30 a.m., Paulsboro Police Officers report vapor cloud (vinyl chloride) is non-toxic; this was determined after finding chlorine car in train was 27 cars deep and un-affected by the derailment.
- 7:30 a.m., The Gloucester County Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Lieutenant arrived on-site and made a recommendation to evacuate everyone within at least a one-half (1/2) mile radius of the derailment site.
- 7:33 a.m., Paulsboro Police notify County dispatch that the vapor cloud is non-toxic and residents should SIP.
- 7:45 a.m., The Conrail Trainmaster takes the only available train consist with him as he surveys the rest of the train to assess any other damage to the train set.
- 7:30 a.m. – 8:00 a.m., The Conrail Trainmaster and Chief Risk Officer confirm the breached car is vinyl chloride. The Chief Risk Office addressed their findings to the Paulsboro Fire Chief. The discussion in part follows:

    - *I had the clipboard with the consist. I explained to him [The Paulsboro Fire Chief] that these cars, 6 through 12, were derailed, and it looked like car number 9 was breached, and then [I] showed him the car number and told him that it ... was a vinyl chloride car... His response to me was...what do we do with that? And I pulled -- in the consist is a hazardous description, almost like a small MSDS sheet... I read it to him... it says that if it's not involved in a fire, it requires a half mile evacuation. If it's involved in a fire, it's recommended a mile evacuation. To my remembrance, he basically said, I don't think we're going to do that. And I said, well, that's your call; you are the fire chief. You are the incident commander. I told him ... I had assistance coming...*[17]

Post-accident interviews regarding if any of the responders were issued any guidance on personal protective equipment (PPE), the Paulsboro Fire Chief explained in part:

- *He's [the Paulsboro Assistant Fire Chief] standing on two legs and he's having a conversation with me, so protective breathing apparatus didn't even come into my mind because...we didn't know that there was a breach in the car...once we found out that there was a release, it was almost like the horse is already out of the barn ...you can't close the gate now, it don't help... we didn't go into SCBA mode or anything like that. I don't believe the hazmat team did either...we really didn't know that it was a release. I mean, the fog came out. The fog went away. We*

[17] In an interview with the Conrail Chief Risk Officer to the NTSB.

didn't smell anything -- or, at least, I didn't. I didn't smell anything. I didn't taste anything. I didn't -- no eye watering. My throat wasn't getting scratchy. I didn't show any signs that I needed to put respiratory protection on.[18]

- 8:00 a.m., The ICP is moved to Paulsboro Fire Hall.
- 8:00 a.m., Conrail informs Paulsboro they are going to fax over a copy of the train consist (no record of when it actually arrived). The Conrail Trainmaster kept the original consist returning 3 to 3.5 hours later after making photocopies of it.
- 8:28 a.m., ICP moved to St. James Church
- 8:34 a.m., First earliest air sampling begins from Paulsboro Refining Company air sampling team who receive three (3) errors on initial readings. On the fourth (4^{th}) attempt, the instrument went into alarm mode for high levels – meaning they were in the "hot (danger) zone". The fourth (4^{th}) reading was not calibrated for vinyl chloride but still read 500 parts per million (ppm), the OSHA Permissible Exposure Limit (PEL) is 1 ppm. This was the last report asked of this team until the 11:30 a.m. meeting.
- 9:20 a.m., Paulsboro Police Department advise residents who evacuated from their residence may return, but to shelter-in-place.
- 10:46 a.m., ICP moved to Borough Hall.
- 2:00 p.m., ICP moved to Gloucester County Fire academy in Clarksboro, NJ.
- 4:00 p.m., evacuation radius is expanded.
- 5:15 p.m., a Unified Command System is formed, informing Police to once again evacuate residents in portions of the town.
- 6:50 p.m., the evacuation radius was expanded and made mandatory.
- 7:00 p.m., a curfew was established.

