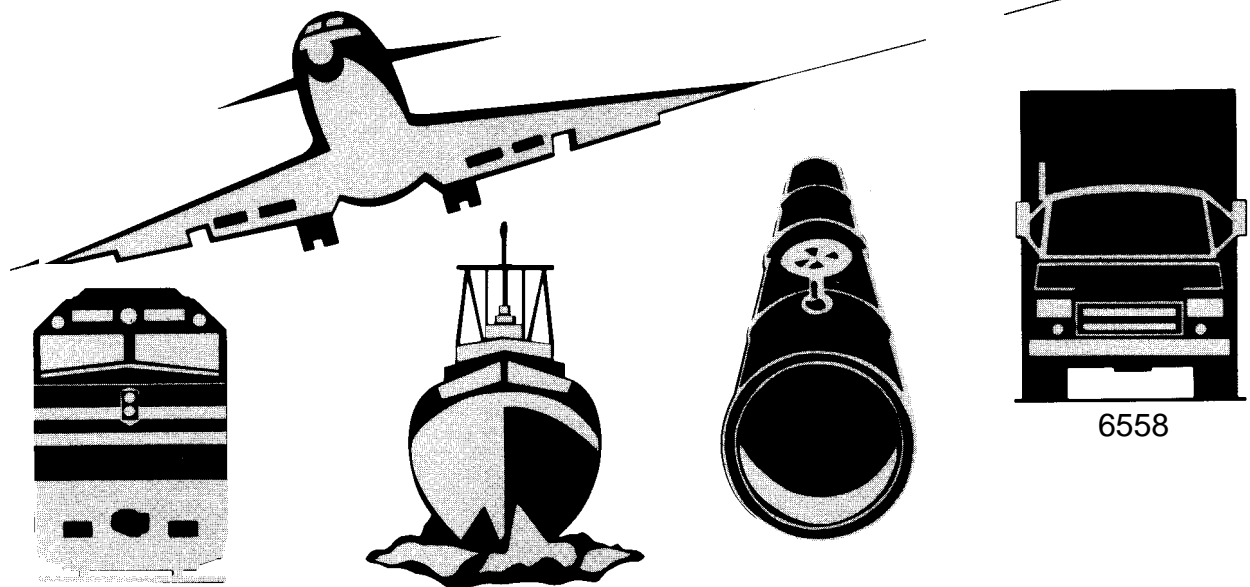


NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

HIGHWAY ACCIDENT REPORT

**COLLISION OF AMTRAK TRAIN NO. 88 WITH
ROUNTREE TRANSPORT AND RIGGING VEHICLE
ON CSX TRANSPORTATION, INC., RAILROAD
NEAR INTERCESSION CITY, FLORIDA
NOVEMBER 30, 1993**



Abstract: This report explains the November 30, 1993, collision of National Railroad Passenger Corporation (Amtrak) train 88 with a Rountree Transport and Rigging, Inc., overdimension/low-clearance vehicle, which was fouling a grade crossing on a private access road to an electricity generating plant complex near Intercession City, Florida. Six people sustained serious injuries and 53 people sustained minor injuries from this accident. The total estimated damage exceeded \$14 million.

From its investigation of this accident, the Safety Board identified safety issues in the following areas: State permitting requirements and procedures, management oversight, oversize move coordination between highway and railroad operators, emergency notification procedures, wreck clearing coordination between railroad and pipeline operators, vehicle escort procedures, and lounge car seat support design.

The Safety Board made safety recommendations to the American Association of State Highway Transportation Officials, the American Gas Association, the American Public Gas Association, the American Petroleum Institute, the Interstate Natural Gas Association of America, the Association of American Railroads, the American Short Line Railroad Association, the Central Florida Pipeline Corporation, the National Railroad Passenger Corporation, the Osceola County (Florida) Emergency Management Division, the State of Florida Division of Emergency Management, the CSX Transportation Corporation, the Specialized Carriers and Rigging Association, the International Association of Chiefs of Police, the National Sheriffs Association, and the National Committee on Uniform Traffic Laws and Ordinances.

The National Transportation Safety Board is an independent Federal agency dedicated to promoting aviation, railroad, highway, marine, pipeline, and hazardous materials safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The Safety Board makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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Safety Board**

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Adopted: May 16, 1995

Notation 6558

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EXECUTIVE SUMMARY

On November 30, 1993, a 184-foot-long vehicle consisting of a truck-tractor and modular transporter operated by Rountree Transport and Rigging (Rountree), Inc., was en route to deliver an 82-ton turbine to a Kissimmee Utility Authority (KUA) electricity generating plant under construction near Intercession City, Florida. The private access road to the plant facility crosses over a single railroad track owned by CSX Transportation, Inc. (CSXT). Because of the configuration of the truck and the profile of the roadway, the cargo deck of the transporter began to bottom out on the roadway surface as the vehicle moved across the tracks and began down the descending grade. To gain sufficient clearance, the Rountree crew shimmed the transporter while the cargo deck was on the tracks. About 12:40 p.m., they had finished raising the cargo deck and were preparing to move the vehicle when the lights and bells at the grade crossing activated. The crossing gates descended, striking the turbine. Seconds later, National Railroad Passenger Corporation (Amtrak) train number 88, the Silver Meteor, carrying 89 passengers, struck the side of the cargo deck and the turbine. The locomotive and the first four cars of the eight-car consist derailed, carrying the turbine and parts of the Rountree vehicle with them.

No deaths resulted from this accident. Responders evacuated 59 people to five local hospitals, where 15 were admitted for further treatment. Six people sustained serious injuries and 53 suffered minor injuries, mostly abrasions, lacerations, and contusions. The Rountree vehicle and the turbine were destroyed, and the locomotive and the first three railcars were damaged extensively. Total damage from the accident exceeded \$14 million.

The National Transportation Safety Board determines that the probable cause of the accident was the failure of Rountree Transport and Rigging, Inc. to notify CSXT in advance of its intent to cross the railroad track at the accident grade crossing and to ensure through CSXT that it was safe to do so. Contributing to the accident were deficiencies in the permitting processes of the CSXT and the Florida Department of Transportation that resulted in a lack of appropriate guidance for permitting officials, oversize, low-clearance vehicle operators, and escort personnel.

From its investigation of this accident, the Safety Board identified safety issues in the following areas: Rountree oversight of oversize moves, oversize move coordination, pipeline notification and hazard identification and avoidance, permitting procedures, and lounge car seat support design.

The Safety Board issued recommendations to the American Association of State Highway Transportation Officials, the American Gas Association, the American Public Gas Association, the American Petroleum Institute, the Interstate Natural Gas Association of America, the Association of American Railroads, the American Short Line Railroad Association, the Central Florida Pipeline Corporation, the National Railroad Passenger Corporation, the Osceola County (Florida) Emergency Management Division, the State of Florida Division of Emergency Management, the CSX Transportation Corporation, the Specialized Carriers and Rigging Association, the International Association of Chiefs of Police, the National Sheriffs Association, and the National Committee on Uniform Traffic Laws and Ordinances.

INVESTIGATION

The Accident

About 11:25 p.m. on November 29, 1993, a 184-foot-long vehicle operated by Rountree Transport and Rigging (Rountree), Inc. left Tampa, Florida, to deliver an 82-ton turbine to the Kissimmee Utility Authority's (KUA's) Cane Island Project, an electricity-generating plant under construction near Intercession City, Osceola County, Florida. The weather was clear and dry. The vehicle consisted of a truck-tractor and a modular transporter comprising three cargo deck sections totaling 67 feet in length to accommodate the 14-foot-high by 14-foot-wide by 57-foot-long turbine (figure 1). Four Rountree employees comprised the vehicle crew: a driver and a tiller operator on the rig, and an equipment supervisor and regional manager in separate vehicles accompanying the rig.

A utility truck with a raised bar to measure the clearance of overhead utility wires preceded the Rountree vehicle en route. In addition, two off-duty Florida Highway Patrol (FHP) officers in marked cruisers provided escort service for the vehicle. The route from the Port of Tampa to the KUA facility selected by the Rountree regional manager traversed 13 highway/railroad crossings (figure 2) in two CSX Transportation, Inc. (CSXT) area divisions. A CSXT maintenance-of-way employee accompanied the vehicle to flag¹ seven crossings in the immediate Tampa area. No flagman accompanied the Rountree vehicle after the seventh crossing. The convoy traversed the next crossing at Pasco County Road 535 without incident and without a CSXT employee protecting the crossing.

The ninth crossing, near Zephyrhills, has a cantilevered light support over the crossing. Rountree had arranged for personnel from the CSXT Vitis subdivision signals department to remove the support and protect the vehicle's transit across the grade crossing. The Rountree vehicle traversed three more crossings without a CSXT employee protecting the crossing before reaching the crossing at the KUA Power Road.

When not making turns or avoiding obstructions, the vehicle operated at a reported top speed of 10 to 15 mph in the city, and about 22 mph in rural areas. The equipment supervisor reported encountering no problems on the trip from Tampa to Intercession City.

About 10:59 a.m.² on November 30, 1993, as the Rountree vehicle and its convoy were turning off U.S. Route 17/92 onto Old Tampa Highway, about 1/2 mile from the access road

¹ When the vehicle approaches a crossing, the flagman contacts the CSXT train dispatcher to determine if it is safe for the vehicle to cross the track. If the dispatcher determines that no train movements will be affected, he grants authorization to the flagman for the track between two milepost areas that include the crossing, and restricts all train movement into this area. The section of track is closed to train traffic until the flagman relinquishes his authority back to the train dispatcher. Additional information about track movement restrictions appears later in this report under *Amtrak Operations*.

² Most of the times in this narrative are based on a videotape of portions of the move.

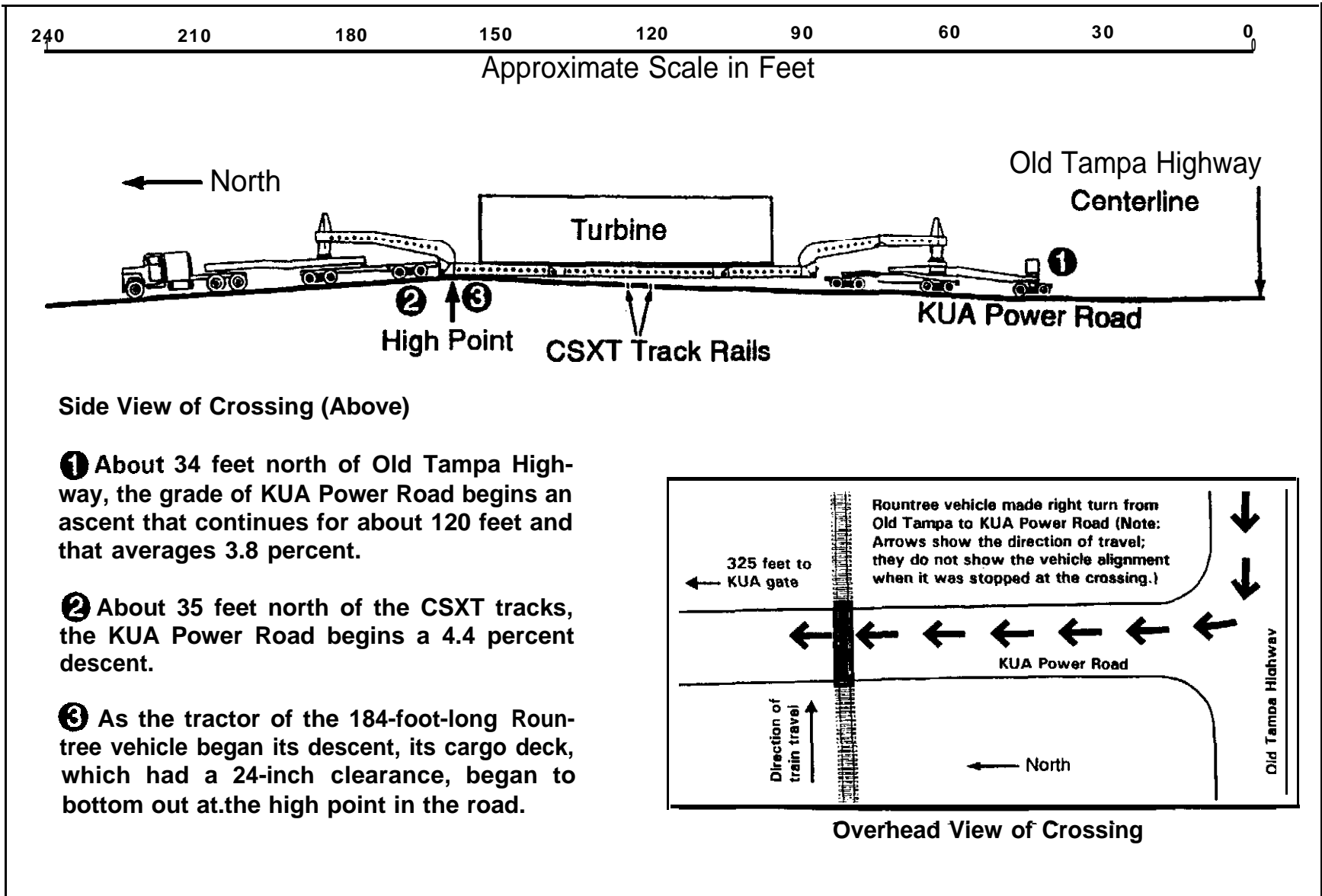


Figure 1.--Rountree vehicle on KUA Power Road grade crossing.

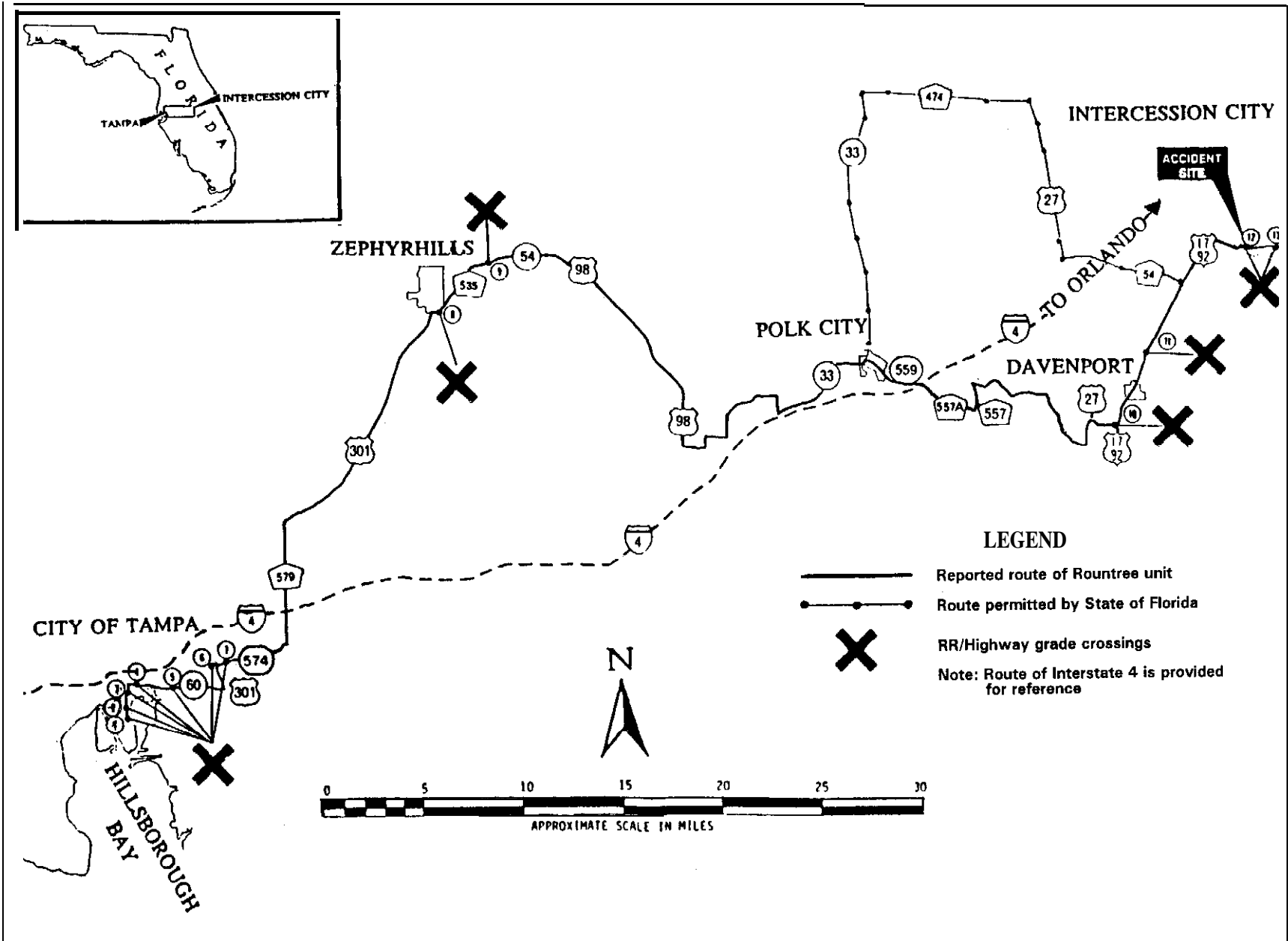


Figure 2.--Route of the Rountree vehicle from Tampa to Intercession City.

to the KUA plant, the Rountree regional manager said two men whom he believed to be KUA employees helped him pull a street sign out of the ground to allow the load to get by. He stated one of the men told him, "You got a train at 1 o'clock," which led him to believe that KUA personnel were in contact with CSXT and that a train was due at 1 p.m. at the KUA Power Road crossing. The KUA employees deny telling the Rountree regional manager any information about the arrival time of the train. (Figure 3 shows a timeline of precollision events.)

The Rountree crew first tried to turn left from Old Tampa Highway onto KUA Power Road, but had to abandon the effort because guy wires to a utility pole blocked the passage of the vehicle. Backing the unit onto Old Tampa Highway took about 15 minutes. They then drove east about 2 1/2 miles, turned the vehicle around, and drove back to attempt a right turn onto KUA Power Road. When the Rountree vehicle began the turn onto the private access road, the FHP escort officers parked their vehicles on the Old Tampa Highway shoulder, where they computed their time and mileage and waited to be paid by Rountree.

