

Log R-432

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: May 24, 1983

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Forwarded to:

Mr. R. D. Sanborn  
President and Chief Executive Officer  
Seaboard System Railroad  
500 Water Street  
Jacksonville, Florida 32202

SAFETY RECOMMENDATION(S)

R-83-46 through -51

At 1:25 p.m., on May 31, 1982, northbound Seaboard Coast Line (SCL) freight train No. 120 derailed at the Swift Creek Bridge in Colonial Heights, Virginia, following a hard run in of slack which occurred when the train transited a change in grades. The train was classified as restricted by SCL timetable designation with a maximum authorized speed of 50 mph. The engineer stated the train speed was 45 mph at the time of derailment; however, tests conducted following the accident indicate that the train speed was 64 mph when the train derailed. Cars No. 89 through No. 118 derailed. A tank car was breached in the derailment, and its contents were released and immediately ignited. No crewmembers were injured as a result of the accident, but 12 firefighters and a state emergency official collapsed during firefighting operations. Erroneous and conflicting information concerning hazardous material on the train caused confusion and misdirected emergency response efforts. 1/

The derailed cut of 29 cars on train No. 120 contained three hazardous materials tank cars (Nos. 96, 97, and 98), which were prepared for shipment by Ethyl Corporation, Orangeburg, South Carolina, on or about May 28, 1982. Two of the tank cars (GATX 27256 and EBAX 3064, No. 96 and No. 97, respectively) contained petroleum base additives. The "empty car" (DUPX 14672, No. 98) contained approximately 50 gallons of a nitrating acid. On May 29, 1982, SCL prepared waybills, a train consist, and emergency handling instructions to accompany the shipment.

Ethyl Corporation loaded tank car GATX 27256 (a Department of Transportation (DOT) 103A100 with Type E couplers) with 77,200 lbs (approximately 10,000 gallons) of a phenolic antioxidant, "Ethyl" Antioxidant 733 Toluene 80% mixture. Ethyl Corporation furnished SCL a certified bill of lading, No. 5559-10, which described the commodity as a "RQ Flammable Liquid, NOS, (Tolvene) (Phenol) UN 1993, Placarded Flammable (Gasoline or Fuel Oil Additives containing less than 50% by weight of petroleum)."

1/ For more detailed information, read Railroad Accident Report—"Derailment of Seaboard Coast Line Railroad Train No. 120, Colonial Heights, Virginia, May 31, 1982," (NTSB/RAR-83/4).

SCL prepared waybill No. 803258 to accompany GATX 27256 and provided carrier routing of the tank car to its destination at Edison, New Jersey. In preparing the waybill, SCL incorrectly listed the shipper's description of the commodity by omitting the "RQ" designator for hazardous substances, and omitting "(Tolvene) (Phenol)." SCL added the required "Dangerous" placard endorsement, <sup>2/</sup> which indicated that special handling was required, and assigned STCC 4910535 to the shipment. The crewmen on train No. 120 were provided, in addition to the waybills, a train consist and an emergency guide reflecting the above STCC and "Dangerous" endorsement.

Ethyl Corporation loaded tank car EBAX 3064 (a DOT 105A300W) with 24,600 lbs (approximately 3,000 gallons) of an organic manganese compound, "Ethyl" MMT/LP46. Ethyl Corporation furnished SCL a certified bill of lading, No. 19615/51, which described the commodity as a "Combustible Liquid, NOS, NA 1993 Placarded Combustible (Petroleum Oil, NOI)."

SCL prepared waybill No. 803259 to accompany EBAX 3064. This waybill provided carrier routing of EBAX 3064 to its destination at Pointe Aux Trembles, PQ, Canada, and identified the commodity as "Petroleum Oil, NOS, Combustible Liquid, NA 1270, Interstate Shipment Placarded Combustible in Bulk." The waybill also assigned the commodity STCC 4915245. Since this material was a combustible liquid, the waybill did not require a "Dangerous" placard endorsement or special handling.