Summary of Paulsboro Refining Company air monitoring data:

- 8:33 a.m. 631 ppm
- 8:37 a.m. 760 ppm (highest levels recorded)
- 9:30 a.m. 11 ppm
- 10:21 a.m. 16 ppm
- 10:55 a.m. 2 ppm
- 11:00 a.m. 0 ppm

[18] In an interview with the Paulsboro fire Chief by the NTSB

PROPOSED FINDINGS

OPERATIONS:

The Brotherhood of Locomotive Engineers and Trainmen concludes that Conrail's training program with regards to the inspection and operation by train crew members of movable bridges was inadequate. It has been determined that Conrail provided no formal classroom or written instruction on how to inspect locking mechanisms of such bridges and that only an on-the-job (OJT) training approach was used for such a task. This left train and engine (T & E) employees to learn how to inspect movable bridges by pure happenstance. If a student conductor did not have an opportunity to inspect a bridge with his or her mentor during training, then the employee would have no knowledge of how to properly inspect the bridge. The Conductor of FC4230 inspected the Paulsboro Movable Bridge just once during his OJT. The accident occurred four (4) years later, with no intervening training provided by Conrail regarding how to inspect movable bridges.

Conrail Timetable No. 9, effective June 20, 2011, was the governing set of instructions to this train crew as they were Conrail employees operating on Conrail track. The Timetable lacks language defining a "qualified person" with respect to inspection and authorization of movement over a movable bridge when the signal protecting the bridge cannot be displayed. This term is addressed loosely in the Northeast Operating Rules Advisory Committee (NORAC) rule book, which is a compilation of those railroads in that committee who offer rules to sister railroads when they traverse over their lines. These rules offer foreign train and engine employees a "snapshot" of the rules they are to be governed under, but in all cases the NORAC rules are subordinate to an individual railroad's Special Instructions (as in this case, Conrail's Timetable No. 9).[19]

NORAC operating rule 241 makes reference to a "qualified employee" determining that the rails are lined and the movable bridge is safe for movement. The term "qualified" is defined at 49 C.F.R Section 217.4 as meaning a person who "has successfully completed all instruction, training and examination programs required by the railroad, and this part and that the person, therefore, has actual knowledge or may reasonably be expected to have knowledge of the subject

[19] See Attachment C at the end of this report

on which the person is expected to be competent." Though the Conductor of FC4230 had completed all examinations required by his employer, the evidence clearly establishes that Conrail failed to adequately address the inspection of movable bridges in its training and qualification process. Therefore, without the proper training and examination of proficiency, the Conductor should not have been considered "qualified" in the context of NORAC Rule 241-d.

HUMAN PERFORMANCE:

In spite of the lack of training by Conrail, the Conductor of train FC4230 performed an inspection of the Paulsboro Movable Bridge to the best of his ability within the limits of his knowledge. The evidence suggests that this component was a contributing factor in this accident.

HAZARDOUS MATERIALS:

A contributing factor to the release of the hazardous material appears to have been the overloading of tank car OCPX 80323 (position 9 in the train) whose coupler and coupler shaft were found inside tank car OCPX 80234 (causing 80234 to breach and release approximately 20,000 gallons of vinyl chloride product into the atmosphere). The OCPX 80323 car (position 10 in the train) was the only car involved in the derailment which was overloaded with product (>420 gallons than other derailed hazardous material cars). The evidence suggests that this component was a contributing factor in this accident.

Figure 4: Photograph of tank car OCPX 80323 and the breach in tank car OCPX 80234

MECHANICAL:

The evidence establishes a post-accident examination of the locomotives event recorder and the integrity of the tank cars that derailed, performed as designed. The evidence suggests that these components were not a contributing or causal factor in this accident.

TRACK:

The evidence suggest that this was a contributing factor as the records indicated since Hurricane Sandy (October 29, 2012), trouble calls for this structure were significantly increased. Had the misalignment and locking issues been properly addressed, this accident would not have occurred.