Before going into the turn, the equipment supervisor had the crew raise the rear tower³ to keep the turbine level while the front of the cargo bed was on the ascending grade of the crossing. As the unit moved forward, the cargo deck began to bottom out on the roadway north of the track. The equipment supervisor said that because the tiller unit was not aligned with the rest of the vehicle after the turn, he believed that backing off the track would be more difficult and take

DATE/TIME	EVENT
<u>Nov. 29</u>	
11:00 a.m.	Rountree crew oversees offloading of turbine from barge onto vehicle.
11:25 p.m.	Vehicle departs Port of Tampa en route to Intercession City.
<u>Nov. 30</u>	
11:12 a.m.	Vehicle attempts first turn onto KUA Power Road; is blocked by guy wires.
11:31 a.m.	Amtrak train departs Tampa en route to New York City.
12:08 p.m.	Amtrak train departs Lakeland for its next stop, Kissimmee, which is 43 miles away.
12:25 p.m.	Vehicle turns onto KUA Power Road, is proceeding across track when the front of the cargo bed begins to drag on the pavement.
12:29 p.m.	Rountree crew lowers cargo deck to shim the load.
12:32 p.m.	According to Rountree regional manager, KUA employee tells him "only 25 minutes left" [before the train].* Rountree manager tries to call Orlando trainmaster, but gets no answer.
12:37:17 p.m.	Rountree manager tries a CSXT toll-free number, gets a menu recording, and hangs up in frustration.
12:39:15 p.m.	He tries the toll-free number again, is listening to the menu for 32 seconds when he hears the train whistle blow.
12:40:06 p.m.	Amtrak train 88 broadsides the cargo deck and turbine. The locomotive and four cars derail.
* The KUA employee denys making this statement.	

Figure 3. Precollision timeline.

³ A device on each of the cargo bed support dollies that enables crews to lower the cargo deck for loading and unloading or to raise the cargo deck to clear humps, dips, or obstacles. With both towers fully raised, the maximum clearance of a loaded cargo bed is about 24 inches.

and take longer than shimming⁴ the cargo deck in place. He decided to adjust the cargo deck, which he estimated would take 6 minutes, while the vehicle straddled the live mainline track.

The Rountree regional manager said that while his crew was shimming the cargo deck, one of the KUA employees approached, looked at his watch, and said, "Only 25 minutes left." In later interviews, the KUA employees deny saying this.

The Rountree regional manager said he interpreted the KUA employee's statement to mean the time of the next train at the crossing, so he "double-timed" to his vehicle to call CSXT via his mobile telephone and have the train stopped. He said he did not have a CSXT emergency number and that the CSXT passage application form that he had been given for the trip did not list any telephone numbers. He was trying other CSXT telephone numbers that he knew, including a toll-free number, when he heard a train whistle blow. About 12:40 p.m., just as the driver and tillerman had climbed back aboard the vehicle to move it, the crossing lights and bells activated. Within seconds, the gates descended, hitting the turbine.

The Rountree equipment supervisor started to run toward the train, waving his arms to get it to stop. He yelled into his portable two-way radio for the driver to bail out of the truck cab. When the tillerman saw the crossing gate arms strike the turbine, he realized a train was coming. He was jumping from his position when the collision occurred. The Rountree regional manager, who had started to run toward the vehicle, saw people running from the unit, so he turned and ran back away from the crossing.

Meanwhile, the engineer and assistant engineer were in the operating compartment of the National Railroad Passenger Corporation's (Amtrak's) train 88, the Silver Meteor, which was en route from Tampa to New York City, New York. Train 88 was approaching railroad milepost (MP) A-816 at an engineer-reported speed of 79 mph when the engineer, who was at the control stand, reported that through the trees he saw "a big blue obstacle⁵ on the crossing." When the grade crossing came into clear view and he saw the track blocked, he placed the train brakes in emergency and he and the assistant engineer exited the cab through the auxiliary engine compartment access door.

Amtrak train 88 struck the left side of the cargo deck and the turbine. The locomotive and the first four cars of the eight-car consist derailed, carrying the turbine and parts of the Rountree vehicle with it. The turbine came to rest partly atop the second railroad car. The locomotive and other wrecked cars came to rest over or near two buried high-pressure liquid product lines operated by Central Florida Pipeline Corporation (CFPL).⁶ (See figure 4.)

⁴ The clearance of a cargo deck can be increased by adding temporary spacers, or shims. A more complete explanation of shimming appears later in this report.

⁵ The turbine was covered with blue tarps.

⁶ At 12:42 p.m., one pipeline was transporting unleaded gasoline at a calculated pressure of 500 pounds per square inch gauge (psig), and the other was transporting aviation jet fuel at a calculated pressure of 300 psig.



Figure 4.--Aerial shot taken by *Orlando-Sentinel* photographer about 2 p.m. Routes of pipelines are superimposed. Arrow points to CFPL pipeline marker.

Events Following the Collision

Emergency Response.--At 12:45 p.m., a resident called the Osceola County Communications Center (911) and reported a "train derailment at 6030 Old Tampa Highway." Eight rescue and fire units initially responded. The Osceola battalion fire chief assumed responsibility as incident commander (IC) and established a command post (CP) and triage area near Old Tampa Highway when he arrived on scene at 12:52 p.m. He radioed area hospitals to activate their disaster plans and requested medical evacuation (Medivac) helicopters. He directed responders to begin efforts to extricate the crewmembers trapped in the locomotive and to conduct a sweep of each railroad car to identify, classify, and tag patients. No fire resulted from the accident.

Responders evacuated all passengers from the train by 1:37 p.m. Osceola Fire Rescue personnel had to remove the roof hatch of the overturned locomotive to extricate the trapped engineer and assistant engineer. By 3:15 p.m., response personnel had transported 59 injured to area hospitals, where 15 were admitted for further treatment. The emergency responders included 24 paramedics, 29 emergency medical technicians (EMTs), and 18 firefighters.

Photographs taken by area newspapers about 2 p.m. show that tape denoting an investigation area had been strung along the treeline, within a few feet of pipeline markers that had not been knocked over by the derailling train.

Pipeline Operator Actions.--At 1:50 p.m., about 1 hour after the accident, an off-duty CFPL operator who had seen a television report on the derailment alerted the CFPL Port of Tampa station operator.⁷ After verifying the location of the derailment, CFPL shut down the pumps on both pipelines at 1:54 p.m., monitored the pressure in the lines for 2 hours to ensure that neither were leaking, and alerted their customers to open their valves so that as much product as possible could be drained from the lines. This reduced the pressure in the lines to the lowest level possible, about 5 pounds per square inch guage (psig).

About 2 p.m., a CFPL maintenance man from Plant City, Florida, and a CFPL field engineer from Tampa proceeded to the accident site. When the CFPL personnel arrived on scene shortly after 3 p.m., the IC indicated that he did not know about the active pipelines at the site and gave the CFPL employees permission to check on them. Some pipeline markers near the KUA Power Road were intact, but other markers had been either damaged or destroyed. The CFPL field engineer placed marker flags along the pipeline routes. He then briefed CSXT on-scene personnel on the pipelines' locations, and depths, and the hazardous materials they were transporting. He said he advised CSXT personnel that the pipelines were still under some pressure and that they would need to keep railcars and heavy equipment off the pipelines.

The IC said that he met with CSXT and CFPL personnel at the CP, asked that they work together during wreckage clearing, and advised them that they should report back to him should

⁷ The CFPL subsequently was notified by the Florida one-call system at 3:03 p.m. Additional information about postaccident emergency notification and actions appears later in this report under *Survival Factors*.

any problems arise. When the CFPL field engineer asked a CSXT representative why CSXT hadn't notified CFPL about the derailment, the CSXT employee said that he did not know.

Table 1. Injuries from accident.

Injuries.--Table 1 is based on the injury criterias of the International Civil Aviation Organization, which the Safety Board uses in accident reports for all transportation modes. An injury table based on the Abbreviated Injury Scale (AIS) of the Association for the Advancement of Automotive Medicine is shown in Appendix B.

Injury Type	Rountree Crew (4)	Train Crew (10)	Passengers (89)	Total (103)
Fatal	0	0	0	0
Serious	1	2	3	6
Minor	0	3	50	53
None	3	5	36	44

Damage.--The Rountree vehicle and the turbine were destroyed, and the locomotive and the first three railcars were damaged extensively. Rountree estimated the replacement cost of the tractor and transporter at \$400,000. KUA valued the turbine at \$10.5 million. Amtrak estimated the damage to rolling stock at \$3 million. CSXT estimated the damage to track and signals at \$15,000. CFPL estimated that its costs for pipe replacement and emergency response was \$120,000 and its loss of commerce while the pipeline was out of service was \$200,000. Total damage estimates including cleanup costs exceeded \$14 million. The KUA reported that they incurred \$156,816 in costs for the construction delay.

Truck.--Inspections revealed no defect attributable to the collision. Damage to the tractor and transporter precluded any mechanical function inspections. Maintenance records and interviews with maintenance personnel indicated that the vehicle had been maintained in compliance with the Federal Motor Carrier Safety Regulations. The crew reported that they had not experienced any mechanical problems on the trip from Tampa and that they had not stopped on the railroad tracks because of a mechanical malfunction.

Train.--Upon striking the turbine, the locomotive nose, which contained a toilet and the event recorder, was crushed 12 inches. The locomotive came to rest on its left side about 28 feet north of the track line and about 364 feet east of the point of initial impact. Investigators found the automatic brake handle in the emergency position. The locomotive fuel tanks were breached, and diesel fuel was leaking. In the lounge car, investigators found four pedestal seats broken from their bases and five tables bent toward the front of the train. Safety Board investigators found that the pedestal seats had separated at the weld area where the pedestal was connected to the base. Amtrak's General Manager of Mechanical Standards and Compliances later stated that the pedestal seat should have collapsed or buckled along the pedestal support rather than separating from the base.

⁸ Title 49 Code of Federal Regulations (CFR) 830.2 defines fatal injury as "Any injury which results in death within 30 days of the accident" and serious injury as an injury that "(1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second or third degree burns, or any burn affecting more than 5 percent of the body surface."

Pipeline.--The CFPL elected to install new pipeline sections in the accident area because replacement was more expeditious and cost about the same as performing an instrumented inspection to determine whether the pipelines sustained internal damage.⁹ The pipeline company excavated both pipelines and found no visible damage to the exterior of the pipes.

Vehicle and Pipeline System Information

Rountree Vehicle

Tractor.--The Rountree power unit was a 1990 Peterbilt 3-axle conventional cab truck-tractor equipped with a sleeper berth. The unit had a diesel engine, an 18-speed manual transmission, and a gross vehicle weight rating (GVWR) of 58,000 pounds. All axles were equipped with standard S-cam air-mechanical brakes.

Modular Transporter.--The modular transporter (figure 5) was typical of units used by the heavy rigging industry to move oil drilling rigs, earth-moving equipment, heavy transformers, power-generating components, and the like. The manufacturer estimates that about 100 units of this type are in operation throughout the United States. The transporter in the Intercession City accident was a 1992 Trail King with a load-carrying capacity of 110 tons. The transporter had 10 axles, which were equipped with standard S-cam air-mechanical brakes. The cargo bed was supported by two jeep dollies,¹⁰ one forward and one aft.

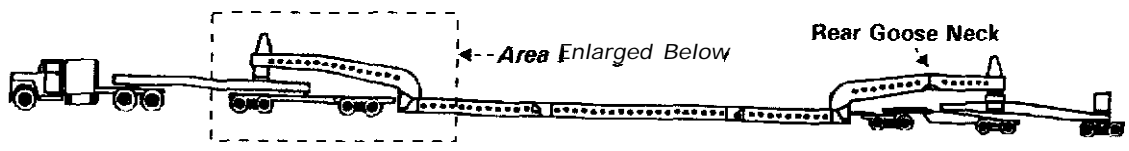
The tongue section of the front jeep dolly connected to the tractor's fifth wheel. The dolly frame articulated between two sets of tandem axles. Each gooseneck had a hydraulic tower, which crews used to lower the cargo deck for loading and unloading or to raise it to clear humps or dips in the road surface or low roadside obstacles. When unloaded, with both towers fully raised, and without shims, the cargo bed had a maximum ground clearance of about 48 inches. When loaded, the maximum clearance decreased to about 24 inches because of flexure in the deck frame and suspension compression in both dolly axles. When operating on the highway, the clearance of the loaded cargo bed fluctuated between 6 and 8 inches.

The basic cargo deck section was 31 feet long with a 28-foot platform. For longer cargos, crews added one or two extension sections, which were 20 feet long with an 18-foot platform, and 16 feet long with a 14-foot platform respectively. The accident vehicle was operating with all three sections for a total cargo deck length of 67 feet.

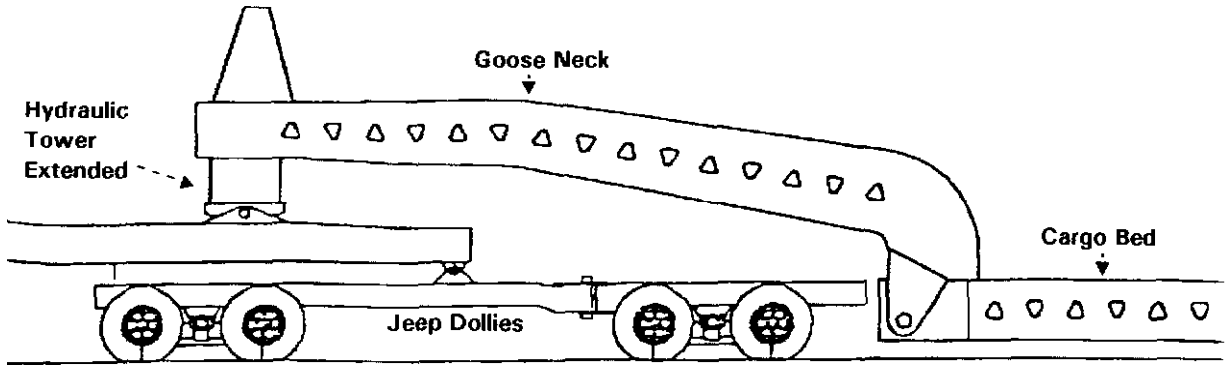
The rear jeep dolly unit had three separate sections; the tiller operator's position was at the back of the third section. The first section, a short dolly, had one set of tandem axles. When

⁹ The CFPL's launch point for an internal inspection device is Tampa.

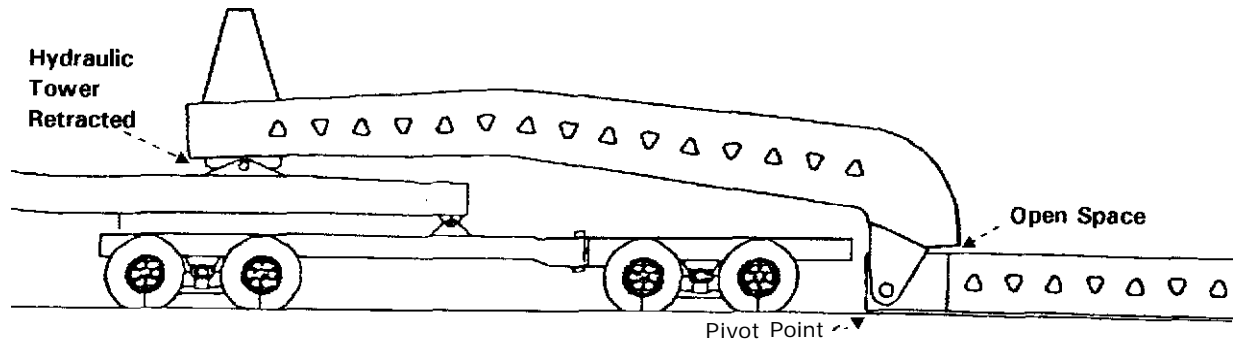
¹⁰ The heavy hauling/rigging industry uses the term *jeep dolly* to denote various configurations of long-frame, or "wing", dollies and short-frame dollies when they are combined to accommodate the weight of a load. A jeep dolly unit is usually positioned at each end of the cargo bed.



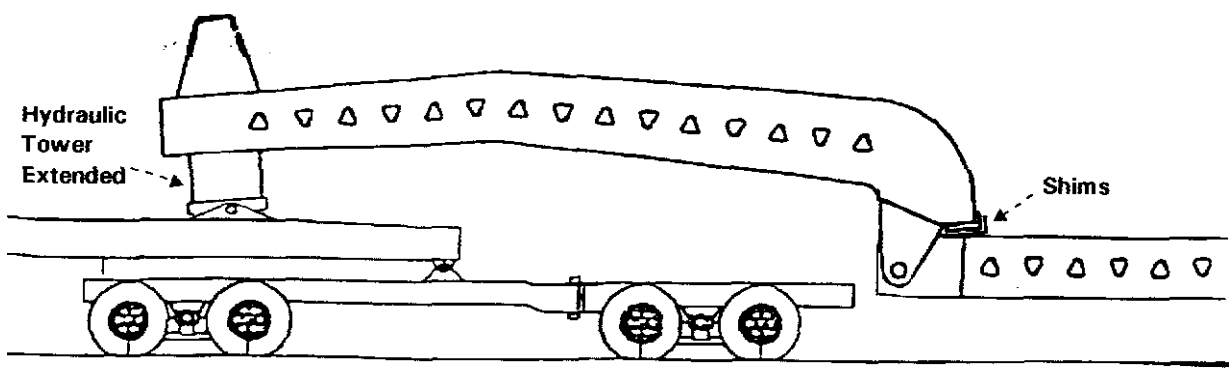
Peterbilt Tractor and Modular Transport Trailer



Normal travel configuration: Hydraulic tower is in the extended position; no shims are used at goose neck/bed connection.



Set-down mode: Hydraulic tower is in the retracted position. The goose neck pivots, leaving an opening for the placement of shims.



Modified travel configuration: Hydraulic tower is in extended position. The shims change the position of the goose neck, which provides increased ground clearance.

****For illustration Only, Not Drawn to Scale****

Figure 5. Drawings show how the front goose neck is shimmed to increase clearance. To raise the cargo bed at the rear of the vehicle, crews shim the rear goose neck.

crews connected or "pinned" the tandem axles to the bed with a tow bar, these axles tracked the cargo bed during forward movement. For turning or backing, the tow bar had to be disconnected and these axles steered either by the tiller operator or by remote control by a person on the ground. The second section had nonsteerable tandem axles mounted on a long (wing) dolly. The third section, the tiller, was a wing dolly with a set of tandem axles that could be steered from the tiller position or by remote control from the ground.

Crews could increase the ground clearance of the cargo deck by adding shims at one or both of the goose neck connections. Using the hydraulic towers, crews lowered the cargo deck either onto the ground or onto cribbing so that the weight of the deck and its cargo was removed from the goose necks. Crews then pivoted the goose neck to create a gap at the connection to the cargo deck, and inserted a shim into this gap.

The transporter had seven articulation points, three to the front of the cargo deck and four to the rear. Forward movement did not require much coordination among crewmembers. Rearward movement of more than a few feet required the full coordination of the 3-person crew. To move the transporter backwards usually required that it be reconfigured, such as disconnecting the rear dolly tow bar. Thus, the company always planned major move routes to maximize forward movements and minimize rearward movements.

Train.--Table 2 shows the consist of Amtrak train 88 on the day of the accident.