SCL changed the shipper's primary description from "Combustible Liquid, NOS" to "Petroleum Oil, NOS," provided a different North American identification number, and assigned a STCC which reflected the altered shipping description. The American Association of Railroads (AAR)/SCL emergency guides for "Combustible Liquids, NOS, NA 1993" and "Petroleum Oil, NOS NA 1270" provide much of the same information to firefighters about hazards and emergency actions; however, these guides differ markedly with respect to the use of solid water streams, the types of foam extinguishment to use on fires, the need to avoid bodily contact with the material, and the necessity for the use of full protective clothing and self-contained breathing apparatus. The guide for "Combustible Liquid, NOS" indicated a greater need for caution and recommended the use of more protective equipment for firefighters than did the guide for "Petroleum Oil, NOS, NA 1270."

SCL prepared waybill No. 621144 to accompany DUPX 14672 to its destination at Gibbstown, New Jersey. The waybill identified the commodity as, "Empty Tank Car, Last Contained RQ Nitrating Acid, Oxidizer NA 1796 Mixed Acid." The waybill identified the commodity as "Dangerous," but was not endorsed in the upper left corner as requiring special handling. Since DUPX 14672 was designated "empty," no STCC was assigned. The SCL's guide information is computer-generated, based upon the assigned STCC identification number. Consequently, the hazard graph contained no emergency response guidance for DUPX 14672.

Throughout a hazardous materials emergency, and especially during the early minutes, it is essential that, to the fullest extent possible, accurate and complete information be provided to emergency response personnel about the hazardous materials which present a threat to the safety of the public and the responding personnel. How quickly this information is provided to the appropriate personnel often determines the magnitude and duration of these incidents. The prompt transfer of accurate information is one task which the Safety Board has observed repeatedly as being the main impediment

2/ As stipulated under 49 CFR Sections 174.83 through 174.93.

to an efficient and coordinated response to a transportation accident involving hazardous materials. The inaccurate information provided to the emergency response personnel during the early stages of this accident caused the firefighters to misdirect their actions, and as a result, they were exposed to potential harm from the third tank car of which they were unaware.

Immediately after an accident, the conductor is responsible for obtaining and providing to emergency response personnel information about the train and its contents. The conductor in this accident correctly identified the number of cars involved in the derailment, but failed to identify correctly the derailed tank cars that were transporting hazardous materials. According to Train Bulletin RM-13, the conductor should have searched the train documents for cars with STCC and UN identification numbers. Instead, the conductor searched for cars with a "dangerous" endorsement, identifying one loaded and one "empty" tank car; a second loaded tank car was not identified because it did not require the "dangerous" endorsement to highlight the need for special handling during switching and transportation. The conductor and the flagman, who assisted the conductor, did not follow the company prescribed procedures for identifying cars transporting hazardous materials.

The conductor provided the emergency response personnel a copy of the hazard graph and, through the SCL Freight Agent, provided the waybills for two tank cars. The conductor did not provide further assistance because he believed that the emergency response personnel knew what to do with the documents. This action was contrary to the direction provided in Train Bulletin No. RM-13, which requires that the information from waybills and train consists be provided, rather than the documents themselves. The Safety Board believes that traincrews should be trained for and be required to interpret the operating documents and advise emergency response personnel about the numbers and types of cars transporting hazardous materials and the specific hazardous materials transported and contained within the damaged cars, and to provide guidance from the documents which accompany the shipments of hazardous materials. Emergency response personnel throughout the Nation cannot be expected to be familiar with the variety of nonstandard specialized operating documents that railroads have developed for internal use.

In this accident, other SCL personnel should have reviewed the information the conductor provided to the emergency response personnel. If they had done so, they would have discovered that it was inaccurate. The freight agent, who should know what actions to take during an emergency and know how to identify from the consist and the hazard graph those cars transporting hazardous materials, did not question the conductor about the adequacy or accuracy of the information provided to the emergency response personnel, nor did he independently review the available documents to assure that the information provided was correct. The trainmaster, who arrived on scene about 2:40 p.m., also did not review the information provided by the conductor. He was aware that train documents had been provided to the Command Post, but until 5:30 p.m., he took no action to review the consist or waybills for the purpose of verifying the accuracy of the information provided by the conductor. When he did review the documents at 5:30, he discovered that there were three tank cars involved in the derailment. The superintendent, who arrived about 4:30 p.m., was advised by the trainmaster that "only two cars possibly carried materials that were considered hazardous." He also did not review the consist waybills or hazard graph to ascertain the accuracy of the information provided, nor did he inquire to determine if others had verified the information. The SCL Operations Center was advised by the Chief Dispatcher at Rocky Mount of the cars that had derailed and that a copy of the consist was available at Rocky Mount. Even though