EMERGENCY REPSONSE:

The evidence suggests that numerous areas were not addressed in accordance with governing standards, including OSHA's Emergency Response Plan, NFPA reference to utilizing the Emergency Response Guidebook, conducting air monitoring as soon as possible, maintain a proper radius to protect the general public, and to afford responders proper personal protective equipment. These failures were not a contributing or a causal factor in this accident. However, it was purely from good fortune that these failures did not exacerbate the injuries from the derailment. It should be noted that the volunteer nature of the Paulsboro Fire Department means that time and resources that can be dedicated toward hazmat training and program development are extremely scarce, and may have contributed to the initial confusion over the appropriate evacuation radius.

PROBABLE CAUSE

It is the conclusion of the Brotherhood of Locomotive Engineers and Trainmen that the probable cause of the accident was the failure of the Paulsboro Movable Bridge to close and lock properly. It is also a contributing factor that had Conrail mandated properly trained and qualified bridge and structure personnel alone could meet the NORAC Rule 241-d requirements for a "qualified employee" in deeming a structure is secure to traverse (as Figures 2 and 3 in this report reflect), this accident would have been avoided.

PROPOSED RECOMMENDATIONS

CONSOLIDATED RAIL CORPORATION (CONRAIL):

1. Review your training programs and base training on data gathered from Job Task Analysis.
2. When inspecting movable bridges, ensure that only those individuals who are specifically trained and qualified in the operation of such bridges - such as bridge maintenance employees - conduct the inspection.
3. Allow for each crew member to have a hazardous materials position form and current DOT emergency response guide (ERG) with the printing of a single work order for the train.

NORTHEAST OPERATING RULES ADVISORY COMMITTEE (NORAC):

1. Add the definition of "Qualified Employee" to reflect the definition found in 49 C.F.R Part 217.

UNITED STATES DEPARTMENT OF TRANSPORTION, FEDERAL RAILROAD ADMINISTRATION (FRA):

1. With respect to FRA's Safety Advisory 2013-01, refer the following items to the appropriate Rail Safety Advisory Committee working groups.
    a. Evaluating the design and construction of the existing movable bridges to determine if effective span locking is being provided.
    b. Review current operating rules and procedures to ensure that these instructions adequately protect movable bridges during the operations of trains
    c. Ensure that employees authorized to determine whether movable bridges are correctly aligned and secured are adequately trained to perform these duties.

AMERICAN ASSOCIATION OF RAILROADS (AAR):

1. Advise all railroads mandating having two (2) copies of train consists on board the train when it is carrying, or due to be carrying, hazardous materials, ensuring either the current Safety Data Sheet (SDS) or Emergency Response Guidebook information are also available.

2. Present the importance of valuable hazardous material awareness training for their employees to the various railroads. Programs such as the Rail Workers Hazardous

Material Training Program (RWHMTP) enhanced training can not only benefit the individual (employee), but also the carrier, and the community.

INTERNATIONAL ASSOCIATION OF FIREFIGHTERS (IAFF):

1. Continue working with railroads and training opportunities with the rail labor unions that may verse your members on emergency response techniques in the case of a train derailment.

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH AND SCIENCES (NIEHS):

1. Continue funding the various firefighting and labor unions in order for them to enhance their knowledge through training about hazardous material awareness training programs being offered.

CERTICATE OF MAILING

I certify that I have on this date electronically forwarded to Mr. Paul Stancil (paul.stancil@ntsb.gov), a full and complete copy of the "Proposed findings, probable cause, and safety recommendations" with regard to the derailment of Conrail Train FC4230 and subsequent hazardous release with evacuation in Paulsboro, NJ, submitted by the Brotherhood of Locomotive Engineers and Trainmen's Safety Task Force to the National Transportation Safety Board. Copies were also forwarded addressed to the parties of interest as required by 49 CFR § 845.27 (Proposed findings).