Locomotive.--The locomotive unit, Amtrak No. 306, was built by General Motors Electro-Motive Division. It was equipped with a 3000-hp engine, 2 four-wheel trucks, and a 1,800-gallon fuel tank. On-board equipment included a 97-channel radio, 26L airbrake equipment, a Barco Bach-Simpson speed recorder, and an over-speed-limit control with a warning whistle. Records indicate the unit was last inspected on November 23, 1993.

Car Information.--The lounge and sleeper cars were Pullman Standard Heritage Class, and the other six cars were Amtrak Amfleet Class.

Table 2. Consist of train.

Consist Position	Unit Number	Unit/Car Type
1	306	Locomotive
2	1174	Mail
3	1168	Bag/Mail
4	2452	Sleeper
5	3107	Lounge
6	25021	Coach
7	25055	Coach
8	25099	Coach
9	25019	Coach

Pipeline.--The two CFPL pipelines along the CSXT right-of-way include a 6-inch-diameter welded steel pipeline that transports jet fuel from the CFPL terminal at the Port of Tampa to the Orlando, Florida, Municipal Airport, and a 10-inch-diameter welded steel pipeline that transports petroleum products from Tampa to Taft, Florida. The 6-inch pipeline was constructed of 6 5/8-inch outside diameter (OD), 0.219 wall thickness (WT) steel pipe manufactured

to the American Petroleum Institute (API) Standard for 5L X42 line pipe, and the 10-inch line was constructed of 10 3/4-inch OD, 0.206 WT steel pipe manufactured to the API Standard for 5L X60 line pipe. The 6-inch-diameter pipeline is buried 22 to 30 inches deep about 55 feet south of the track and the 10-inch-diameter pipeline is buried 34 to 36 inches deep about 30 feet north of the track.

Personnel Information

Amtrak Crew.--Amtrak train 88 had five operating crewmembers and five on-board service personnel. The operating crew included an engineer, assistant engineer, conductor, and two assistant conductors. The on-board service personnel included a lead service attendant and four other attendants. Amtrak personnel records indicate that each crewmember was qualified to operate on the CSXT.

The operating crewmembers were headquartered at the Amtrak Jacksonville, Florida, terminal. Before coming on duty on November 30 in Tampa, the crewmembers had been off-duty in compliance with the provisions of the Hours of Service Act. On November 29, 1993, they arrived at Tampa on train 87 at 6:03 p.m., whereupon they went off duty at 6:18 p.m. The operating crewmembers came on duty at Tampa at 11:01 a.m. on November 30, 1993.

The engineer was hired by Amtrak on July 14, 1989. He had his last physical on June 16, 1993. His engineer certification was issued on July 7, 1993, and his last rules examination was on September 22, 1993. The assistant engineer was hired on August 20, 1986. His last rules examination was on August 25, 1993, his last physical was on November 15, 1993, and his engineer certification was issued November 21, 1993. The conductor was hired on October 28, 1989, his last physical was April 21, 1993, and his last rules examination was August 31, 1993.

One assistant conductor, who was hired on August 20, 1986, had his last physical on August 30, 1991, and took his last rules examination on August 5, 1993. The other assistant conductor was hired and had his last physical on January 25, 1993, and took his last rules examination on February 20, 1993.

The on-board service (OBS) crew also came on duty at Tampa. When the accident occurred, two OBS employees were in the lounge car, one was in a sleeper car, and two were in different coaches. Amtrak personnel records indicate that OBS crewmembers had received training in emergency evacuation procedures. Two employees took the training in August 1993, one in January 1985, and one in May 1987. The personnel file for the fifth employee did not indicate a training date.

Rountree Crew.--Operating the transporter required a minimum crew of three: a tractor driver, a tiller operator, and an equipment supervisor. On the day of the accident, the regional manager was in charge of the move and accompanied the modular unit in a separate vehicle. The crew used two-way radios to communicate with each other and with escort personnel. Crewmembers acquired their expertise through on-the-job-training under the supervision of experienced operators and company officials.

The driver, age 51, had a valid Florida class A commercial vehicle driver's license with multi-trailer and tanker endorsements, and a valid medical examiner's certificate dated December 4, 1992, indicating he was physically qualified to drive commercial vehicles in interstate commerce. Both his license and his medical examiner's certificate restricted him to driving with corrective lenses. His driving record for the 36 months before the accident showed no convictions for violations. He had been a truckdriver for Rountree since 1986 and a professional truck driver for almost 28 years. He had regularly driven the accident tractor for about 1 year.

The tiller operator, age 46, had a valid Florida class A commercial vehicle driver's license and a valid medical examiner's certificate dated December 3, 1992, indicating he was physically qualified to drive commercial vehicles in interstate commerce with no restrictions. He had been a truck driver for Rountree since 1987. His driving record for the 36-month-period before the accident showed he had been convicted of careless driving while operating a commercial vehicle following an accident in Lake County, Leesburg, Florida, on September 2, 1992.

The equipment supervisor, age 31, had been employed by Rountree for 7 1/2 years, during which he was a mechanic for 2 years and then supervisor of the transporter operation and maintenance for 5 1/2 years. On moves involving the transporter, he accompanied the unit in a separate vehicle. Prior to joining Rountree, he had been employed as a truck mechanic.

The regional manager, age 56, had been employed by Rountree for 30 years, during which he worked as a dispatcher, terminal manager, and regional manager. He had been the regional manager for 11 months before the accident.

Hours of Service.--Federal regulations prohibit a driver in interstate commerce from driving more than 10 hours and from driving after having been on duty more than 15 hours since his last 8 hours off duty.

Rountree crew service.--The tiller operator stated that on November 29, he, the equipment supervisor, and the truckdriver assembled the Rountree vehicle and oversaw the loading of the turbine at the Port of Tampa from about 9:00 a.m. to about 5:30 p.m., with a 1-hour break for lunch. They then returned to their motel rooms and remained off duty for about 4 1/2 hours until 10:00 p.m., when they reported back at the Tampa pier to begin the trip to Intercession City. The tiller operator's duty status record showed he was *on duty-not driving* from 10 p.m. on November 29 until the time of the accident, 12:40 p.m. on November 30, a total of 14 hours, 40 minutes. From the time the driver and tiller operator began work at 9 a.m. on November 29 until the accident, they had been on duty about 20 hours since their last 8 hours or more off duty.

Investigators found no duty status records (daily logs) for the truckdriver's accident trip after the accident. The truckdriver stated he did not recall any of the events associated with the accident trip.

Postaccident actions.--A Rountree official advised the Safety Board that in order to ensure compliance with State and Federal hours-of-service regulations, the company will have

a second crew available to relieve the regular crew on future moves to prevent hours-of-service violations.

Toxicological Tests

Rountree Employees.--The injured truck driver was taken to Orlando Regional Medical Center, where technicians obtained blood and urine samples for medical reasons at 3:59 p.m., 3 hours and 19 minutes after the accident. The medical center tested the blood sample for the presence of alcohol and found none. The medical center also tested the urine sample for the presence of five drugs (cocaine, amphetamines, cannabinoids, opiates and phencyclidines). The results of the drug test were negative.

The following day, about 25 hours after the accident, Rountree required the three other employees to submit urine samples for drug testing. The results of the drug tests were negative.

Amtrak Crew.--Amtrak did not have the operating crew toxicologically tested after the accident because 49 Code of Federal Regulations (CFR) 219.201(b) provides as an exception that "no test shall be required in the case of a collision between railroad rolling stock and a motor vehicle or other highway conveyance at a rail/highway grade crossing."

Accident Site Information

Kissimmee Utility Authority (KUA) Power Road.--At the accident site, the CSXT right-of-way is in a general east-west direction and extends 100 feet on both sides of the track centerline. Property owned by the KUA borders the right-of-way on the north; Old Tampa Highway borders the right-of-way on the south and essentially parallels the CSXT track in the accident area. To access its new combustion turbine power plant, KUA and CSXT entered into an agreement on April 26, 1993, which provided for KUA to construct, use, and maintain a private road from Old Tampa Highway across CSXT's track and right-of-way to the power plant, and for CSXT to install active warning devices at the grade crossing created by the planned roadway. The private road was opened for use on August 5, 1993.

The north-south KUA Power Road has two 12-foot-wide asphalt lanes with 5-foot-wide gravel shoulders. The CSXT track are about 122 feet north of the junction of the KUA Power Road with Old Tampa Highway. The plant facility gate is about 325 feet north of the track.

To cross the track at grade, the KUA Power Road was constructed with an ascent that averages 3.8 percent beginning about 34 feet north of the north edgeline of Old Tampa Highway and that extends about 120 feet from a point about 34 feet north of the Old Tampa Highway edgeline to a point about 35 feet north of the track, the highest point of the roadway. The roadway then begins an average 4.4 percent descending grade for about 105 feet back to the approximate level of the surrounding terrain. The KUA Power Road grade crossing is assigned Department of Transportation/American Association of Railroads (DOT/AAR) No. 643879-N.

Track, Wayside, and Crossing Signals.--The grade crossing is at railroad MP A-816.27 in the Lakeland Subdivision of the CSXT Jacksonville Division. CSXT maintains the track to meet or exceed Class 4 Federal Railroad Administration (FRA) Track Safety Standards. Passenger trains operate at a maximum authorized speed of 79 mph.

In the accident area, the track is constructed of continuous welded rail and from an eastbound engineer's perspective has a 1-degree right hand curve and a 0.07 percent ascending grade. The north rail is superelevated about 3 inches above the south rail. A whistle post designating the point at which an eastbound train must begin sounding a crossing warning signal is 2,160 feet in advance of the KUA Power Road crossing, on the engineer's side of the track.

The crossing was equipped with flashing red lights, gates, and an audible device (bell), which were installed by October 21, 1993. A Harmon Electronic motion detector 3,317 feet west of the KUA Power Road crossing activates the crossing signal equipment for eastbound trains.

Pipeline Markers.--In the area of the grade crossing, 3-foot-high white markers were spaced along both mainlines. At the top of each of the pipeline markers was a 10-inch-diameter circular black and yellow sign that was imprinted with a red-lettered warning to call the toll-free telephone number indicated on the sign should an emergency arise.

Carrier Information.--Following an overview of each of the primary parties in this accident, this report will discuss the operations of Rountree and CSXT as they pertain to oversize and low-clearance vehicle move permitting and procedures. Additional information related to emergency response operations and procedures appears later in this report.

CFPL Operations.--CFPL is owned by GATX Terminals Corporation, a part of GATX, Inc. CFPL operates two hazardous liquid mainlines, which lay predominantly in (CSXT) railroad rights-of-way between Tampa and Orlando. The dispatcher at Hemlock Pump Station, which is near the Port of Tampa and is the CFPL control center, controls the CFPL system by means of remotely operated valves at its pump stations in Tampa, Auburndale, Intercession City, Kissimmee, and Taft.

Rountree Operations.--Rountree is authorized by the Interstate Commerce Commission to operate as a common carrier by motor vehicle over irregular routes in 13 southeastern States, transporting commodities that because of their size or weight require special handling or equipment. Rountree operates 54 tractors (47 owned and 7 leased), and 150 trailers of various types, including flat beds, lowboys, drop necks and steer dollies.

Rountree's principal place of business is in Jacksonville, Florida, where it domiciles 25 full-time drivers and 7 independent contractor/drivers at its terminal. The company also has terminals in Orlando, Florida, and Fort Lauderdale, Florida, which have 2 and 4 full-time employee drivers respectively.

CSXT Operations.--The accident occurred in the Lakeland subdivision of the CSXT Jacksonville division. Other CSXT divisions and subdivisions traversed while the Rountree vehicle was en route to Intercession City are listed in Appendix C. In the Tampa area, territorial assignments for maintenance-of-way personnel in subdivisions of the Fertilizer Business Unit and Jacksonville divisions overlap. The single track that passes through Intercession City carries two scheduled Amtrak passenger trains and about six freight trains daily. While on the CSXT system, Amtrak crews are subject to both Amtrak's Manual of Instruction for Transportation Department Employees and CSXT's operating rules.

Amtrak Operations.--Train 88, the Silver Meteor, is a regularly-scheduled Amtrak revenue run originating daily in Tampa, Florida, with a final destination of New York City, New York. The Amtrak schedule lists the following departure times for train 88: Tampa, 11:30 a.m.; Lakeland, 12:03 p.m., Kissimmee, 12:45 p.m. Between Tampa and Kissimmee the CSXT Special Instructions list nine locations where the maximum authorized speed is restricted to 40 to 75 mph.

Amtrak operating crews receive special notices, bulletins, or messages about events that affect the movement of their train. Such information items typically identify areas having temporary speed restrictions, areas where railroad personnel are working on or near the track, and areas where the train dispatcher has granted temporary control to a flagman. The notices do not necessarily advise Amtrak crews why a given area, or zone, is under a flagman's control. For example, the notices do not advise train crews that a flagman has been granted control of a zone for the purpose of protecting the crossing movement of an oversize vehicle. Crews cannot move a train into a zone that is under a flagman's authority without first contacting him, usually by radio, and obtaining permission to do so.

Oversize Move Permits and Procedures

Regulatory Requirements.--The State of Florida Uniform Traffic Control Section 316, "Moving Heavy Equipment at Railroad Grade Crossings," requires that operators of certain types of highway vehicles with low ground clearance notify railroads of each intended crossing at grade (see appendix E). The statute further states "... a reasonable time shall be given to the railroad to provide proper protection at the crossing." Officials for Rountree and CSXT both advised the Safety Board that their company was not aware of this requirement before the accident. Neither Federal nor State of Florida regulations specifically require that rail carriers provide protection at crossings.

State Permitting Procedures.--The State of Florida requires that motor carriers obtain a permit to operate vehicles exceeding maximum height, width, length, or weights on any State-maintained highway.

To obtain an overdimension/overweight permit, operators must first submit an Overload Permit Request (OPR) to the Permit Section of the Florida Department of Transportation

(FDOT) State Maintenance Office in Tallahassee, Florida. Applicants must provide the following information on the OPR form: name and address of operator; description of the load, including dimensions, axle spacings, and weights; number and size of tires on each axle; and an exact description of the route, including Federal, State, and County road numbers and city streets. Applicants must also include a map showing the route along State-maintained highways.

The permit section personnel then perform a design analysis of the highway structures, including bridges and box culverts, on the requested route. If they identify a problem with the route, the OPR is denied and the applicant must select and file a different route. The process continues until the permit section determines that the proposed route is satisfactory, at which time it assigns a "Move Request Number" to the OPR. Operators can file and the permit section can approve an OPR well in advance of the move. The operator then contacts the FDOT permit section shortly before the move to obtain the actual permit.

When the FDOT issues permits, it does not advise applicants that Florida law requires operators of certain low-clearance vehicles to provide railroads with advance notification of the applicant's intent to travel over grade crossings. An FDOT Permit Section official stated that if any terms or conditions of a permit are violated, the permit is invalid. The FDOT Permit Section issues about 90,000 permits per year.

Local Permits.--In addition to the FDOT permit, carriers must obtain permits from city and/or county agencies if the movement of the oversize vehicle might impact a structure(s) within their jurisdictions. For the Intercession City move, Rountree obtained permits from the City of Tampa and Hillsborough, Pasco, and Polk Counties.

Escort Requirements.--The FDOT requires an off-duty police escort for any vehicle and cargo more than 16 feet high. Before the Intercession City accident, escort officers were only required to obtain advance approval to perform the escort and to radio the FHP dispatcher at the onset of the trip, when they began escorting the overdimension load. The two off-duty FHP escort officers hired for the Intercession City trip had accompanied overdimension Rountree vehicles on previous occasions. They did not nor did FHP procedures require them to inspect the move permits issued to Rountree by the FDOT or other local agencies. (Information about postaccident changes to FDOT escort requirements appears later in this report.)

Other Requirements.--Figure 6 lists other typical FDOT restrictions. For the Intercession City trip, Rountree had to trim some trees along the route.

The CSXT Application Process.--To provide the railroad with a means of protecting train movements, CSXT issues *Right-of-Way: Passage* application form to over-dimension vehicle operators routing their moves over at-grade crossings. A fee assigned to the passage form covers the carrier's costs of providing a flagman. In the case of all passage forms issued to Rountree, CSXT charged \$200 per move.

The passage application form indicates the date, time, and affected location(s) of the

planned move. By signing the form, the applicant agrees to schedule the movement when it will not interfere with train operations, and to provide 24-hour notice of the move.

Based on the route shown on the application, CSXT annotates it with the names and telephone numbers of subdivision supervisors who will be affected by the move. The motor carrier is to contact all CSXT supervisors listed on the passage form to confirm the date and to arrange for needed assistance.

Rountree Procedures.--The regional manager selects the trip route for the modular unit. After defining the correct highway designations for the route, he advises his supervisor, a Rountree vice president, who then calculates the anticipated weight on each axle of the combination. The vice president is responsible for filing the OPR with and obtaining the move request number from the FDOT Permit Section. The regional manager is responsible for procuring and complying with city or county permit requirements, as well as arranging for passage over grade crossings.

<p>Permittee is responsible for verifying all vertical and horizontal clearances on the route.</p> <p>Permit is usually valid for only one trip and remains in effect for a limited number of days.</p> <p>Permit is valid from origin to destination on State-maintained roads only.</p> <p>Movement is prohibited when visibility is less than 1,000 feet.</p> <p>Requirements for size and placement of warning flags, signs, and warning lights are specified.</p> <p>Requirements for law enforcement escort are specified.</p> <p>Overhead utilities must be contacted if height exceeds 16 feet. Utilities may require a line crew to be in attendance.</p> <p>Mover shall be responsible and liable for accidents, damages, and injuries.</p> <p>Certain overwidth/overlength units are prohibited from operating on certain highways during rush hours.</p>

Figure 6. Common Florida move restrictions.

Previous CSXT Permits Granted to Rountree.--CSXT records indicate that prior to the Intercession City load, CSXT prepared four *Right-of-way: Passage* forms to Rountree to transport seven loads of turbine generators and accessories to various points in Florida between October 1, 1992 and March 9, 1993. Copies of three application forms issued to Rountree appear in Appendix D.

CSXT prepared the first Rountree application form post facto after finding an overdimension Rountree vehicle carrying a turbine engine stuck under the grade crossing cantilever signal on Faulkenburg Road in the Tampa area on October 1, 1992. A CSXT signals supervisor for the Tampa area overheard a radio report of the fouled crossing and proceeded to the scene even though the grade crossing was not in his territory. He asked the Rountree employee in charge of the move¹¹ for his *Right-of-Way: Passage* application. The Rountree regional manager replied that he didn't have a permit to cross the track, and had never obtained one before.

¹¹ The regional manager who later would be in charge of the Intercession City move.

