

**EMERGENCY ORDER
No. 11**

[4910-06]

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[FRA Emergency Order No. 11]

LOUISVILLE AND NASHVILLE RAILROAD COMPANY

**EMERGENCY ORDER LIMITING MOVEMENT
OF HAZARDOUS MATERIALS**

The Federal Railroad Administration (FRA) of the Department of Transportation (DOT) has determined that considerations of public safety necessitate the issuance of an Emergency Order placing certain limitations on the movement of railroad freight cars containing materials required to be placarded in accordance with DOT regulations, 49 CFR Parts 170-189 (placarded hazardous materials cars), by the Louisville and Nashville Railroad Company (L&N), and by other railroads over L&N-owned or leased track.

On the basis of both the results of repeated safety inspections conducted by FRA throughout the L&N's system and the great number of accidents reported to FRA by the L&N over the past 3 years, FRA is convinced that serious safety deficiencies permeate all phases of L&N freight operations and create a substantial and constant risk to the health and safety of the public, particularly where those operations involve the transportation of placarded hazardous materials cars.

RECENT L&N HAZARDOUS MATERIALS ACCIDENTS

Within the last 3 months, the L&N has had numerous derailments of trains that were transporting placarded hazardous materials cars, several of which led to evacuations and releases of hazardous materials. On January 27, 1979, near Chef Menteur, Louisiana, 18 freight cars moving in an L&N freight train, including a placarded hazardous materials car containing propane, derailed as the result

of a broken rail. On December 26, 1978, a placarded hazardous materials car containing propane gas derailed at the L&N's yard in Atala, Alabama, forcing the evacuation of approximately 1,000 people.

On December 13, 1978, an L&N freight train hauling three placarded hazardous materials cars containing sulfuric acid derailed near High Cliff, Tennessee. One of those cars ruptured as a result of the accident, and fumes created by that release of acid forced the evacuation of approximately 75 people. Preliminary investigation of that accident indicates that it was caused by a defective track condition (excessive change in cross level) on a curve. That condition was created as a result of improper repairs performed by the L&N to correct track damage caused by another L&N freight train derailment at approximately the same site on December 11, 1978. With blatant disregard for the safety of its employees and the public, the L&N accomplished these track repairs hurriedly and haphazardly. As a consequence, L&N failed to bring such track back into compliance with certain Federal regulations (49 CFR 213.63). Despite the presence of that serious track deficiency, which would have been obvious to any qualified track inspector and which created a severe derailment hazard, the L&N reopened that section of track to traffic, including trains hauling placarded hazardous materials cars. This cavalier attitude by the L&N towards the safety of the public has been exhibited on numerous other occasions.

On November 27, 1978, near Appalachian, Tennessee, an L&N freight train hauling eight tank cars containing sulfuric acid derailed. As a result of the derailment, one of those cars released a portion of its contents, which spilled into a river and caused extensive damage to aquatic life. Preliminary investigation indicated that the derailment was caused by wide gage resulting from deteriorated ties. On November 30, 1978, another L&N freight train hauling three placarded hazardous materials cars containing liquefied petroleum gas derailed at the November 27 derailment site. A preliminary investigation indicated that the derailment was

caused by an excessive rate of change in the cross level of the track at the derailment site, which was in violation of applicable Federal regulations.

Approximately 5 weeks (October 18, 1978) prior to the first Appalachian derailment, another L&N freight train hauling tank cars containing sulfuric acid derailed near Madisonville, Tennessee. One of those cars was punctured, and another developed a leak as a result of the derailment. Fumes resulting from the release of acid injured four people and necessitated the evacuation of approximately 3,550 people. Preliminary investigation indicated that the derailment was caused, at least in part, by a track condition (variation in cross level) that was not in compliance with applicable Federal regulations. More important, the condition of the track in the area of the defect indicated that the contributing conditions had been present for some time prior to the derailment and should have been obvious to any qualified track inspector. The L&N's track inspectors, however, failed to detect the defect (and take appropriate corrective action) during a number of track inspections conducted prior to that mishap. The L&N's failure to take appropriate steps either to correct that track defect or to reduce the safety risk that it created by ordering a speed reduction over that section of track illustrates a recurring flaw in the L&N's operating philosophy that has been largely responsible for its poor safety record. In many circumstances, L&N management has exhibited great reluctance to take any measures to ensure the safety of its operations if such measures were perceived by management to be detrimental to operational expediency.

As documented more fully below, the Chef Menteur, Atala, High Cliff, Appalachian, and Madisonville accidents are merely the most recent examples of a long series of L&N accidents that have occurred as a direct result of safety deficiencies in L&N operations involving placarded hazardous materials cars.