Paul Stancil
National Transportation Safety Board
Investigator In Charge, DCA12MR002
490 L'Enfant Plaza SW
Washington, DC 20594

Robert Tomaszewski, Operating Practices
Federal Railroad Administration
[redacted]

Les Fiorenzo, Regional Administrator
Federal Railroad Administration,
[redacted]

William Bates
UTU/SMART Safety Team
[redacted]

Ryan Keating
Conrail – Manager Field Operations
[redacted]

Neil Ferrone
Chief Risk Officer, Conrail
[redacted]

A.D. McKisic, Senior Director
Product Development, Trinity Rail,
[redacted]

Gary Pearson, Assistant Director
Emergency Management, New Jersey
Department of Environmental Protection
[redacted]

Sincerely yours,

[redacted]

William C. Walpert
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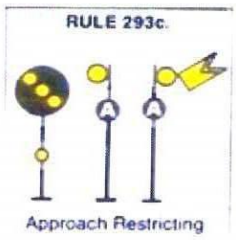
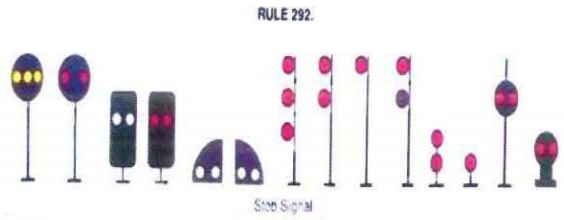
ATTACHMENT A

NORAC Rule 293c APPROACH RESTRICTING



293 c: Proceed prepared to stop at the next signal. Trains exceeding Medium Speed must begin reduction to Medium Speed as soon as the engine passes the Approach Restricting signal. NOTE: Does not convey block or track information.

NORAC rule 292 STOP SIGNAL



292: Stop

ATTACHMENT B

NORTHEAST OPERATING RULES ADVISORY COMMITTEE (NORAC):

Rule 241: Passing a Stop Signal

To pass a Stop Signal, a train must have verbal permission of the Dispatcher (or Operator when authorized by the Dispatcher). Permission must not be given or accepted until the train has stopped at the signal. A member of the crew must contact the Dispatcher or Operator and follow his instructions.

A. Giving Permission to Pass Before giving permission to pass the Stop Signal, the Dispatcher (or Operator) must determine that:

1. Affected appliances are properly positioned. If the position of a switch cannot be determined, the route must be inspected.

2. No opposing or conflicting movements have been authorized.

3. Blocking devices have been applied to protect against opposing movements whenever the Stop Signal involved governs entrance to a track where Rule 261 is in effect.

The Dispatcher (or Operator) must give permission to pass a Stop Signal in the following manner: "No. 5316 engine 4129 pass Stop Signal on No. 2 track at Rare and proceed east to No. 1 track."

The receiving employee must repeat this permission and the Dispatcher or Operator must then confirm it.

B. Movement after permission has been confirmed

After permission has been confirmed, the train must operate at Restricted Speed until the entire train has cleared all interlocking or spring switches and the leading wheels have:

1. Passed a more favorable fixed signal,

Or

2. Entered non-signaled DCS territory,

Or

3. Entered Rule 562 territory with a Form D authorizing Rule 563.

In CSS territory, trains with operative cab signals must not increase their speed until they have run one train length or 500 feet (whichever distance is greater) past a location where a more favorable cab signal was received.

C. Stopped at Automatic Interlocking Home Signal When a train is stopped at a home signal at an automatic interlocking and no immediate conflicting movement is evident, the movement will be governed by:

1. Instructions posted at that location.

2. Instructions in the Timetable.

Track cars may proceed after first determining that there are no approaching or conflicting movements.

D. Stopped at a Signal Protecting Movable Bridge

Under the following conditions, a qualified employee must determine that the rails are properly lined and the bridge is safe for movement before verbal permission is given to pass the signal:

1. When the signal cannot be displayed for the first movement over a bridge after the bridge has been closed, regardless of bridge lock indication.