After making arrangements to raise the cantilever signal support so that Rountree crews could get the vehicle off the track, the signals supervisor transported the Rountree manager to the CSXT Tampa office where the CSXT project engineer prepared a *Right-of-Way: Passage* application for Rountree's Faulkenburg Road crossing transit. When asked if Rountree's regional manager mentioned where the load was going, the signals supervisor stated, "No, he didn't really tell me where it was going....I thought there was a power plant (in or near) Zephyrhills¹², and I really didn't ask him where it was going."¹³

On October 2, 1992, the CSXT Tampa office prepared the second right-of-passage application for Rountree to transport three overdimension loads from Tampa on October 5, 6, and 7, 1992. The route for the load to be moved on October 5 ends at Highway 301; the routes for the loads to be moved on October 6 and 7 end at Faulkenburg Road. The actual destinations of the loads were Umatilla, Florida, Dade City, and Umatilla, respectively.

The CSXT signals supervisor reported that shortly after his initial contact with the regional manager, about 3 a.m. one morning¹⁴ he received a telephone call at home from the Rountree regional manager reporting that the CSXT flagman for a CSXT-permitted load had not arrived at the pier in Tampa and that Rountree was going to proceed without flagging protection. The signals supervisor told the regional manager not to move without a flagman, traveled to the pier, and flagged for Rountree only to the end of his territory in the Tampa area. He did not see a CSXT flagman from the adjoining territory meet the vehicle. The Tampa supervisor did not ask if the vehicle was going over any other tracks outside his territory, and the Rountree regional manager did not offer any such information. The Tampa supervisor later stated that he "... assumed that he [the Rountree regional manager] wasn't crossing the railroad anymore."

The signals supervisor stated that during one of his conversations with the Rountree regional manager:

I told him time and time again, don't go across the track unless you have somebody from the railroad there protecting it.... He said, 'it don't take me but about a minute to get across the tracks.' I explained to him . . . even at [a] protected crossing where you have crossing signals, the crossing signals is set for 30 seconds warning time. If a train is approaching and you're going across the track that 30 seconds will not give you time to get cleared. You cannot clear the track.

¹² Zephyrhills was in the Vitis subdivision of the Jacksonville subdivision, outside the signals supervisor's territory. The actual destination for the load was Dade City, Florida.

¹³ The Safety Board determined that in the case of this trip, the Faulkenburg Road crossing was the last highway-rail crossing on the route. However, Rountree crossed some tracks that were unprotected by CSXT and that were beyond the last point specified on the permits on at least two subsequent trips.

¹⁴ Although the signals supervisor could not recall the date, examination of the permits indicate this incident probably occurred on October 7, 1992.

On October 29, 1992, the CSXT Tampa office issued the third permit to Rountree to transport two overdimension loads on November 3 and 4, 1992. The permit itself does not list the load routes, but refers to two attachments, which are written on Rountree notepaper. Again, the last points indicated do not show the actual load destinations, Dade City and Umatilla. The first attachment showing the November 3 route ends at East Broadway and includes the notation "Your man will drop off here." The second attachment, which is for the November 4 load, indicates the route is the same with two extra crossings, one at Zephyrhills Bypass and the second at Highway 54. The attachment is annotated "...everything OK here" for the Zephyrhills Bypass crossing and "need to lift arm ... I will furnish crane ... " for the Highway 54 crossing.

On the October 29 permit, the CSXT Tampa office listed the name and telephone number of the signals supervisor in the Vitis subdivision as the point of contact to arrange to raise the cantilever signal support at the Highway 54 grade crossing.

On March 9, 1993, the CSXT Tampa office issued the fourth permit to Rountree to transport one overdimension load on March 17, 1993. The route indicated ends at the Highway 54 grade crossing, although the actual destination was Gainesville, Florida.

Each of the four single-page permits also show a 24-hour advance notification number to call to arrange for a flagman, the name and toll-free telephone number of the CSXT chief dispatcher, and the names and telephone numbers of the CSXT signals engineer and communications supervisor for the Tampa area (see figure 7).

The Intercession City Move

Route selection and OPR approval--The Rountree regional manager said that he began preparing for the Intercession City move in March 1993 by scouting area roadways for 1 1/2 days to determine an appropriate route. He decided that as far as practical the load bound for Intercession City would follow the same route as other similar shipments that Rountree had moved from Tampa, splitting off at the junction of Pasco County Road 54 and U.S. 98 east of Zephyrhills, Florida.

On November 9, 1993, a Rountree vice president met with KUA contractors at the Cane Island job site to discuss the details of the move. Neither the regional manager in charge of the Intercession City move nor a CSXT representative was present. A KUA contractor said that he asked the Rountree vice president if the transport vehicle would be able to traverse the elevated profile of the KUA Power Road grade crossing and the vice president assured him it would. He and another KUA contractor reported that the vice president told those attending that a CSXT flagman would be at all railroad grade crossings on the route.

Rountree's regional manager reported he last visited the KUA Power Road crossing on November 23, 1993. The roadway at the new crossing was complete. He said he anticipated having no problem getting over the new grade crossing.

Tampa, Florida, October 2, 1992
Date

RIGHT-OF-WAY: Passage

Division Manager
CSX Transportation
5656 Adamo Drive
Tampa, Florida 33619-3240

CSX TRANSPORTATION, INC.

Application is hereby made by Rountree Transport & Rigging, Inc.

3580 S.W. 46th Ave., Ft. Lauderdale, FL 33314
the undersigned, hereinafter called "Licensee," for permission to move ~~a house~~ across track and right-of-way property of CSX Transportation, Inc., hereinafter called "Licensor," at the following location(s):

Date and Time	Location
<u>10/5/92 9:00 AM</u>	<u>Hookers Pt. to 22nd St., north to Adamo Dr., East to 50th St., north to Columbus Dr., east to Hwy 301</u>
<u>10/6/92 "</u>	<u>Hookers Pt. to 22nd St., north to Adamo Dr., east to 50th St., north to Columbus Dr., east to Faulkburg</u>
<u>10/7/92 2:00 AM</u>	<u>" " "</u>

It is fully understood and agreed that said movement(s) shall be made at the entire cost and expense of Licensee, including the cost of flag protection, as specified in the Operating Rules of Licensor, and the expense of any wireline or crossing signal changes necessary to accomplish said movement(s). Licensee agrees to schedule said movement(s) at an hour which will not interfere with the train operations of Licensor and provide, without exception, 24 hour notice to Licensor as to time and date of movement. (Telephone (813) 664-6372). Roadmaster R.J. Kinder

In consideration of the granting of this application, Licensee hereby assumes and agrees to indemnify and hold harmless Licensor, its successors and assigns, from and against all loss, costs, expense, including attorney's fees, claims, suits and judgments whatsoever, in connection with injury to or death of any person or persons, or loss or damage to any property arising at or in any way connected with said movement(s).

A ~~non-refundable~~ ^{six} deposit of ~~two~~ ^{six} hundred dollars (~~\$200.00~~ ^{\$600.00}) is hereby posted to cover anticipated expenses incurred by Licensor.

(Company Name) Rountree Transport & Rigging, Inc.
(Address) 3580 S.W. 46th Ave
(City, State Zip Code) Ft. Lauderdale, FL 33314
(signature) Jack L. Jones
Jack L. Jones, Reg. Manager
Name and Title
10-2-92
Date

Cys: McGaha
Mgr. Misc. Billing & Collections - Check for \$ _____ attached.
Mr. R. J. Green, Chief Dispatcher - 1/800/232-0149.
Mr. M. R. Spoorbe, Engineer Signals - 813/626-4027.
Mr. R. H. Billingsley, Supv. Communications - 813/626-9492.
R.J. Kinder, Roadmaster

FORMS: DE-House Moving Application Sample (revised 11/03/89)

80 percent of original size

Figure 7.--The Right-of-Way: Passage Permit issued to Rountree on October 2, 1992, is a single-page version that shows the CSXT telephone numbers at lower left.

According to FDOT Permit Office records, on November 19, 1993, the FDOT denied the first OPR that Rountree filed in October 1993 for the Intercession City movement because of a potential problem with a highway structure on the proposed route. After Rountree modified the route, the FDOT Permit Section approved the OPR on November 23, 1993.

The Rountree regional manager reported that after the Florida DOT Permit Section approved the OPR, he was traveling over the State-approved route and discovered that a bridge had been removed and replaced with a temporary steel bridge.¹⁵ Believing that the temporary bridge might slow or prevent passage of the turbine, he defined a different route, which he listed when he applied for and received the Polk County permit on November 29, 1993. He did not notify the Florida DOT Permit Section of his intent to deviate from the State-approved route.

CSXT Permit.--According to the Rountree regional manager, he phoned the CSXT Tampa office in March 1993 and discovered that the project engineer with whom he had dealt previously had retired. When he asked the new CSXT project engineer for a right-of-passage permit to take a turbine from Tampa to Intercession City, the project engineer told him he was not familiar with the permit form. The regional manager said he read the title of the form, *DE-House Moving Application Sample (revised 11/03/89)*, from a prior permit. The CSXT project engineer responded that he did not know where the form was, but that he would try to find it. The Rountree regional manager said he twice called to remind the project engineer that he would be coming in to pick up the permit before the Intercession City trip.

The Rountree regional manager says he told the CSXT project engineer he was transporting a turbine from Tampa to Intercession City. He did not identify any roadways he intended to travel or tracks he would cross and the project engineer did not ask for any route information.

The CSXT project engineer says that he remembers getting a telephone call from Rountree, probably in October, telling him the plans for the Intercession City move, and that he arranged to complete the paper work.

On November 22, 1993, a Rountree administrative assistant went to the CSXT Fertilizer Business Unit office to pick up the CSXT permit. She showed the new project engineer an earlier permit listing a Tampa area route, which he used as a guide for filling out the Intercession City permit.

The CSXT project engineer later confirmed her account, stating, "At the time I was new in the capacity as a project engineer and never really handled any of these movements, permits, before." He said that he had looked in the former project engineer's files to find "something to give me some idea how to do it." In making out the new permit, he said, "I took them [Rountree] through what I thought was either to their final destination or at least through the Tampa

¹⁵ The temporary bridge was installed on November 19, 1993, 4 days before the FDOT Permit Section approved the Rountree OPR. A Permit Section official said that had his personnel known about the temporary bridge, which usually has a wooden pile substructure, they would have rerouted the Rountree vehicle because the load-carrying capacity of the substructure was uncertain.

Division and since there wasn't anymore there [on the previous permit], I didn't follow through to see if it was going anywhere else."

The Rountree regional manager stated he was not concerned that the CSXT permit did not list all the planned grade crossings on the Intercession City trip. He said that the CSXT project engineer with whom he had dealt in the past had been interested only in Tampa area crossings, and had displayed no interest in crossings farther away. The Rountree manager also was not concerned about the omission of one Tampa area crossing because it was just a switching track and not a mainline. He expected the flagman to leave the convoy after this switching track because it was the location at which flagmen had left previous convoys. The CSXT permit did not list the accident crossing. The Rountree manager said that this omission did not surprise him because the crossing "was on KUA property, not public property," therefore the KUA crossing was not subject to permit requirements. He considered Old Tampa Highway the end of the permitted route and the KUA Power Road simply a job site entrance. Further, he considered it the responsibility of KUA to ensure safe delivery to its job site, which he felt included providing train-related information.

The route description on the Intercession City permit (see figures 8a and 8b) is identical to the route on the October 2, 1992, permit. Like the previous four single-page permits, it contains the advance notification telephone number to call to arrange for a flagman. Unlike the four previous permits, the project engineer used a two-page form for the Intercession City permit. On the single-page permits issued for previous moves, the toll-free telephone number of the CSXT chief dispatcher, and the names and telephone numbers of the CSXT signals engineer and communications supervisor for the Tampa area appear at the lower left corner of the document. On the two-page form, this notification information is on the second page. On March 9, 1995, the project engineer informed the Safety Board that he could not recall if he gave the second page of the permit to the Rountree administrative assistant. On March 14, 1995, the project engineer signed an affidavit stating that he provided both pages, including the second page containing the telephone numbers, to the administrative assistant. The Rountree administrative assistant stated that she was given only the first page of the permit.

Postaccident Revisions.--On January 10, 1995, an official from CSXT's engineering department advised the Safety Board that as a result of the Intercession City accident, on July 13, 1994, CSXT introduced Form 4493-(6/94), *Permit For The Transportation and Movement of Unusual Vehicle Or Object Across Track(s) At Grade*, for use throughout the CSXT system. The new form requests not only the name and address of the applicant and the time and date of the planned crossing, but also a description and the dimensions of the object being transported, and a description of the crossing, including city, county, state, DOT/AAR crossing inventory number, rail subdivision, rail MP, and the name of the roadway. CSXT requires that applicants prepare a separate form for each crossing they will traverse. The form does not ask that the applicant supply the final destination of the load. It requests that the applicant provide an emergency contact number and has a block for the CSXT division engineer's telephone number. The form does not include any other CSXT telephone numbers.

During a December 1994 deposition taken in conjunction with litigation stemming from

Tampa, Florida, Nov. 22, , 1993

RIGHT-OF-WAY : Passage

Division Manager
CSX Transportation
5656 Adamo Drive
Tampa, Florida 33619-3240

CSX TRANSPORTATION, INC.

Application is hereby made by ROUNDTREE TRANSPORT & RIGGING, INC.
the undersigned, hereinafter called "Licensee", for permission to move a
house across track and right-of-way property of CSX Transportation, Inc.,
hereinafter called "Licensor", at the following location(s):

ESTD. HOOKERS POINT TO 22ND ST., NORTH TO ADAMO DR., EAST TO
11-29-93 11:00PM 50TH ST., NORTH TO COLUMBUS DR. EAST TO HWY. 30

Date and Time	Location
---------------	----------

It is fully understood and agreed that said movement(s) shall be made at the entire cost and expense of Licensee, including the cost of flag protection, as specified in the Operating Rules of Licensor, and the expense of any wireline or crossing signal changes necessary to accomplish said movement(s). Licensee agrees to schedule said movement(s) at an hour which will not interfere with the train operations of Licensor and provide, without exception, 24 hour notice to Licensor as to time and date of movement, telephone (813) 664-6372. RAMON MORA R.D. KING

In consideration of the granting of this application, Licensee hereby assumes and agrees to indemnify and hold harmless Licensor, its successors and assigns, from and against all loss, costs, expense, including attorney's fees, claims, suits and judgments whatsoever, in connection with injury to or death of any person or persons, or loss or damage to any property arising at or in any way connected with said movement(s).

CHECK NO. 4595
REC'D. 11-22-93

A ~~non-refundable~~ deposit of two hundred dollars (\$200.00) is hereby posted to cover anticipated expenses incurred by Licensor.

(Company Name) ROUNDTREE TRANSPORT & RIGGING, INC.

(Address) 3850 S.W. 46TH AVE.

(City, State, Zip) FT. LOUDERDALE, FL 33314

(Signature) _____

Jose E. Jimenez Sr. Asst.
Name and Title

(Date) Nov. 22, 1993

80 percent of original size

Figure 8a.--The first page of the *Right-of-Way: Passage* Permit for the Intercession City trip.

FORMS: DE-House Moving Application
Sample (revised 11-03-89)

cys: Mgr. Misc. Billing & Collections - Check for \$ _____ attached
Mr. R.J. Green, Chief Dispatcher - (800) 232-0149
Mr. M.R. Spoores, Engineer Signals - (813) 626-4027
Mr. R.H. Billingsley, Supv. Communications - (813) 626-9492
Roadmaster _____

Figure 8b.--Top of the second page to the *Right-of-Way: Passage Permit for the Intercession City trip*. Actual second page is full size.

the Intercession City accident, the CSXT project engineer involved in the Intercession City move produced a different *Permit For The Transportation and Movement of Unusual Vehicle(s) Or Object(s) Across Track(s) At Grade* than the CSXT Jacksonville Headquarters provided the Safety Board. The permit has different information than the July 13, 1994, permit, and includes spaces for listing all crossings, the "exact movement route," and the final destination. In a March 1995 interview with the CSXT project engineer, he stated that he has not received any official permit or instructions from CSXT. He said that he had "kind of pieced some stuff together in developing the form after the accident." This form has no CSXT telephone numbers.

After the accident, KUA contracted another motor carrier to deliver a replacement turbine. When the motor carrier notified CSXT of its intended route, a CSXT signals supervisor accompanied the motor carrier over the entire route before the intended move and listed each of the grade crossings by street or highway, railroad MP, DOT/AAR number, and the nearest city. He then notified all CSXT divisions about the crossings along the intended route. The replacement turbine was delivered in May 1994 without incident.

Medical and Pathological Information

Most of the injured were transported by ambulance or bus to area hospitals, where they were treated for minor abrasions, lacerations, and contusions. Five of the six seriously injured were evacuated by two air ambulance helicopters.

Three passengers sustained serious injuries from being tossed against walls or tables. A woman, age 81, suffered fractured ribs and a concussion; a woman, age 77, suffered facial fractures; and a man, age 64, suffered facial lacerations and a head injury. The assistant engineer suffered hip and ankle fractures. An assistant conductor received a fractured sternum and neck injuries from striking a table and wall in the lounge. The truck driver, who suffered lacerations

to his right ear and forehead and a cervical compression, was kept in the hospital for observation more than 48 hours.

Other train crew members who were admitted for further treatment included the engineer, who received cervical and lumbar trauma along with knee contusions; an OBS attendant, who received a fractured nose after striking a seat in the last car; and an OBS attendant, who received fractured ribs from striking a table in the lounge car.

Survival Aspects

Postaccident Survey.--Within 30 days of the accident, the Safety Board contacted 53 passengers who were treated at local hospitals to obtain their observations about events shortly before and after the accident. Of those contacted, 17 responded. Their observations are summarized in figure 9.

Lounge Car Injuries.--At the time of the accident, 12:40 p.m., 18 to 20 people were in the lounge (figure 10). In addition to the two injured OBS attendants noted above, an OBS attendant complained of minor injuries after being thrown against a lounge table and a lounge attendant received minor burns after being splashed with hot coffee. One passenger sustained chest trauma from striking tables, and another passenger received a head contusion after striking his head on a lounge partition wall. A passenger in a pedestal seat at table 11 received spinal trauma after she reportedly was thrown against and over the table. She said a broken chair also struck her right leg. Another passenger at table 11 was thrown more than 8 feet, striking table 10 with his left temple.

Most passengers indicated that the only warning they felt or heard prior to impact was the application of emergency braking.

Most passengers were seated. Those facing forward were thrown forward and sustained mostly head and chest injuries from striking a seat back, seat back tray or dining table. Passengers reported several latched seat back trays dropped open.

Those thrown to the floor struck their lower extremities on seat backs and seat supports. Several said their legs became pinned underneath the coach seats when they were thrown to the floor and they were unable to move until train crewmembers freed them by releasing the seat locks and rotating the seats.

Passengers were able to use the exits from most coaches. However, after the train came to rest, several coaches were tilted, which precluded using the step devices that OBS personnel usually place on station platforms to facilitate exit from the train. Responders stacked railroad ties at some coaches to form steps at the exits. Other coaches were so tilted that emergency response personnel had to lower several passengers from the windows.