this information was available to the SCL Operations Center about 2:30 p.m., a delay was experienced in the Center's obtaining a computer-generated consist of the train. Despite this delay, the Operations Center did not again contact the Chief Dispatcher to obtain information from the consist available at Rocky Mount. The Chief Dispatcher could have identified the derailed cars which were transporting hazardous materials.

Even though traincrews may be instructed properly and trained about actions to take during emergencies, a carrier should recognize that employees often do not adequately perform all actions expected of them during emergency situations. The Safety Board believes that the SCL through its supervisory and management employees should provide support for the early traincrew actions by requiring its dispatchers to verify that traincrews have taken the required emergency actions and by requiring that first-arriving supervisory personnel review the actions taken by traincrews to determine that accurate and sufficient information has been provided to emergency response personnel about any hazardous materials being transported in cars that have been damaged or are derailed.

The engineer in this accident had a history of poor train handling, and supervisory personnel were aware of the engineer's problem. The engineer's immediate supervisor, the road foreman of engines, had suggested that the engineer attend a train dynamics analyzer (TDA) class in October 1981. During a 60-day period following the TDA session, the engineer was disciplined four times for poor train handling. The SCL superintendent took the engineer out of road service in December 1981. As a condition for his return to road service, the engineer was required to attend a 2-day session on the TDA on April 15 and 16, 1982. SCL supervision did not inform the instructors in the TDA program of the engineer's problems, and therefore the TDA instructors were not aware that the engineer had been removed from road service.

The engineer apparently was not completely aware of his problem, since he told the instructor that he needed help with braking. The Safety Board believes that SCL supervision should have taken a more active role in assisting the engineer in identifying and correcting his train handling problems. SCL should have informed the instructors in the TDA program about the engineer's problems and should have monitored the engineer's performance after his training.

SCL established a comprehensive training program in 1973 to qualify engineers. However, engineers promoted prior to the establishment of the training school are only given retraining on a voluntary basis. According to the SCL engineer training officer, the TDA is the best equipment available today to evaluate the problems of an engineer in train handling. The Safety Board believes that the SCL is not using the TDA equipment to its fullest potential, and that engineers who have train handling problems should be required to attend the TDA classes.

As a result of its investigation of this accident, the Safety Board recommends that the Seaboard System Railroad:

Revise practices for developing waybills to require use of the hazardous material shipping description provided by shippers unless a change is approved by the persons(s) originally selecting the shipping description.  
(Class II, Priority Action) (R-83-46)

Revise practices to include emergency response guidance information on the hazard graph for tank cars containing residual quantities of hazardous materials classified as "empty." (Class II, Priority Action)  
(R-83-47)

Periodically instruct and test traincrews and supervisory personnel on the procedures for using train documents to identify all cars transporting hazardous materials and the information to be provided to assist emergency response personnel. (Class II, Priority Action) (R-83-48)

Require supervisory personnel arriving at the scene of an emergency to determine what information has been provided by traincrews to emergency response personnel, to verify the accuracy of the information provided, and to advise the on-scene coordinator of any errors or omissions in the initial information given by the traincrew. (Class II, Priority Action) (R-83-49)

Revise the engineers' retraining program to require annual attendance at the train dynamics analyzer classes with special emphasis on correcting deficiencies observed by supervisors while evaluating the engineers' performance in service. (Class II, Priority Action) (R-83-50)

Require engineers who fail to demonstrate proficiency in train handling during mandatory train dynamics analyzer classes to attend the engineers' training school and thereafter require that they demonstrate an ability to properly operate a train before being allowed to return to train service. (Class II, Priority Action) (R-83-51)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations (P.L. 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations, and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

  
Jim Burnett  
Chairman