THIRTY-MONTH HISTORY OF L&N HAZARDOUS MATERIALS ACCIDENTS

During the period between January 1, 1976 and June 30, 1978, the L&N reported to FRA rail equipment accidents ^{1/} that resulted in the release of hazardous materials from 42 placarded hazardous materials cars at various locations within seven different states (Indiana, Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida). Those accidents resulted in 19 deaths, approximately 71 serious injuries, and necessitated the evacuation of approximately 7,280 people. The L&N's reported figures with respect to the number of deaths, injuries, and persons evacuated as a result of such accidents exceeded the totals reported in each of those categories by every other Class I line haul railroad in the nation.^{2/} In fact, the next highest totals for deaths and injuries reported by any Class I line haul railroad during that period were 6 and 32, respectively.

As the foregoing statistics illustrate, any accident involving a placarded hazardous materials car presents a grave risk to the health and safety of persons in the immediate vicinity. A derailment of a train hauling placarded hazardous materials cars could result in a powerful explosion, the contamination of a city water supply, and the poisoning of persons along the right-of-way. Set forth below is a brief summary of the most significant rail equipment accidents involving

^{1/} Rail equipment accidents include collisions, derailments, fires, explosions, acts of God, or other events involving the operation of railroad on-track equipment (standing or moving) that result in more than \$2,900 (\$1,750 effective December 9, 1974 and \$2,300 effective November 10, 1976) in damages to railroad on-track equipment, signals, track, track structures, or roadbed, including labor costs and all other costs for repair or replacement in kind.

^{2/} For calendar years 1976 and 1977, Class I line haul railroads included any line haul railroad having annual operating revenues in excess of \$10 million. Beginning in 1978, that term includes any line haul railroad having annual operating revenues of \$50 million or more.

placarded hazardous materials cars reported by the L&N during the 30-month period ending June 30, 1978. These accidents encompass virtually all areas served by the L&N, thus illustrating the breadth of the L&N's safety problems.

On February 22, 1978, near Waverly, Tennessee, an L&N freight train hauling five placarded hazardous materials cars derailed as a result of a broken wheel. Two days later, one of the involved placarded hazardous materials cars, loaded with liquefied petroleum gas, exploded and killed 16 people, seriously injured 46 people, and caused the evacuation of approximately 500 people. The force of the explosion was so great that it destroyed an entire two-block area of downtown Waverly. Subsequent investigation revealed that the broken wheel was caused by extreme heat generated either by a sticking air brake or an improperly applied hand brake. Statements by the train crew indicate that they failed to inspect the air brakes of the car that caused the derailment, which was added to the train en route, in the manner required by Federal regulations (49 CFR 232.13(d)). More important, during the Waverly accident investigation hearing conducted by the National Transportation Safety Board (NTSB), testimony revealed that the L&N manual "Special Rules Governing Train Handling, Air Brakes and Dynamic Brakes," which became effective on April 1, 1975, and was in effect at the time of the Waverly mishap, failed to mention the full air brake test that is required by Federal regulations when cars are added to a train en route.

On November 9, 1977, two of the hauling locomotives and the following 35 cars of a 128-car L&N freight train, including 17 placarded hazardous materials cars containing anhydrous ammonia, derailed on a 6°04' curve near Pensacola, Florida. Contents of three of those cars were released into the atmosphere as a result of the derailment. The released anhydrous ammonia created a toxic gas cloud that killed two people, seriously injured 46 others, and forced the evacuation of approximately 1,500 people. This tragic

accident could have been averted if the L&N had complied with its own internal track standards.

The NTSB conducted an investigation of the accident and concluded that its probable cause was the overturning of the high rail of the curve, which caused track gage to widen. NTSB further concluded that the high rail tipped because the tight gage of the track at the derailment site did not enable it to withstand the lateral forces applied by the three 6-axle locomotives on the train and by a lightly loaded long car and an empty short car directly between the locomotives and the rest of the train with heavy trailing tonnage. The two cars were placed contrary to L&N's special rules governing train handling and the Association of American Railroad's Track Train Dynamics recommendations.

The NTSB's investigation further revealed that in June 1977, the L&N's track geometry vehicle had indicated that track gage and cross level conditions in the area of the derailment did not conform to the L&N's own track standards, and that no further action was taken by the L&N to correct those conditions. The NTSB also found that since 1975, no substantial maintenance had been performed on the track in the vicinity of the derailment, that the crossties in that area had not been thoroughly inspected since 1973, and that portions of track in the vicinity of the derailment were not maintained in accordance with FRA's Track Safety Standards (49 CFR Part 213).

In addition to the findings of its track geometry vehicle in June 1977, the L&N had more than adequate prior notice of serious track deficiencies in the area of the derailment. From January 1975 until the Pensacola accident, the L&N had reported to FRA 22 derailments caused by track conditions in its Mobile division (which includes Pensacola), 17 of which occurred within 50 miles of the Pensacola derailment.