Figure 9. Passenger survey responses.

Emergency Procedures

Background.--Historically, railroads performed their own wreck-clearing following a derailment. During the past 2 decades, rail carriers increasingly have used private contractors, working under railroad supervision, to clear wreckage debris while the rail crews perform minor rerailing and damaged equipment loading. Some rail contractors became involved in the wreckage clean-up business because they were former pipeline contractors, and as such, owned large crawler tractors with side booms, which are used in pipe laying. According to spokespersons for

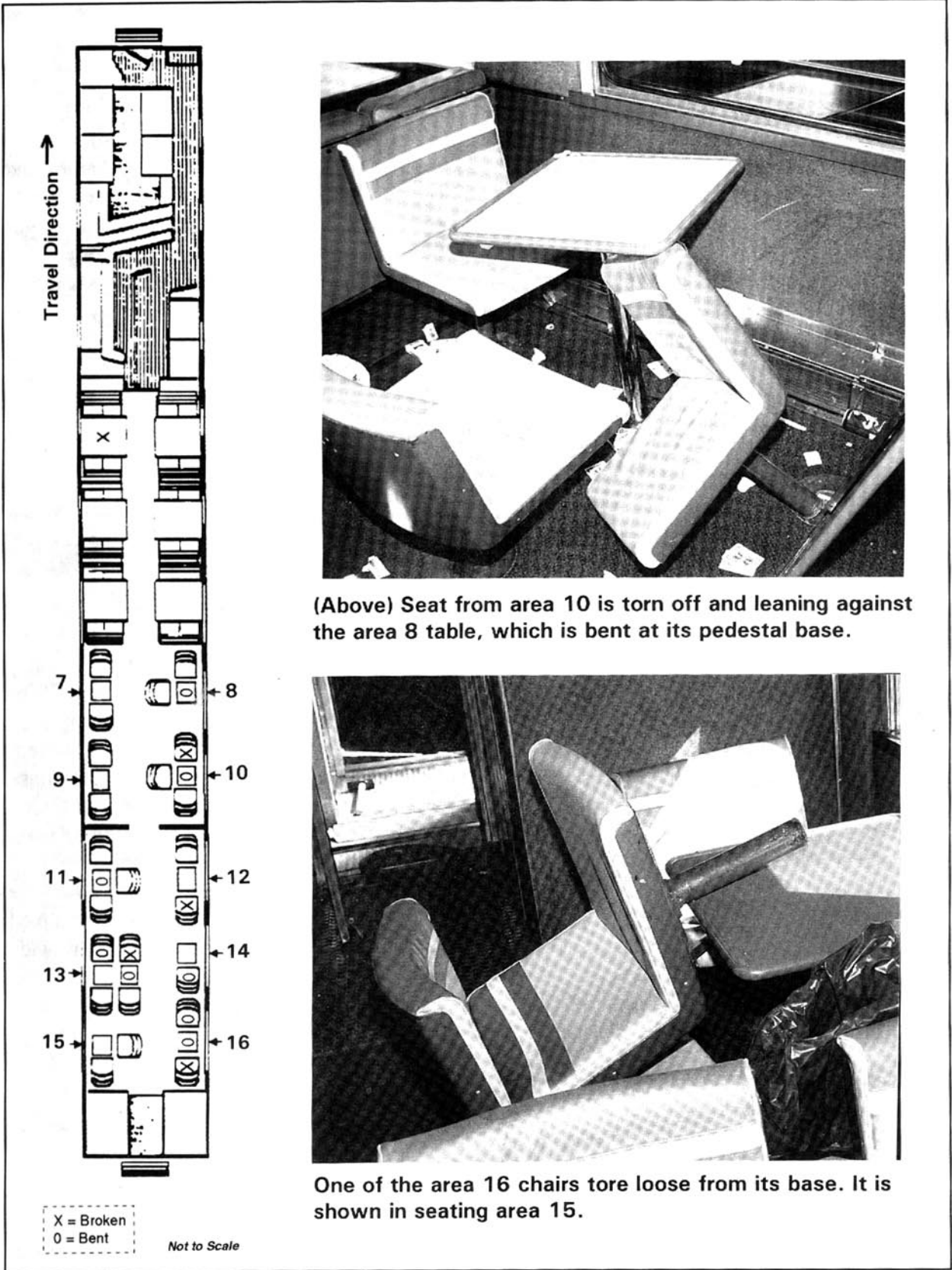


Figure 10.--Lounge car interior. Graphic shows location of damaged pedestal seats and tables.

the rail industry, contracting a major portion of the wreckage-clearing operations is more cost effective for the rail carriers.

Postaccident Events--After arriving at the accident scene at 3 p.m., the CFPL field engineer advised the IC about the two high-pressure liquid mainlines. The IC indicated he knew nothing about the pipelines.¹⁶ The CFPL field engineer then called his supervisor in Tampa and told him that debris and railcars were near and over both pipelines. The CFPL manager and engineer supervisor traveled to the derailment site, arriving about 5:40 p.m. The CFPL manager advised a CSXT division superintendent whom he believed to be in charge of wreckage removal and recovery not to operate heavy machinery over or near the pipelines because of the possibility of fire or explosion.

Wreck-clearing operations began about 9 p.m. The Safety Board received conflicting reports from CFPL and CSXT regarding the practices that CSXT followed during clean-up operations. For example, the CFPL manager stated that when using a crane to move a railcar, CSXT crews set it down on the ground above the 10-inch-diameter pipeline. The CSXT contractor said that he had 14 years experience in operating heavy equipment and in installing pipelines and that his crews did not move the railcar in such a way as to endanger the pipeline. When CFPL excavated the pipelines, it found no visible indications of damage to the exterior of the pipe.

CSXT Emergency Procedures--The CSXT emergency procedures manual states that the first priority for its Operations Center dispatchers following an accident is "to promptly notify appropriate local emergency response agencies when an emergency situation exists. These include city or county, fire, police, civil defense and other similar agencies." After notifying local emergency agencies, the Operations Center is to notify appropriate CSXT division/system officers and departments, the Florida Department of Transportation, and the National Response Center. To facilitate emergency notification of local emergency response agencies, the CSXT Operations Center maintains a list of emergency phone numbers for each county with a "main track and sidings" map showing mile posts and the nearest station.

CSXT emergency procedures do not define the derailment of a train in an area occupied by a pipeline as an emergency condition. In addition, CSXT has no established company-wide emergency notification procedures for notifying users of its right-of-way following a derailment or other incident. The CSXT Managing Director stated, "At an accident scene, a supervisor may notify utilities directly or request that such notification be made by the CSX Transportation Operations Center." He added that no additional notification was necessary at the Intercession City accident, because "pipeline and utility locator service personnel were present during the clean-up operations."

¹⁶ One week before the accident, an Osceola County fireman attended a training session on pipeline emergency response actions that was sponsored by CFPL. The CFPL gave the fireman a map of area CFPL pipelines, which he placed in the battalion commander's vehicle. He had not briefed others at the fire station about proper response actions or about the two CFPL pipelines before the accident occurred. The IC subsequently retrieved the map and examined it at the scene about 2 hours after his arrival.

The CFPL was notified about 3 p.m. as a result of the actions of an individual CSXT employee. At 2:38 p.m. on November 30, 1993, an assistant roadmaster from the CSXT Orlando office called the Florida one-call system and informed the center operator that a train had derailed 0.3 of a mile south of milepost 816 and that a crew was on-site with heavy machinery to rerail train cars.¹⁷ The one-call operator checked the map grids for the emergency site and by 3:03 p.m. notified the four underground facility operators in those grids: CFPL, General Telephone, MCI Telemarketing, and Williams Communications.

CFPL Emergency Procedures.--In its employee emergency procedures manual, CFPL identifies potential hazards posed to pipelines in a railroad right-of-way and classifies the derailment of a train as an emergency condition. Upon being notified of a derailment near its pipelines, CFPL procedures call for promptly assessing the effect on the pipeline, promptly dispatching pipeline personnel to the emergency site, and taking actions to minimize an emergency condition, including closing block valves, shutting down the operation of the pipeline, reducing the pressure in the line, and controlling any released product. The procedures note that it is important that the CFPL be notified promptly of emergency conditions, such as train derailments over its lines, so that the company can direct operator personnel to take necessary emergency actions. The CFPL emergency manual contains several telephone numbers for employees to call in the event of a pipeline emergency. It does not contain the CSXT toll-free telephone number.

In addition to its employee emergency procedures manual, CFPL also has a "spill emergency call list" that contains the telephone numbers of emergency agencies and organizations such as the CSXT to be contacted in the event of an emergency involving CFPL pipelines. The CFPL developed the call list in 1991 and updates it at least annually. The CSXT telephone numbers on the spill list include the roadmasters at Tampa and Taft and the toll-free number on both the one-page and two-page CSXT *right-of-way: passage* permits.

The CFPL Manager acknowledged that CFPL and CSXT have not worked together in a coordinated effort to define what actions are necessary to protect each another's facilities during emergency response activities.

State Plans and Procedures.--The Florida Department of Community Affairs, Emergency Management Division approved the June 1992 Osceola County, Florida Disaster Plan (PEP) as meeting all Federal and State emergency planning requirements. Also, the Osceola County Emergency Management Division has developed standards operating procedures (SOPs) for incident commanders at railroad incidents involving either passenger or freight trains.

In determining potential hazards following passenger train derailments, the SOP states,

¹⁷ The roadmaster told the Safety Board that he established this policy based on his past experience and because he knew that pipelines were in the area. He said his railroad maps did not show pipelines in the vicinity. He was not aware of any CSXT procedure to inform the one-call system of derailments, and had not been directed to notify either the one-call system or CFPL directly.

"[There is] little or no hazardous materials problem other than the train's own fuel." Also, the SOP advises to use the train crew as a resource, in that the "train crew can assist with knowledge of train, hazards, victim location." The focus of the SOP is emergency-response manpower and material requirements along with identification and evacuation guidelines for hazardous materials train incidents. For freight trains, the SOP states "Identify any hazardous materials involved. Train crew, train waybill, tank car design, placards on car(s), obvious visual or odor identification."

The Administrative Chief of the Osceola Department of Fire and Emergency Services stated that CSXT had provided his department with two telephone numbers by which his personnel could contact the railroad in the event of an emergency. He believed that one number, which had been provided to the department several years before the Intercession City accident, was for the nearby CSXT trainyard at Taft, Florida. He said that CSXT provided him with a toll-free number after the Intercession City accident. The toll-free number given to the Osceola chief is the same number on both the one-page and two-page *Right-of-Way: Passage* permits issued to Rountree.

Past Accidents--On May 12, 1989, a Southern Pacific Transportation Company freight train derailed near San Bernadino, California, destroying the entire train and destroying or extensively damaging 11 homes located in the adjacent neighborhood. Two train crewmembers and 2 local residents were killed.

Because a 14-inch high-pressure liquid pipeline was buried beneath the wreckage site, local officials evacuated the residents of nearby homes for 24 hours as a precautionary measure until the owner, Calnev Pipe Line Company¹⁸ (Calnev), determined that the derailment did not damage the pipe. Wreckage clearing and cargo removal operations continued for several days after families returned to the area.

About 8:05 a.m. on May 25, 1989, 13 days after the train derailment, the pipeline ruptured at the derailment site, releasing gasoline under pressure, which spewed over homes in the immediate area and then ignited. The resulting fires killed 2 residents, injured 19 others, 3 seriously, and destroyed 11 homes and 21 motor vehicles. Three other homes received moderate fire and smoke damage.¹⁹

The Safety Board's investigation determined that the pipeline's 4 to 6 feet of earth cover protected it during the derailment, and that the pipeline was mechanically dented and gouged by earth-moving equipment. This damage most likely occurred during removal of the train wreckage or the train's dry bulk cargo which was spilled at the site, and that the catastrophic failure occurred at one of the points where this damage was located.

¹⁸ Calnev and CFPL are both owned by GATX.

¹⁹ For further information, see Railroad Accident Report *Derailed of Southern Pacific Transportation Freight Train on May 12, 1989, and Subsequent Rupture of Calnev Petroleum Pipeline on May 25, 1989, San Bernardino, California* (NTSB/RAR-90/02).

The Safety Board concluded that neither the railroad nor the pipeline operators' surveillance of excavating equipment operations was sufficient to prevent damage to the pipeline. Consequently, it recommended that the Research and Special Programs Administration (RSPA):

P-90-25

Require, in conjunction with the Federal Railroad Administration, operators of pipelines located on or adjacent to railroad rights-of-way to coordinate with the railroad operators the development of plans for handling transportation emergencies that may impact both rail and pipeline systems and then to discuss the plan with affected State and local emergency response agencies.

Concurrently, the Safety Board recommended that the FRA:

R-90-25

Require, in conjunction with the Research and Special Programs Administration, railroad operators to coordinate with operators of pipelines located on or adjacent to their railroad rights-of-way the development of plans for handling transportation emergencies that may impact both the rail and pipeline systems and then to discuss the plan with affected State and local emergency response agencies.

In March, 1993, DOT/FRA revised its *Hazardous Materials Emergency Response Plan Guidance Document for Railroads*²⁰ by issuing a special notice, developed by FRA and RSPA, concerning pipelines that might be affected by a railroad accident. The Notice cautioned that many railroad rights-of-way contain underground high-pressure hazardous materials pipelines that may be damaged by a derailment, heavy equipment operations, digging activities, or other activities that disturb the right-of-way. The Notice emphasized the need for railroads to:

Actively coordinate their emergency response activities with pipeline operators to assess possible damage due to the incident and to prevent damage during response and cleanup operations... Railroad emergency response plans should include information on underground pipelines which could be damaged by a rail incident. This information should include location, materials carried, and emergency numbers for the pipeline operator.

On March 2, 1994,²¹ RSPA issued an Advisory, which appeared in the Federal Register, informing natural gas and hazardous liquid pipeline operators and State pipeline safety program managers about the FRA Special Notice, and encouraging pipeline operators to work with railroad operators in mutually undertaking the development of plans for handling emergencies involving both rail and pipeline systems.

²⁰ See DOT FRA ORD-93/09.

²¹ See 59 Federal Register 10035.

As a result of the actions taken by the FRA and RSPA, the Safety Board classified Safety Recommendations R-90-25 and P-90-25 as "Closed-Acceptable Alternate Action."

In the course of this investigation, the Safety Board contacted officials of several class I carriers, all of whom stated their companies never received the FRA special notice and became aware of it only after reading the RSPA pipeline advisory in the Federal Register. As a follow-up measure, the Board contacted an FRA official, who stated that the FRA mailed the 1993 special notice to "chief operating officers" using addresses on a list of carriers charged FRA user fees. He indicated several mailings were returned because the addresses were those of the carriers' attorneys, who handled this aspect of the carriers' business. The FRA official said that the FRA has no record of receipt or action taken.

Tests and Research

Speed Recorders.

Locomotive.--The speed indicator on the locomotive reportedly was destroyed by impact forces and torch damage incurred when CSXT contract crews cut the locomotive apart to facilitate clearing the wreckage from the railroad right-of-way. Investigators sent one paper strip chart from the locomotive's Barco/Bach-Simpson speed recorder to the Safety Board Vehicle Performance Division laboratory for readout and evaluation. Laboratory personnel inspected the paper strip chart visually and found diesel fuel had stained several portions of the recording area, including the area immediately after the point where the final speed was recorded. Because the speed indicator must be functional to conduct postaccident calibration of the speed recording system, the Safety Board could not verify the validity of the recorded speed.

According to the engineer, he was operating about 79 mph before the accident and had not noted any deficiencies with the locomotive speed indicator. He said that he checked the speed indicator about 8 to 10 miles before the collision site (MP A-824.8) and noted an indicated speed of 81 mph. The FRA regulations at 49 CFR 229.117(1) require that a locomotive built since December 31, 1980, be equipped with a speed indicator that is accurate to within +/- 3 mph for speeds of 10-30 mph and +/- 5 mph for speeds in excess of 30 mph.

Equipment Defect Detector.--A wayside equipment defect detector records and annunciates a safety message to the operating crew that includes noted defects followed by the noted length, speed, and total axles of the train. On the day of the accident, the wayside defect detector at MP A-819.8, about 13,800 feet from the collision crossing, annunciates and recorded a speed of 83 mph.²² The engineer stated that he noted the segment of the message announcing "no defects," but not the annunciates speed.

²² The defect detector manufacturer specifies a +/- 2 mph degree of accuracy for the speed recorder. The CSXT and Amtrak operating officials state that the speed indicated by an equipment defect detector is not used to evaluate train operations or for train speed checks. No Federal regulations require a defect detector to record a train's speed.

Sight Distance.--The Safety Board conducted two tests to determine the distance at which Amtrak operating personnel could discern the presence of a large object on the KUA Power Road grade crossing. In the first test, investigators placed a CSXT truck in the middle of the grade crossing and approached the crossing at 10 mph in a locomotive. At a distance of 1,385 feet from the crossing, the engineer could see an object on the track, but could not distinguish what it was. Thirty-five- to 40-foot-high trees about 25 to 30 feet south of the track parallel the curve and are about 800 to 1,500 feet from the KUA Power Road crossing. At a distance of 1,169 feet from the crossing, the engineer could plainly see the truck.

In the second test, investigators lined up five vehicles so that they extended on either side of the track. At 1,518 feet from the crossing, the engineer could see the farthest vehicle north of the crossing, but could not distinguish what it was. At 1,269 feet from the crossing, he could see the strobe light on the vehicle parked on the north side of the crossing.

Stopping Distance.--At the Safety Board's request, Amtrak calculated the estimated distances in which the train as configured could reasonably be expected to stop using the weights of the locomotive and cars, brake types, calculated emergency braking forces, and a given speed of 79 mph. Calculations indicated that the brake rate would be about 4.20 feet/second² with a stopping distance of 1,954 feet. Amtrak advised that the calculation is subject to a 15 percent tolerance.

Track.--Investigators checked the track for level, gauge and line, and found all the elements were within the required standards for a FRA class 4 track.

Crossing Signals.--Title 49 Code of Federal Regulations, Part 234 Section 234.5 Paragraph (c), requires that an active highway-rail grade crossing warning system indicate the approach of a train at least 20 seconds prior to the train's arrival at the crossing. On December 1, 1993, investigators participated in tests of the undamaged crossing signal equipment and found that the relays, crossing gate, and lights functioned as designed.

Radio Test (Dispatcher).--A radio test was performed on December 1, 1993, at approximately 12:25 p.m. from a CSXT vehicle located 10 feet west of the main track in the middle of KUA road crossing. The dispatcher immediately responded and the reception was good both receiving and sending. The dispatcher was toned in through the Davenport, Florida, Tower, and he responded immediately. The dispatcher is located in the carrier's control center in Jacksonville, Florida.