Or

2. At any time a bridge unlock indication is received.

E. Stop Signal Disregarded

If a Stop Signal is disregarded, the Dispatcher or Operator must immediately take two actions:

1. Attempt to stop that train and other trains involved.

2. Notify the next TBS or interlocking station.

ATTACHMENT C

Bridge Operations Description

The Paulsboro Movable Bridge was normally open for water traffic between March 1st and December 1st each year, although some years, if the weather was warm enough there would be a request to open before March 1st.

The information about the seasonal operation of the bridge was in the South New Jersey Dispatcher, Daily Bulletin Number 9-529, Thursday November 29th, 2012, effective 6:01 p.m. and reads as follows:

H. PENNSGROVE Secondary

1. MP 13.7 (PAULSBORO MOVABLE BRIDGE) **IN REMOTE**

   THE BRIDGE IS OPEN FOR THE SEASON CREWS ARE TO OPERATE THE BRIDGE PER TIMETABLE INSTRUCTIONS.

When the bridge is open for water traffic, an approach restricting signal would permanently display a yellow aspect. (Rule 293C) When the bridge was open, the signal protecting movement over the bridge displays a red aspect. In order to close the bridge for a train movement, the train must stop within 100 feet of the red signal protecting movement over the bridge. After stopping the engineer enters a key code into the radio and transmits. A device on the bridge receives the request from the transmission and closes the bridge. Once the bridge is closed and in proper position the signal will change to a green aspect and the train can proceed.

PENNS GROVE SECONDARY (PENS)

9. DISTRICT INSTRUCTIONS

A. LOCATIONS OF RUNNING TRACKS

Unless otherwise indicated, maximum speed on Running Tracks is Restricted Speed not exceeding the speed indicated below.

Running Track	Between	Controlled by	Restricted Speed not exceeding
Salem	Woodbury and Swede	South Jersey Dispatcher	10 MPH

B. MOVEABLE BRIDGES — NOT PART OF AN INTERLOCKING RADIO CONTROLLED OPERATION

Bridge	Location	Request Code
Paulsboro	MP 13.7	137
Bridgeport	MP 20.8	208

Instructions Governing the Operation of Moveable Bridges shown

Normal position of moveable bridge is **OPEN**.

1. Trains must approach moveable bridge prepared to stop.
2. Verify river traffic is clear of moveable bridge.
3. To close moveable bridge for rail traffic, key in request code and * using the keypad of the locomotive or portable radio.
4. Warning message will be broadcast over radio and loudspeakers on bridge announcing closing of bridge.
5. When moveable bridge is completely closed, message will be broadcast over radio and loudspeakers confirming closing. A signal to proceed will then be displayed.
6. To stop the bridge at anytime, key in the request code and #. A message will be broadcast over the radio and loudspeakers indicating process has been halted. To restart the closing sequence, again key in the request code and *.
7. After train proceeds and is clear of bridge circuit, the moveable bridge will automatically open. A message will be broadcast over radio and loudspeakers confirming the opening.

   NOTE: Failure to display a proceed indication or failure of system to broadcast messages announcing bridge opening must be reported immediately to the South Jersey Train Dispatcher.

Failure of Moveable Bridge to close when requested by Radio Command:

1. Open control panel case marked T/E using switch key. Control panel case is located on west side of track on both sides of bridge.
2. Press the "CLOSE" button; radio and loudspeaker warning broadcast will commence.
3. To stop the bridge, press the "CLOSE" button. A message will be broadcast over the radio and loudspeakers indicating process has been halted. To restart the closing sequence, again press the "CLOSE" button.
4. Once bridge is closed, close and lock case.
5. When signal indication to proceed is displayed, train may proceed across moveable bridge.
6. After train proceeds and is clear of bridge circuit, the moveable bridge will automatically open. A message will be broadcast over the radio and loudspeakers confirming the opening.

   NOTE: Failure to display a proceed indication or failure of system to broadcast messages announcing bridge opening must be reported immediately to the South Jersey Train Dispatcher.

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