Time-Distance Calculations.-- A train traveling at 79 mph, which the engineer reported was the speed of the train as it approached the crossing, would give about 18.6 seconds audible warning of its approach before reaching the crossing if the whistle was sounded at the whistle post 2,160 feet from the crossing. A train traveling at 79 mph would reach the crossing in 28.6 seconds from the location of the crossing signal electronic start 3,317 feet from the crossing.

Grade Crossing Survey.--The American Railroad Engineering Association (AREA) and the American Association of State Highway and Transportation Officials (AASHTO) standard²³ for roadway vertical profiles at railroad/highway grade crossings state in part:

Acceptable geometrics necessary to prevent drivers of low-clearance vehicles from becoming caught on the tracks would provide the crossing surface at the same plane as the top of the rails for a distance of 2 ft outside of the rails. The surface of the highway should also not be more than 3 inches higher nor 6 inches lower than the top of the nearest rail at a point 30 ft from the rail unless track superelevation dictates otherwise....²⁴

The Safety Board was present when CSXT surveyed the KUA Power Road grade crossing and determined that the top of the north rail was superelevated 0.27 feet above the top of the south rail, with a 5.4 percent grade.

Using the +3 inch to -6 inch parameters set out in the AREA/AASHTO guidelines and assuming a constant +5.4 percent grade, the surface of the roadway 30 feet north of the north rail should have been between 1.12 ft and 1.87 ft higher than the rail. Calculations based on the survey data indicate the roadway surface 30 feet north was 1.032 ft higher than the top of the north rail, or 0.088 feet below the lower tolerance stated in the standards.

Using the same parameters and assuming a constant -5.4 percent grade, the roadway surface 30 feet south of the south rail should have been between 1.37 ft and 2.12 ft lower than the rail. Calculations based on the survey data supplied indicate the roadway surface was 1.5 feet lower than the top of the south rail, within the tolerances stated in the guidelines.

Other Information

Railroad-Highway Crossing Inventory and Numbering System.--In 1972, the DOT submitted a Report to Congress with recommendations for a central collection system of grade crossing information. Through the cooperative efforts of the Federal Highway Administration (FHWA), FRA, AAR, individual states, and individual railroads, a national rail-highway crossing inventory data file was established by 1974. The program is largely voluntary. Based on submissions of the DOT-AAR crossing inventory forms and update information provided, the FRA maintains a database containing information describing the physical and operational characteristics of public and private at-grade rail-highway crossings. Each crossing is assigned a unique identification number having six numeric characters and an alphabetic character. Either

²³ *A Policy on Geometric Design of Highways and Streets, 1990*, American Association of State Highway and Transportation Officials, pp. 842-843. Adopted as a Federal Highway Administration standard in April 1993.

²⁴ The standards do not further define "unless track superelevation dictates otherwise." Given the context of the phrase, the Safety Board presumes it means that when one rail is superelevated above the other, the measurement reference line may be moved from level to a point at the same plane as the top of the rails.

the State or the railroad can voluntarily provide updated information to the FRA about crossing changes, such as installation of new traffic control devices.

A tag bearing the DOT/AAR crossing inventory number is nailed or, in the case of a temporary tag, strapped to a crossing fixture. Typically, the tag is put on the crossbuck or flashing light pole. The tags are considered temporary and designed to last a maximum of 5 years. Posting of permanent metal tags or stenciling the number on the post is also voluntary. As of June 1994, about 99 percent of all highway-rail grade crossings, or 280,503, had been assigned DOT/AAR numbers and were in the national inventory.

Other State Crossing Safety Measures.--Florida's law requiring that operators of low clearance vehicles provide railroads carriers with advance notice of intended grade crossings is based upon Section 11-703 of the 1992 revision of the Uniform Vehicle Code and Model Traffic Ordinance.²⁵ (See Appendix E.) Fifteen States have similar requirements. (See Appendix F.) The Safety Board reviewed several programs to identify the various measures that other States use to ensure crossing safety.

New York is the only State that requires the carrier to obtain a railroad permit before the highway permit is issued. Two States, Texas and Delaware, have established toll-free notification programs for the public to use to report problems at grade crossings.

State Escort Policies.--Florida Highway Patrol (FHP) officers may perform certain off-duty activities for pay while in uniform and while driving State-assigned vehicles, provided their troop commander approves the employment in advance. Commonly-approved off-duty employment may include providing escort for oversized vehicles and providing security at public gatherings. When using State-assigned vehicles, officers must provide proof of liability insurance coverage and reimburse the State for mileage driven.

As mentioned earlier, escort officers were only required to radio the FHP dispatcher at the onset of the trip, when they began escorting the overdimension load before the Intercession City accident. After the Intercession City accident, the FHP adopted a new FHP escort policy that requires FHP officers applying to escort overdimension and certain hazardous materials vehicles to include the following information in the application:

1. A safety plan that includes a description of the material being transported, vehicle dimensions, a route map, a trip timetable, proof that appropriate county and municipal authorities along the route have been advised of the movement, and a listing of telephone numbers for emergency service agencies.
2. Authentication that the transporter operator has obtained all required permits, and the approval and emergency telephone numbers of railroads, utility companies, and private entities whose activities might be affected by the movement.

²⁵ National Committee on Uniform Traffic Laws and Ordinances, 405 Church Street, Evanston, Illinois 60201.

3. A listing of any safety apparatus installed on the load-bearing vehicle.
4. Copies of any FDOT, county, and/or municipal government permits.
5. A liability release signed by an officer of the company contracting for the services of escorting officers.

If the planned route of the escort extends beyond the geographical limits of any troop, copies of the plan shall also be supplied to other troop commanders along the path of the escorted vehicle. Before initiating the escort or permitting the load-bearing vehicle to be placed in motion, officers shall inspect to verify compliance with dimensional specifications outlined in the safety plan and safety requirements identified on any permit.

Officers shall also verify the validity of the operator's driver license, and ensure the operator is in compliance with Florida laws and regulations governing commercial vehicle safety and hazardous material laws and regulations.

Copies of the safety plan shall be maintained in each Highway Patrol vehicle assigned to the escort, with at least two vehicles assigned to each escort. At least one of the escorting vehicles must be equipped with a cellular telephone supplied by the entity requesting escort services. If an escort is disrupted by breakdowns or other unforeseen circumstances, any changes to the original safety plan must be approved by the troop commander, and railroads, utilities, and other private entities must be notified of such changes.

ANALYSIS

In the following analysis, the Safety Board lists the factors and conditions that it was able to exclude as being causal or contributory in this accident, recapitulates the accident from a causal perspective, and addresses each of the following safety issues identified in this accident investigation:

1. Rountree oversight of oversize moves;
2. Oversize move coordination;
3. State permitting requirements and procedures;
4. Emergency notification procedures;
5. Wreck clearing coordination;
6. Overdimension vehicle escorts; and
7. Lounge car seat support design.

Exclusions

Evidence indicates that the Amtrak crew was qualified to perform their duties in accordance with operating rules and hours of service requirements. The condition of the track, operation of the wayside signals, crossing devices, mechanical condition of the train, and the roadway profile did not cause or contribute to the accident.

At an engineer-reported speed of 79 mph on a clear signal, the calculated stopping distance was 1,954 (+/- 15 percent) and the available sight distance was about 1,300 feet. The Safety Board concludes that when the traincrew first sighted the Rountree vehicle, they did not have sufficient distance to stop the train in time to avoid the collision.

The Rountree vehicle driver and tiller operator did not experience any mechanical problems with their vehicle from Tampa to the KUA facility near Intercession City. Inspection and examination of Rountree's vehicle did not reveal any missing or broken components that were not the result of the accident. Safety Board interviews with the Rountree crew revealed that it was stopped on the grade crossing to make adjustments to clear the track, not because of any mechanical malfunctions. The Safety Board concludes that the Rountree vehicle had no pre-existing mechanical problems or conditions that caused or contributed to the accident.

The Safety Board found that the vertical profile of the KUA Power Road at the grade crossing was consistent with the AASHTO and AREA recommended practices.

The negative results of drug and alcohol testing on samples obtained from the truck driver indicate substances played no role in his actions at the time of the accident. Likewise, the negative drug testing results for the other three Rountree employees indicate those drugs did not influence their respective roles in the accident. No alcohol testing was conducted on the three Rountree employees and no testing of any kind was done on the train crewmembers; however, observations of their actions after the accident would indicate that they were not influenced by drugs or alcohol. The Safety Board concludes no evidence indicates that any Rountree or Amtrak employees involved in the accident were under the influence of alcohol or other drugs.

The Accident

The Safety Board believes that from the pretrip phase to postaccident response and cleanup, the various transportation entities directly and indirectly involved in this accident failed to cooperate effectively to promote general public safety.

Pretrip Phase.--During the planning phase of the trip, the Rountree regional manager did not advise CSXT of all crossings that he would be traversing on the trip to Intercession City. Although Florida statute requires that operators of low-clearance vehicles notify railroad operators of each intended crossing, the Rountree regional manager later stated that he was not aware of the statute. The FDOT currently has no procedure for communicating this requirement to vehicle operators applying for overdimension, low-clearance moves.

To protect train movements, CSXT requires that over-dimension vehicle operators apply for passage protection by the railroad if the movement includes traversing at-grade crossings. However, the company's *Right-of-Way: Passage* application form used before this accident did not request that the applicant list the crossings or the final destination of the vehicle. Further, the CSXT employees preparing the Intercession City and previous applications for the Rountree regional manager took no proactive measures to determine the entire vehicle route so protection could be arranged for all crossings. The CSXT signals supervisor for the Tampa area maintains he stressed that the Rountree regional manager arrange for protection at any intended crossing. However, when he accompanied the regional manager for Rountree's reported first application, he did not ask the Rountree manager where the vehicle was going or advise him that the form should list all rail crossings on the route. In the case of this trip, Rountree did not traverse any more highway-rail crossings.

When the Rountree regional manager contacted the CSXT Tampa office to apply for passage protection for the Intercession City move, the project engineer with whom he had dealt previously was no longer there. The new project engineer was not familiar with the application form. When tasked with preparing the *Right-of-Way: Passage* form, he could not find any copies of the form or information about preparing it in his office files and did not get advice or direction about completing the form from peers or supervisors when he called them. The project engineer therefore prepared the Intercession City move application form by copying information from a previous passage application form that Rountree provided as a sample.

The Rountree regional director also arranged for an FHP escort as required by the FDOT. In the course of the trip, he deviated from the FDOT-approved route, which voided his FDOT moving permit. However, because the FHP did not require that escorts follow prescribed measures to ensure the safety of the vehicle's movement, the off-duty patrolmen accompanying the Rountree vehicle did not know that the convoy was not following the permitted route or that Rountree had not arranged for CSXT to protect crossing movements.

Problems at the Site.--While the Rountree regional manager had visited the KUA Power Road crossing on two occasions, the equipment supervisor, who was responsible for the movement of the vehicle, had not. At no time did the equipment supervisor or any other member of the vehicle crew attempt to determine in advance if they might experience complications at the KUA access road. Further, they were not prepared to contact CSXT should an emergency arise. Guy wires blocked the crew's first attempt to turn onto the KUA facility access road. On their second attempt, they swung onto KUA Power Road and continued across the track until they bottomed out. While the crew shimmed the goose neck with the cargo deck straddling the track, the Rountree regional manager tried to call a CSXT trainmaster in Orlando only to get no answer. He then called a CSXT toll-free number and got a menu, which prompted him to hang up in frustration. He called the toll-free number a second time and was in the process of listening to the menu items when he heard the train whistle blow. Shortly thereafter, Amtrak train 88 broadsided the vehicle and turbine.

Postaccident Activities.--When the train derailed, the locomotive and several other cars came to rest above and/or near two high-pressure hazardous liquid pipelines. Neither Osceola County nor CSXT emergency response procedures include determining the presence of or potential endangerment to pipelines or other buried facilities following a derailment. When notified of the accident, the CSXT dispatcher contacted the appropriate CSXT officials indicated on the CSXT Division Emergency Notification List and the National Response Center in accordance with CSXT dispatch operating procedures. He was not required to contact nor did he have a method of identifying operators of facilities buried in the derailment area.

Osceola County emergency responders were on scene within 11 minutes of the collision. Having no knowledge of the presence of the pipelines and no safety training stressing precautions to take should they observe a pipeline marker, they did not take any measures to protect themselves or the accident victims from a potential pipeline breach. Further, no one recognized the need to notify the IC of the presence of pipeline markers. Almost all train passengers were evacuated by 1:15 p.m. and the front-end crew were extricated from the locomotive by 1:37 p.m. Photographs taken shortly before 2 p.m. show people, including firefighters, standing next to a pipeline marker, however, no one alerted the IC about the presence of the pipelines until CFPL employees arrived about 3 p.m. Further, the earliest notification that CFPL received was at 1:50 p.m. from an off-duty CFPL employee who happened to see a news broadcast about the accident. The notification that CFPL received from the one-call system about 2 1/2 hours after the collision occurred only because an individual CSXT employee has a personal policy of notifying the Florida one-call system when the rail company dispatches excavation equipment to a site. By this time, CSXT had begun contacting clean-up contractors who would use bulldozers, cranes, and other heavy equipment that could potentially damage the pipelines.

Rountree Oversight of Oversize Moves

Grade Crossing Flagging Arrangements.--Rountree arranged to have CSXT flag crossings only in the immediate Tampa area. Consequently, CSXT personnel protected only 8 of 13 crossings on the Intercession City trip. These arrangements were similar to those made for four previous Rountree trips from Tampa to various destinations beginning in October 1992. The Safety Board concludes that Rountree had an obligation to ensure that all the crossings it intended to traverse were protected before proceeding across them, and failed to do so.

Without a flagman, Rountree lost the direct coordination with CSXT necessary to provide safe passage over all five unflagged crossings. Rountree's regional manager tried to contact CSXT minutes before the collision, however, the telephone numbers that he called did not connect him with a CSXT representative who could stop or slow the train.

According to KUA officials, a Rountree representative assured KUA during a planning meeting that CSXT flagmen would be at all grade crossings. However, the Rountree regional manager reported that he considered the KUA Power Road crossing to be a job site entrance and therefore considered KUA responsible for ensuring the delivery. No evidence indicates that a Rountree representative ever expressed this viewpoint to KUA personnel. Rountree's expectation that KUA would be responsible for ensuring safe delivery after the vehicle entered the KUA Power Road was the first of several assumptions preceding the collision.

The Rountree regional manager said that he believed that KUA officials were in contact with CSXT, and that the next train was due at the crossing at 1 p.m. based on statements made by KUA personnel when the Rountree vehicle approached the crossing and again when it was over the track. The KUA personnel who allegedly made these statements deny making them.

Regardless of what KUA officials may or may not have told the Rountree regional manager, the responsibility for deciding whether to pull the vehicle over the track was Rountree's alone. The belief that a train would not arrive until 1 p.m. may have led Rountree officials to assume erroneously that they had sufficient time to clear the track. Without first determining the cargo deck height necessary to clear the track, the transporter was at risk of bottoming out, which is, in fact, what happened.

Because Rountree did not arrange for a flagman at the KUA crossing, their vehicle and load were not protected. The Safety Board concludes that Rountree failed to ensure that it was safe to proceed over the KUA Power Road grade crossing before doing so.

Route Selection.--Rountree obtained FDOT approval for a route to Intercession City that the regional manager later changed when he discovered a temporary bridge on the approved route. Rountree's decision to change the route appears to be justified; an FDOT official stated that the Rountree vehicle would not have been routed over the temporary bridge. However, because Rountree failed to apply for a new route, the FDOT did not have the opportunity to calculate whether the highway structures on the new route could support the oversize load. The Safety Board concludes that Rountree may have increased the risk of damage or even the

collapse of a highway structure by traveling on an unapproved route.

Work Schedule.--The project supervisor, truckdriver and tiller operator were on duty on Monday, November 29 for about 12.5 hours. They slept Monday evening for about 4.5 to 5.5 hours and went back to work that same night. By the time of the accident, 12:40 p.m. on November 30, they had been up about 14.5 hours. This equates to only 4.5 to 5.5 hours of sleep in a 31.5 hour period. The regional manager worked about 12 hours on November 29, slept 2 hours, and then worked 15.5 hours before the accident. This equates to 2 hours of sleep in a 27.5 hour period.

The schedules of all four Rountree employees allowed for a limited and likely inadequate amount of sleep on the day before the accident. Such hours are fatigue producing and exceed the Hours of Service rules that apply to the truckdriver and the tillerman. Research has shown that humans need approximately 8 hours of sleep per night, though individual differences range from about 5 to 10 hours.²⁶

Sleep losses can degrade individual performance capabilities. In a recent accident report²⁷, the Safety Board cited a NASA Ames Research Center report, in which the authors addressed the effect of sleep loss, stating "Sleepiness can be associated with decrements in decision making, vigilance, reaction time, memory, psychomotor coordination, and information processing (e.g., fixation on certain material to the neglect of other information)." "For example, the individual may react slowly to information, may incorrectly process the importance of the information, may find decision making difficult, may make poor decisions, may have to check and recheck information or activities because of memory difficulties. This performance degradation can be a direct result of sleep loss and the associated sleepiness and can play an insidious role in the occurrence of an... accident."

The Safety Board has highlighted the potential deleterious effects of sleep loss in past accidents and continues to have serious concerns about the impact of long work hours. However, despite the long work hours of the Rountree crew, the role of sleep loss in this accident is difficult to quantify. It appears that the decisions to cross the tracks without a flagman, and without determining the trailer height necessary to accomplish it, closely correspond to procedures used by the crew on previous trips and earlier portions of this trip. Nevertheless, the Safety Board is concerned that their failure to make appropriate decisions may have been influenced by a lack of sleep and the number of hours they were on duty.

²⁶ Dinges, D.F., "The nature and timing of sleep." *Transactions & Studies of the College of Physicians of Philadelphia*, 1984. Ser5:6(3), pp 177-206.

²⁷ For additional information, read Airline Accident Report, *American International Airways Flight 808, Douglas DC-8-61, N814CK, Uncontrolled Collision with Terrain, Guantanamo Bay, Cuba, August 18, 1993.* (NTSB/AAR-94/04.)

Oversize Move Coordination

The first reported contact between Rountree and CSXT occurred when a Rountree vehicle became stuck under a signal bridge in October 1992. The CSXT signals supervisor who responded to the scene reported that Rountree didn't tell him where the load was going, and he didn't ask because he assumed that it was going a power plant facility in the Zephyrhills area. The permit that CSXT issued post facto lists only the crossing where the Rountree vehicle became stuck.

Shortly after the first contact, the same signals supervisor responded to an early morning call from the Rountree regional manager advising him that Rountree was going to proceed without a flagman when the assigned flagman did not show at the appointed time and place. The signals supervisor said that on this and the earlier occasion, he emphasized to the regional manager never to travel over an unprotected crossing. However, in this instance, he flagged for Rountree only to the end of his assigned territory and didn't ask whether the vehicle was going over any other crossings.

On the CSXT application for the load transported on November 4, 1992, Rountree wrote that the planned route included two additional crossings outside the Tampa area. Concerning the first of these two crossings, Rountree indicated "everything OK here."

The contacts between Rountree and CSXT for trips between October 1992 and November 1993 apparently followed the same general pattern: Rountree did not provide complete information regarding all the crossings on its route, and the CSXT personnel in Tampa with whom Rountree dealt did not ask what was the final destination of the load or whether the route included crossings outside the Tampa area.

In a conversation with the CSXT signals supervisor, the Rountree regional manager reportedly implied that he felt the small amount of time it took his vehicle to cross over a track did not warrant obtaining a flagman. This would indicate that despite reported warnings to the contrary, the Rountree regional manager did not have a real appreciation for the hazards involved at grade crossings.

The Rountree regional manager's action also suggests that he viewed obtaining permits, including the CSXT *Right-of-Way: Passage* application, as merely a necessary requirement with no safety implications. For example, he did not comply with FDOT requirements concerning permits when he deviated from the State-approved route, potentially placing highway structures in jeopardy.

Communications again broke down between the motor carrier and the railroad when Rountree attempted to obtain a permit for the Intercession City move. The Rountree regional manager maintains that he did advise CSXT of the destination, which the CSXT project engineer denies. However, the CSXT project engineer responsible for permitting was new to the job and not familiar with the forms or permitting process. When presented with a previous permit to use as an example, he copied the information shown, which was only through the Tampa area.

Although it was the responsibility of Rountree to provide CSXT information about the entire route of its vehicle, including all rail crossings, this accident investigation identified another problem in the permitting process. The Safety Board believes that the CSXT permitting procedures do not take precautions to ensure that information provided by the motor carrier is accurate and complete. The Board recognizes that the CSXT is not required by Federal or State regulations to coordinate moves with motor vehicles. The Board acknowledges the efforts of CSXT to improve the safety at highway-rail crossings by requiring that operators of oversize low-clearance vehicles obtain a permit to arrange for a flagman. However, the Safety Board believes that CSXT needs to improve the permitting process and its forms. The current form does not provide space for the motor carrier to list the crossings along the route. Over 99 percent of all crossings have DOT/AAR identification numbers. Requiring motor carriers to indicate the DOT/AAR number or other identifying features of all rail crossings they intend to traverse would improve the communication and coordination between the CSXT and the motor carrier. The CSXT should require applicants to supply the final destination and clearly identify all crossings on the planned route. Further, the Safety Board believes that CSXT has a responsibility to make certain that the CSXT employees issuing permits are familiar with the process to ensure that travel over the CSXT system is as safe as possible. The Safety Board concludes that the CSXT permitting procedures do not ensure that the information provided by the motor carrier is accurate and complete.

As part of this investigation, the Safety Board contacted five other Class 1 rail carriers to determine whether and what type of procedures they had for coordinating the transit of over-dimension, low-clearance highway vehicles across railroad tracks and, if so, how their procedures compared with those of CSXT. The rail carriers contacted included Burlington Northern Railroad, Consolidated Rail Corporation, Florida East Coast Railroad, Norfolk Southern Railroad, and Union Pacific Railroad.

The officers of three carriers said that their companies arrange for protection of such highway movements on an ad-hoc basis through local railroad officials. They said they have no formalized systemwide procedures for coordinating overdimension, low-clearance vehicle crossing movements. They also stated that they have never experienced any problems with such movements and have no records of accidents or incidents involving such movements.

The other two rail carriers have formalized procedures for protecting overdimension low-clearance vehicle crossing movements. One carrier not only checks the route indicated on applications against a company map showing all grade crossings, but also requires that the applicant (or his agent) accompany a railroad employee on a pre-move inspection trip during which they drive the route to determine whether any specialized protection is required or whether any crossing grade might pose a problem.

The officers of all five rail carriers emphasized that for the railroads to protect oversized vehicle movements at grade crossings, the motor carrier must first contact and advise the rail carrier of the move. They further stressed that the safest method of protecting such movements is to have a rail carrier employee, such as a flagman, on site and communicating with the rail dispatcher to coordinate control of the site.

From interviews, the Safety Board discovered that the CSXT's procedures for providing protection to motor carriers at grade crossings are typical of other Class 1 rail carriers. Further, although other major carriers stated they have never experienced an incident like the Intercession City accident on their property, the Safety Board believes that rail carriers should review their procedures for coordinating overdimension, low-clearance vehicle crossing movements for the benefit of public safety. The Safety Board believes that the Association of American Railroads and the American Short Line Railroad Association should inform their members of the facts and circumstances of this accident and recommend that they review their procedures for coordinating the transit of overdimension, low-clearance highway vehicles across their rights-of-way to ensure the safety of such movements.

State Permitting Requirements and Procedures

When issuing permits, the FDOT does not advise applicants that Florida law requires operators of certain low-clearance vehicles to provide railroads with advance notification of the applicant's intent to travel over grade crossings. The Safety Board concludes that during the Intercession City permit process, the FDOT did not ensure that Rountree had notified railroads of the grade crossings that it intended to traverse. The Safety Board believes that the American Association of State Highway and Transportation Officials should urge the FDOT and the other States' permitting authorities having this requirement to routinely advise permittees that notifying the railroads is a condition of the State permit's validity. Further, the Safety Board believes that those States that do not require low clearance overdimension/overweight operators to provide railroads with advance notification of travel over crossings should revise their permitting requirements to do so.

The Specialized Carriers and Rigging Association²⁸ publishes the "Permit Manual of State Permits and Canadian Regulations," which contains a State-by-State listing of State permitting agencies and an analysis of overdimension or overweight vehicle permitting requirements in each jurisdiction. The Manual currently does not indicate the States that require operators of low-clearance vehicles to provide railroads with advance notification of their intent to travel over grade crossings. The Safety Board believes that including such State requirements in the manual will serve to educate operators of this requirement, and help to minimize incidents involving low clearance vehicles becoming stuck on unprotected grade crossings.

The Safety Board also believes that The National Committee on Uniform Traffic Laws and Ordinances should revise Section 14-112, "Permits for Excess Size and Weight," of the Uniform Vehicle Code to require State agencies to notify carriers of the provisions contained in Section 11-703, "Moving Heavy Equipment at Railroad Grade Crossings," of the Uniform Vehicle Code.

²⁸ Specialized Carriers and Rigging Association, 2750 Prosperity Avenue, Suite 620, Fairfax, Virginia 22031, (703) 698-0297.

Emergency Notification Procedures

CFPL began a shutdown of its pipelines at 1:54 p.m., about an hour and 12 minutes after the accident, because an off-duty CFPL employee saw a report of the accident on television, assumed that the CFPL pipelines may have been in the area, and reported the accident to on-duty CFPL personnel. CSXT did not initiate notification to other users of its right-of-way at the accident site until 2:38 p.m., when an assistant roadmaster in CSXT's Orlando office notified Candy/UNCLE of the accident. He notified the one-call system on his own initiative, not in response to any established company-wide CSXT emergency notification procedures.

Had the CSXT Operations Center had emergency notification procedures regarding pipeline hazards, its personnel could have notified not only CFPL, but also the IC while he was en route to the site, thus ensuring that responders received prompt information about the location of pipelines, materials involved, and need to notify the affected utilities.

The Safety Board addressed the issue of CSXT's emergency notification procedures in two other recent investigations. Following the derailment of an Amtrak passenger train operating on CSXT track at Lugoff, South Carolina, on July 31, 1991,²⁹ emergency responders were delayed when CSX dispatchers used an outdated telephone list for notification. In its investigation report, the Safety Board recommended that CSXT:

Maintain an up-to-date emergency response telephone list. (Class II, Priority Action)(R-93-20)

On March 9, 1995, CSXT's Vice President of Safety And Operations Support notified the Safety Board that CSXT had completed new local emergency number contact notebooks for each division in August 1994 and computerized the division notebooks in September 1994. Because CSXT completed the recommended action, the Safety Board is classifying Safety Recommendation R-93-20 "Closed--Acceptable Action." The Safety Board notes, however, that the contact notebooks do not contain hazardous liquid pipeline emergency numbers or identify locations where hazardous liquid pipelines are present.

The Safety Board again addressed the adequacy of CSXT's emergency notification procedures during its investigation of the derailment of a Ringling Brothers and Barnum & Bailey Circus Blue Train near Lakeland, Florida on January 13, 1994.³⁰ This accident occurred on the same segment of track 30 miles west of the Intercession City accident and derailed railroad equipment threatened the integrity of hazardous liquid pipelines owned by CFPL. Again, CSXT did not notify CFPL of the accident and the potential threat to its pipelines. CFPL learned of the accident about 1 hour after the derailment from two different sources, a county utility coordinator and a CFPL employee's wife, who heard the news of the derailment on the radio.

²⁹ *Derailment and Subsequent Collision of Amtrak Train with Rail Cars on Dupont Siding of CSX Transportation Inc., at Lugoff, South Carolina, on July 31, 1991.* (NTSB/RAR-93/02)

³⁰ *Derailment of a Ringling Bros. and Barnum & Bailey Circus train on January 13, 1994.*(NTSB/RAR-95/01)

The Safety Board found that CSXT's emergency telephone list did not identify operators of pipelines on or adjacent to its railroad right-of-way that could be damaged by a rail incident.

The Safety Board therefore recommended that the CSXT:

Include on its emergency response telephone list those operators that have pipelines on or adjacent to your right-of-way that could be damaged by a rail incident.
(Class II, Priority Action) (R-95-8)

On April 28, 1995, CSXT wrote the Safety Board in response to Safety Recommendation R-95-8 stating that it (CSXT) was updating its emergency response telephone notification list to include the locations of all pipelines on or adjacent to its rights-of-way and operators to contact should a rail incident occur. The CSXT indicated that it should have the pipeline emergency numbers added to its notification list by July 1995. The Safety Board is pleased that CSXT has taken this action and classifies Safety Recommendation R-95-8 "Open--Acceptable Action" pending completion of the program.

Wreckage Clearing Coordination

On-scene Problems.--After arriving on-scene, CFPL personnel marked the locations of its pipelines through the derailment site before wreckage clearing operation began. CFPL representatives cautioned CSXT personnel in charge of clean-up operations about the need to protect the pipelines, the hazards posed by the presence of the pipelines, and the need to protect them from damage during recovery operations.

CSXT and CFPL presented conflicting views regarding the potential hazard to the pipeline during wreckage clearing operations. Regardless of the actual hazard potential in this accident, the Board is concerned about efforts to maintain the safety of emergency response, railroad, and pipeline personnel and property during wreckage clearing operations. A breach in a hazardous liquid pipeline during wreckage recovery operations would result in the release of a flammable product, which, if ignited could injure nearby workers and destroy or damage nearby property. Even if not ignited, release of this material would delay the safe resumption of railroad and pipeline operations through an affected area for days or even weeks while the environment is restored.

Similar complaints and coordination problems also arose between railroad and pipeline on-scene personnel during the wreckage clearing operations at Lakeland. Following that accident, neither CSXT nor CFPL took actions to determine the reasons for the problems that arose during wreckage clearing. The Safety Board concludes that the lack of cooperative action plan between CSXT and CFPL contributed to a break-down in communication during wreck-clearing operations. The Safety Board believes that CSXT and CFPL should jointly develop a plan for effective on-scene coordination that would ensure the protection of pipelines and other facilities buried within the railroad right-of-way so as to abate the risk to on-scene personnel and the public. Further, CSXT should cooperate with pipeline operators in its other operating areas to develop a similar cooperative plan.

The need for all railroads and pipelines to actively coordinate their emergency response activities was recommended to the rail industry in a March 1993 FRA special notice and to the pipeline industry in a March 1994 RSPA pipeline advisory, the latter of which was printed in the Federal Register. Many Class I rail carriers were not aware of the FRA special notice until they read about the RSPA advisory in the Federal Register. From interviews, the Safety Board determined that several Class I carriers have included information about the recommended actions in their emergency response plans. The Safety Board notes that none of the carriers indicated that they have included training of railroad personnel or contractors who supervise or oversee wreck-clearing operations in their plans.

Risk Identification.--In formulating immediate emergency actions, the only potential hazard that on-scene emergency responders readily identified and closely monitored was the diesel fuel leaking from the locomotive. No emergency responder or CSXT employee in the derailment area noted the pipeline markers and reported the presence of the pipelines to the incident commander. The CFPL had provided the Osceola County Fire Department with information about the location of the pipelines, however, a fireman had put the documents in the fire chief's vehicle without telling him. Consequently, the incident commander was not aware of the pipelines until a CFPL representative arrived on-scene about 3:05 p.m., 2 hours, 23 minutes after the accident.

Although the Florida Department of Community Affairs, Emergency Management Division, approved the June 1992 Osceola County Disaster Plan as meeting all Federal and State emergency planning requirements, the standard operating procedures developed for incident commanders responding to freight and passenger train incidents or derailments do not include determining the presence of or potential endangerment to pipelines or other buried facilities within the railroad right-of-way.

The Safety Board concludes that Osceola County emergency responders failed to determine and assess the risks posed by potentially hazardous pipelines at the accident site. The Safety Board believes that Osceola County should revise existing risk identification standard operating procedures for railroad incidents to require that responders immediately determine whether pipelines or other potentially hazardous facilities are present at the site, and assess the risks posed by any facilities when formulating initial emergency response plans. When a determination is made that such facilities pose a potential risk, such standard operating procedures should emphasize the need for an incident commander to notify the facility operators and to continue monitoring and maintaining protective control measures at the site both during the initial emergency response and during subsequent wreckage removal and recovery operations.

The Safety Board believes that the State of Florida Division of Emergency Management in coordination with hazardous liquid and gas pipeline operators and railroads should establish procedures for prompt notification of all involved parties including public safety officials following a transportation accident and establish comprehensive plans for monitoring and maintaining protective control measures during wreck-clearing operations.

Overdimension Vehicle Escorts

Before the Intercession City accident occurred, policies and procedures for obtaining approval for off-duty FHP officers to perform escort services for overdimension vehicles varied little from those required for obtaining approval for providing off-duty security at a public gathering. The FHP was only expected to control highway traffic along the route. After the accident, the FHP extensively revised its escort approval requirements; the Safety Board believes these revisions should minimize the possibility of future similar occurrences in Florida.

During its investigation of this accident the Safety Board contacted several States and determined that requirements for providing escort of overdimension vehicles vary widely. Some jurisdictions, like Florida, permit (or require) off-duty police personnel to provide escort services while others use on-duty officers. Other jurisdictions don't use police personnel, but instead permit (or require) private professional escort services, usually with minimum qualification and training requirements established by the lead police agency in the jurisdiction.

Although the type of organization providing overdimension vehicle escort services may vary among the several jurisdictions, the Safety Board believes that those firms or agencies providing such services should ensure that the vehicle being escorted is in compliance with all applicable requirements for each jurisdiction. In the 16 States that require that low-clearance vehicle operators notify railroads in advance of the intent to travel over grade crossings, escorts should ensure that such advance notification has been given.

The Safety Board believes that the International Association of Chiefs of Police and the National Sheriff's Association should advise their membership of the facts and circumstances of this accident and request that members whose activities include providing escort for overdimension vehicles, or which exercise oversight of private organizations providing overdimension vehicle escort, review their policies and procedures to ensure that those responsible for performing the escort ensure that the overdimension vehicle operator is in compliance with all applicable permit and advance notification requirements, and has the information and the communications capability to contact railroad, utility, and other private entities along the vehicle's planned route in the event of a change in plans or an emergency.

Lounge Car Seat Design

In the Amtrak Heritage lounge car, most passengers sustained minor injuries when they were thrown into car tables/seats. At least two lounge car passengers were injured when they were struck by displaced pedestal seats. During the derailment, the seat columns on four pedestal seats separated from the floor attachment flanges allowing the seats to be projected forward.

Had the pedestal seats collapsed or buckled along the pedestal support column, the potential for injury would have been reduced. The Safety Board concludes that separation at the weld connecting the base and column of the pedestal seats in the lounge car contributed to passenger injuries.

In a letter dated April 13, 1995, Amtrak advised the Safety Board that all Heritage lounge cars are expected to be out of service in the first quarter of 1996. The Safety Board believes that as an interim measure Amtrak should inspect all Heritage lounge cars still in service to identify and correct weld deficiencies in the pedestal seat floor attachment. Further, should lounge cars be refurbished before being retired, Amtrak should modify the pedestal seats to mitigate passenger injuries.

CONCLUSIONS

Findings

1. The AMTRAK crew was qualified to perform their duties in accordance with operating and hours of service rules.
2. The condition of the track, operation of the signals, and the mechanical condition of the train did not cause or contribute to the accident.
3. When the traincrew first sighted the Rountree vehicle, they did not have sufficient distance to stop the train in time to avoid the collision.
4. The Rountree vehicle had no preexisting mechanical problems or unusual conditions that caused or contributed to the accident.
5. No evidence indicates that any Rountree or Amtrak employees involved in the accident were under the influence of alcohol or other drugs.
6. Rountree had a statutory duty to provide advance notice to CSXT of all highway-rail crossings it intended to traverse before proceeding across them, and failed to do so.
7. Rountree failed to ensure that it was safe to proceed over the KUA Power Road grade crossing before doing so.
8. Rountree may have increased the risk of damage or even the collapse of a highway structure by traveling on an unapproved route.
9. The CSXT permitting procedures do not ensure that the information provided by the motor carrier is accurate and complete.
10. CSXT's procedures for providing protection to motor carriers at grade crossings are similar to those of other Class 1 rail carriers.
11. During the Intercession City permit process, the FDOT did not ensure that Rountree had notified the railroads of the grade crossings that it intended to traverse.
12. The lack of a coordinated action plan between CSXT and CFPL resulted in untimely notification of the pipeline operator, and a breakdown in communication during wreck-clearing operations.
13. Osceola County emergency responders failed to determine and assess the risks posed by potentially hazardous pipelines at the accident site.

14. Separation at the weld connecting the base and column of the pedestal seats in the lounge car contributed to passenger injuries.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the accident was the failure of Rountree Transport and Rigging, Inc. to notify CSXT in advance of its intent to cross the railroad track and to ensure through CSXT that it was safe to do so. Contributing to the accident were deficiencies in the permitting processes of the CSXT and the Florida Department of Transportation that resulted in a lack of appropriate guidance for permitting officials, oversize, low-clearance vehicle operators, and escort personnel.

RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board makes the following recommendations:

To the American Association of State Highway and Transportation Officials--

Inform your members of the facts and circumstances of the Intercession City, Florida, accident, and urge that they require operators of low clearance, overdimension/overweight vehicles to provide railroads with advance notification of travel over grade crossings. Further, recommend that your members revise their permit documents to state that compliance with this notification requirement is a condition of permitting. (Class II, Priority Action) (H-95-7)

To the American Gas Association--

Advise your members of the pipeline safety issues identified in the Intercession City, Florida, accident report, and urge them to work with railroad operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (P-95-31)

To the Interstate Natural Gas Association of America--

Advise your members of the pipeline safety issues identified in the Intercession City, Florida, accident report, and urge them to work with railroad operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (P-95-32)

To the American Public Gas Association--

Advise your members of the pipeline safety issues identified in the Intercession City, Florida, accident report, and urge them to work with railroad operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (P-95-33)

To the American Petroleum Institute--

Advise your members of the pipeline safety issues identified in the Intercession City, Florida, accident report, and urge them to work with railroad operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (P-95-34)

To Central Florida Pipeline Corporation--

Cooperate with the CSXT and any other railroads in your operational areas to develop a program to notify the railroad when pipeline accidents endanger railroad operations. (Class II, Priority Action) (P-95-35)

To the Association of American Railroads--

Inform your members of the facts and circumstances of the Intercession City, Florida, accident and recommend that they review their procedures for coordinating the transit of overdimension, low-clearance highway vehicles across their rights-of-way. (Class II, Priority Action) (R-95-24)

Advise your members of the safety issues identified in the Intercession City, Florida, accident report, and urge that they work with pipeline operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (R-95-25)

To the American Short Line Railroad Association--

Inform your members of the facts and circumstances of the Intercession City, Florida, accident and recommend that they review their procedures for coordinating the transit of overdimension, low-clearance highway vehicles across their rights-of-way. (Class II, Priority Action) (R-95-26)

Advise your members of the pipeline safety issues identified in the Intercession City, Florida, accident report, and urge them to work with pipeline operators in developing plans for handling emergencies involving both rail and pipeline. (Class II, Priority Action) (R-95-27)

To the National Railroad Passenger Corporation--

Inspect all Heritage lounge cars still in service to identify and correct separation problems between the base and pedestal column of the pedestal seat. Should lounge cars be refurbished before being retired, modify the pedestal seats to mitigate passenger injuries.(Class II, Priority Action) (R-95-28)

To the Osceola County (Florida) Emergency Management Division--

Revise your standard operating procedures for a railroad incident to include immediately determining whether pipelines are present and whether they may pose a risk during the initial emergency response effort and subsequent wreckage removal operations. (Class II, Priority Action) (R-95-29)

To the State of Florida Division of Emergency Management--

In coordination with hazardous liquid and gas pipeline operators and railroads, establish procedures for prompt notification of all involved parties, including public safety officials, following a transportation accident and establish comprehensive plans for monitoring and maintaining protective control measures during wreck-clearing operations. (Class II, Priority Action) (P-95-36)

To CSX Transportation Corporation--

Revise your permitting process and forms to ensure that overdimension vehicle operators provide load and complete route information so that CSX Transportation Corporation (CSXT) can ensure protection; ensure that CSXT employees issuing permits are familiar with the process and include a staffed 24-hour CSXT telephone number on the permit forms. (Class II, Priority Action) (R-95-30)

Cooperate with Central Florida Pipeline Corporation and any other pipelines in your operational areas to develop a program to notify the pipelines when railroad accidents endanger pipeline operations. (Class II, Priority Action) (R-95-31)

Develop, in coordination with hazardous liquid and gas pipeline operators, procedures for coordinating emergency response and wreckage clearing operations with public safety officials to ensure that the actions of its employees and its contractors do not endanger personnel safety or the facilities of others on or adjacent to the railroad right-of-way. (Class II, Priority Action) (R-95-32)

To the Specialized Carriers and Rigging Association--

Advise your members of the facts and circumstances of the Intercession City, Florida, accident, and urge that they implement procedures to ensure that personnel coordinate with railroads when traversing grade crossings, comply with all statutes, obtain all necessary permits, have an emergency contingency plan, and outfit the move crew with appropriate emergency equipment, telephone numbers, and contacts. (Class II, Priority Action) (H-95-8)

Revise the *Permit Manual of State Permits and Canadian Regulations* to list those jurisdictions that require low-clearance vehicle operators to provide railroads with advance notification of intended travel over grade crossings and include a caution that coordinating with railroads is necessary to ensure safe travel over grade crossings. (Class II, Priority Action) (H-95-9)

To the International Association of Chiefs of Police--

Advise your members of the facts and circumstances of the Intercession City, Florida, accident, and request that those whose activities include providing or overseeing overdimension vehicle escort review their policies and procedures to ensure the vehicle operator is in compliance with all applicable permit and advance notification requirements, and has the communications capability and telephone numbers to contact railroad, utility, and other private entities along the route in the event of a change in plans or an emergency. (Class II, Priority Action) (H-95-10)

To the National Sheriffs' Association--

Advise your members of the facts and circumstances of the Intercession City, Florida, accident, and request that those whose activities include providing or overseeing overdimension vehicle escort review their policies and procedures to ensure the vehicle operator is in compliance with all applicable permit and advance notification requirements, and has the communications capability and telephone numbers to contact railroad, utility, and other private entities along the route in the event of a change in plans or an emergency. (Class II, Priority Action) (H-95-11)

To the National Committee on Uniform Traffic Laws and Ordinances--

Revise Section 14-112, "Permits for Excess Size and Weight," of the Uniform Vehicle Code to require that State agencies notify carriers of the provisions contained in Section 11-703, "Moving Heavy Equipment at Railroad Grade Crossings," before issuing permits. (Class II, Priority Action) (H-95-12)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

JAMES E. HALL
Chairman

ROBERT T. FRANCIS II
Vice Chairman

JOHN A. HAMMERSCHMIDT
Member

May 16, 1995

APPENDIX A INVESTIGATION

Investigation

The National Transportation Safety Board was notified of this accident at 1 p.m. on November 30, 1993, by the news media.

Accident investigators dispatched from the Safety Board's Atlanta, Georgia, regional office arrived on scene at 7 p.m., and investigators dispatched from the Safety Board's headquarters office in Washington, D.C. arrived on scene at 10 p.m., November 30, 1993.

Participating in the investigation were representatives of Rountree Transport and Rigging, Inc., CSX Transportation, Inc., the National Railroad Passenger Corporation (AMTRAK), the Central Florida Pipeline Corporation, the Brotherhood of Locomotive Engineers, the Osceola County (Florida) Fire and Rescue Department, the Florida Highway Patrol, the Florida Department of Transportation, the Federal Railroad Administration, and the Federal Highway Administration.

Hearing/Deposition

The Safety Board did not hold a public hearing or deposition proceedings in connection with this accident. On December 1, 1993, the Safety Board obtained sworn testimony from the engineer, the conductor, and the assistant conductor.

APPENDIX B

INJURY INFORMATION

Injuries in this accident have been coded to the revised 1990 Abbreviated Injury Scale of the American Association for Automotive Medicine, which is a standard system of assessing injury severity.

Abbreviated Injury Scale Table

Injuries	Truck Driver	Train Crew	Train Passengers	Total
AIS-1 Minor	1	2	50	53
AIS-2 Moderate	0	2	3	5
AIS-3 Serious	0	1	0	1
AIS-4 Severe	0	0	0	0
AIS-5 Critical	0	0	0	0
AIS-6 Unsurvivable	0	0	0	0
AIS-0 None	0	5	36	44
AIS-9 Unknown	0	0	0	0
Total	1	10	89	103

APPENDIX C

RAILROAD/HIGHWAY GRADE CROSSINGS ON THE ROUTE OF THE ROUNTREE VEHICLE

Crossing Number	Railroad Milepost	CSX Transportation Division/Subdivision	Description
1*	S843.23	Fertilizer Business Unit	Chem Lead, Hooker's Point Spur DOT/AAR No. 626438-W
2*	S843.23	Fertilizer Business Unit	Guy Verger Blvd., Hooker's Point Spur DOT/AAR No. 626438-W
3*	S843.23	Fertilizer Business Unit	22nd Street, Hooker's Point Main Track DOT/AAR No. 626398-B
4*	S843.22	Fertilizer Business Unit	Route 60, Hooker's Point Main Track DOT/AAR No. 626957-Y
5*	AZA879.9	Fertilizer Business Unit	Route 60 DOT/AAR No. 624820-X
6*	A878.8	Fertilizer Business Unit/Lakeland	East Tampa Blvd. and 7th Avenue DOT/AAR No. 624365-C
7*	A876.0	Fertilizer Business Unit/Lakeland	Route 574 DOT/AAR No. 624363-T
8	S809.46	Fertilizer Business Unit/Yeoman	Pasco County Road 535 DOT/AAR No. 623822-N
9	AR838.6	Fertilizer Business Unit/Vitis	State Route 54 DOT/AAR No. 622851-P
10	A827.29	Jacksonville/Lakeland	Bates Road, Polk County DOT/AAR No. 622968-X
11	A823.4	Jacksonville/Lakeland	Standard Sand and Silica Spur DOT/AAR No. 622959-Y
12	A816.30	Jacksonville/Lakeland	KUA Power Road DOT/AAR No. 643879-N
13	A812.80	Jacksonville/Lakeland	Spur to warehouse crossing Old Tampa Highway about 2/10 mile west of Poinciana Blvd. (crossed twice.) DOT/AAR No. 622951-U
* Crossings where CSXT provided flagging protection			

**APPENDIX D
CSXT PERMITS ISSUED TO ROUNTREE**

Tampa, Florida, October 29, 1992
Date

RIGHT-OF-WAY: Passage-

Division Manager
CSX Transportation
3636 Alden Drive
Tampa, Florida 33619-3240

CSX TRANSPORTATION, INC.

Application is hereby made by Rountree Transport & Rigging, Inc.

3550 S.W. 41th Ave., Ft. Lauderdale, FL 33314
the undersigned, hereinafter called "Licensee," for permission to move a house across track and right-of-way property of CSX Transportation, Inc., hereinafter called "Licensor," at the following location(s):

- *1 Nov 3, 1992 ^{Estimated} 1:00 AM Route per attached sheet 1 of 2
*2 Nov 4, 1992 ^{Estimated} 1:00 AM Route per attached sheet 2 of 2

Date and Time	Location
---------------	----------

It is fully understood and agreed that said movement(s) shall be made at the entire cost and expense of Licensee, including the cost of flag protection, as specified in the Operating Rules of Licensor, and the expense of any wireline or crossing signal changes necessary to accomplish said movement(s). Licensee agrees to schedule said movement(s) at an hour which will not interfere with the train operations of Licensor and provide, without exception, 24 hour notice to Licensor as to time and date of movement. Telephone (813) 464-4322, Attn: Mr. M.C. Charpeney, Supv. Signals, (904) 742-1423 for more info.

In consideration of the granting of this application, Licensee hereby assures and agrees to indemnify and hold harmless Licensor, its successors and assigns, from and against all loss, costs, expense, including attorney's fees, claims, suits and judgments whatsoever, in connection with injury to or death of any person or persons, or loss or damage to any property arising at or in any way connected with said movement(s).

A non-refundable deposit of ^{four} \$400.00 hundred dollars (\$200.00) is hereby posted to cover anticipated expenses incurred by Licensor.

(Company Name) Rountree Transport & Rigging, Inc.
(Address) 3550 S.W. 41th Ave
(City, State Zip Code) Ft. Lauderdale, FL 33314
(Signature) Jack L. Jones
Jack L. Jones Regional Manager
Name and Title
10-29-92
Date

Cys!
Mgt. Misc. Billing & Collections - Check for \$ _____ attached.
Mr. R. J. Green; Chief Dispatcher - 1/800/232-0749.
Mr. R. E. Spootes, Engineer Signals - 813/626-4017.
Mr. R. H. Billingsley; Supv. Communications - 813/626-9492.
_____, Roadmaster

80 percent of original size

PHS: DC-House Moving Application Sample (revised 11/03/87)

ROUNTREE TRANSPORT & RIGGING, INC.



Terminals

2840 North Lane Avenue
Jacksonville, Florida 32205
1-800-342-5036
904/781-1033

3580 SW 46th Avenue
Ft Lauderdale, Florida 33314
1-800-432-2203
305/587-1333

412 A Taft-Vineland Road
Orlando, Florida 32824
407/855-7306

1ST LOAD TUE. Nov. 3RD 1 AM.

Route - Point of Tampa
Guy Venger Blvd - N
19th St - N
Durham St. (Truck Pk) - E
22ND ST - N
60 - E (NOANO DR.)
41 - N (50th ST)
Columbus Dr. E
E. BROADWAY (YOUR MAN WILL
Drop off Here)

" TIME 2 HRS
APP ON ROUTE "

sheet 1 of 2

SPECIALIZED HAULING & RIGGING
Serving the Southeastern United States

Attachment 1 to the October 29 Permit

ROUNTREE

TRANSPORT & RIGGING, INC.



Terminals

2640 North Lane Avenue
Jacksonville, Florida 32205
1-800-342-5035
904/781-1033

3580 S.W. 46th Avenue
Ft. Lauderdale, Florida 33314
1-800-432-2203
305/587-1333

412 A Tatt-Vieland Road
Orlando, Florida 32824
407/855-7306

2ND LOAD
WED. 4³⁰ AM

SAME ROUTE AS 1ST LOAD WITH
THESE XTRA ROUTE

ZEPHYRHILLS BYPASS 1ST X
EVERYTHING O.K. HERE

HWY 54 X NEED TO
LIFT ARM: SHOULD BE AT
THIS POINT BY 7³⁰ A.M. TUE.

I WILL FURNISH CRANE 11/3/92

JACK JONES
645-9458

sheet 2 of 2

SPECIALIZED HAULING & RIGGING
Serving the Southeastern United States

Attachment 2 to the October 29 Permit

Tampa, Florida, March 9, 1993
Date
TYPE OF WAY: Passage

Division Manager
CSX Transportation
3656 Alder Drive
Tampa, Florida 33619-3240

CSX TRANSPORTATION, INC.

Application is hereby made by Rountree Transport & Rigging, Inc.

3580 SW 46th Ave Ft. Lauderdale, FL 33314
the undersigned, hereinafter called "Licensee," for permission to move a home across track and right-of-way property of CSX Transportation, Inc., hereinafter called "Licensor," at the following location(s):

3/17/93 Estimated 12:00AM Route per attached sheet

Date and Time Location

It is fully understood and agreed that said movement(s) shall be made at the entire cost and expense of Licensee, including the cost of flag protection, as specified in the Operating Rules of Licensor, and the expense of any wireline or crossing signal changes necessary to accomplish said movement(s). Licensee agrees to schedule said movement(s) at an hour which will not interfere with the train operations of Licensor and provide, without exception, 24 hour notice to Licensor as to time and date of movement. (Telephone (813) 444-4370, also Mr. M.C. Chopping, Supv. Signals, Wildwood 904-746-1423)

In consideration of the granting of this application, Licensee hereby assumes and agrees to indemnify and hold harmless Licensor, its successors and assigns, from and against all loss, costs, expense, including attorney's fees, claims, suits and judgments whatsoever, in connection with injury to or death of any person or persons, or loss or damage to any property arising at or in any way connected with said movement(s).

A non-refundable deposit of two hundred dollars (\$200.00) is hereby posted to cover anticipated expenses incurred by Licensor.

(Company Name) Rountree Transport & Rigging, Inc.
(Address) 3580 SW 46th Ave
(City, State Zip Code) Ft. Lauderdale, FL 33314
(Signature) Joseph J. Jovan
Joseph Jovan Area Asst
Name and Title
March 9, 1993
Date

Cys:
Mgr. Misc. Billing & Collections - Check for \$ attached.
Mr. R. J. Green, Chief Dispatcher - 1/800/232-0149.
Mr. M. R. Mc Gibb, Engineer Signals - 813/626-4027.
Mr. R. H. Billingsley, Supv. Communications - 813/676-0492.
Mr. R. J. Kinder, Coordinator 813/624-6392
Mr. M.C. Chopping, Supv. Signals, 904/746-1423
FORMS: DE-Home Moving Application Sample (rev. 11/03/87)

80 percent of original size

RIGHT-OF-WAY: Passage, March 9, 1993
Rountree Transport & Rigging, Inc.

Route for equipment movement across CSXT tracks at the following locations beginning at 12:05 AM, March 17, 1993:

Begin at Guy Verger and Maritime Blvd., Hookers Point,
continue north on 20th Street to Durham,
East on Durham to 22nd Street,
North to State Road 60 (Adamo Dr.),
East to US41 (50th Street),
North to Columbus Drive,
East across Sabal Park lead track.

Zephyrhills, FL, State Road 54 (Signal needs adjusted at this location-Rountree to furnish crane)

APPENDIX E

SECTION 11-703 OF THE UNIFORM VEHICLE CODE AND SECTION 316.170 OF THE FLORIDA UNIFORM TRAFFIC CONTROL

"Moving Heavy Equipment at Railroad Grade Crossings", provides that:

(1) No person shall operate any crawler-type tractor, steam shovel, derrick, or roller, or any equipment or structure having a normal operating speed of 10 or less miles per hour or a vertical body or load clearance of less than 1/2 inch per foot of the distance between any two adjacent axles or in any event of less than 9 inches, measured above the level surface of a roadway, upon or across any track at a railroad grade crossing without first complying with this section.

(2) Notice of such intended crossing shall be given to a station agent or other proper authority of the railroad, and a reasonable time shall be given to the railroad to provide proper protection at the crossing.

(3) Before making any such crossing the person operating or moving any such vehicle or equipment shall first stop the same not less than 15 feet nor more than 50 feet from the nearest rail of the railroad and while stopped shall listen and look in both directions along the track for any approaching train and for signals indicating the approach of a train, and shall not proceed until the crossing can be made safely.

(4) No such crossing shall be made when warning is being given by automatic signal or crossing gates or a flagman or otherwise of the immediate approach of a railroad train or a car. If a flagman is provided by the railroad, movement over the crossing shall be under his direction.

APPENDIX F

STATES REQUIRING NOTIFICATION TO RAILROAD(S) OF TRAVEL OVER RAILROAD/HIGHWAY GRADE CROSSING(S)

State	Notification Required?	Applicable Regulation	Overdimension Vehicle Permits in 1993
Alabama	No		80,000
Alaska	No		19,000
Arizona	No		66,970
Arkansas	No		22,660
California	No		132,000
Colorado	Yes	42-4-609	38,344
Connecticut	No		68,000
Delaware	Yes	4167	38,789
Florida	Yes	316	90,000
Georgia	No		206,284
Hawaii	No		4,600
Idaho	No		4,700
Illinois	Yes	11-1203	193,500
Indiana	Yes	40	198,000
Iowa	Yes	321.344	90,000
Kansas	Yes	36-1-27, 36-1-1A	55,000
Kentucky	No		91,000
Louisiana	Yes	174	219,835
Maine	No		25,000
Maryland	Yes	21-704	99,847
Massachusetts	No		26,500
Michigan	No		90,038
Minnesota	No		106,000
Mississippi	No		200,000
Missouri	No		105,000