Less than 1 month (October 15, 1977) prior to the Pensacola accident, referenced above, an L&N train hauling 33 placarded hazardous materials cars had derailed

because of a worn wheel at a site within 6 miles of the later accident. As a result of that accident, one of those cars released its contents, forcing the evacuation of approximately 1,000 people.

On May 29, 1978, an L&N freight train hauling 38 placarded hazardous materials cars derailed near Mossy Head, Florida, because of a broken rail. As a result of the derailment, four of those cars released their contents, which necessitated the evacuation of an estimated 400 people. On August 4, 1976, an L&N freight train hauling three placarded hazardous materials cars derailed within 3 miles of the site of the May 29, 1978, derailment. This was also caused by a broken rail. As a result of the derailment, one of those cars released its contents, thereby forcing the evacuation of approximately 100 people.

On May 19, 1978, two placarded hazardous materials cars derailed on a curve in the L&N's Howell Yard in Evansville, Indiana, and released their contents. That release necessitated the evacuation of approximately 2,500 people.

On April 25, 1978, an L&N freight train hauling two placarded hazardous materials cars derailed near Bowling Green, Kentucky, because of a broken wheel. As a result of that accident, approximately 500 persons were evacuated.

On February 2, 1978, track irregularities caused the derailment of, and a release of contents from, a placarded hazardous materials car in an L&N train near Castleberry, Alabama. Two people were injured and 50 were evacuated as a result of that accident.

On March 20, 1977, an L&N freight train hauling three placarded hazardous materials cars derailed near Kennesaw, Georgia. The L&N reported the cause of this accident as a "low rail." Two of those cars released their contents as a result of the derailment, which necessitated the evacuation of approximately 150 people. Approximately 6 months later (September 28, 1977), another L&N train hauling placarded hazardous materials cars derailed at approximately the same site. One of those cars released its contents as a result of the derailment,

thereby forcing the evacuation of an estimated 200 people.

In the space of two days in February 1977, the L&N suffered two derailments that resulted in the release of hazardous materials and forced the evacuation of people from the derailment site. On February 18, 1977, near St. Matthews, Kentucky, an L&N train hauling one placarded hazardous materials car derailed because of a burned-off journal. The placarded hazardous materials car involved in that derailment released its contents, resulting in the evacuation of approximately 30 persons. One day prior to that derailment, an L&N train hauling six placarded hazardous materials cars derailed near Brownsville, Tennessee, because of a broken rail. Two of the cars released toxic materials, thereby necessitating the evacuation of approximately 75 people.

On May 11, 1976, nine people suffered injuries from inhalation of fumes generated by hazardous materials that were released as a result of an L&N derailment near Wilcox, Alabama. That accident involved the derailment of an L&N train hauling four placarded hazardous materials cars. The L&N reported the cause of this mishap as "defective equipment." The contents of two of those cars were released as a result of that accident. Approximately 4 months prior to the Wilcox accident (January 4, 1976), 1 person was injured and an estimated 275 people were evacuated as a result of a release of hazardous materials caused by the derailment of an L&N train near Barth, Florida. That accident involved an L&N train hauling eight placarded hazardous materials cars that derailed because of a track defect.

The foregoing summary of major L&N accidents involving placarded hazardous materials cars clearly demonstrates that the L&N has serious and widespread safety deficiencies throughout its system with respect to the transportation of hazardous materials, and that these deficiencies create a constant and substantial risk to the health and safety of the public. As the following statistics will prove, the L&N currently has the worst safety record in the nation with respect to the

transportation by rail of hazardous materials, and there is substantial reason to believe that its record will continue to worsen until appropriate remedial action is taken. For comparison purposes, the L&N's ranking among all reporting Class I line haul railroads with respect to each statistic is included in parentheses, a rank of first being the worst in each category.

COMPARATIVE RANKING

Through the first 6 months of 1978, the L&N reported 39 rail equipment accidents (3rd highest among 33 reporting) that involved trains hauling a total of 240 placarded hazardous materials cars (6th). Those accidents caused damage to 80 such cars (1st), 12 of which released some or all of their contents as a result (4th). Those accidents also resulted in 16 fatalities (1st), approximately 48 injuries (1st), and the evacuation of approximately 3,950 people (1st). The L&N's poor safety record with respect to the transportation of hazardous materials is highlighted by the fact that, exclusive of the L&N, Class I line haul railroads reported a total of only 4 fatalities and 61 injuries from rail equipment accidents involving hazardous materials during the first 6 months of 1978.

As the statistics for the years 1976 and 1977 demonstrate, the L&N's poor safety record during 1978 is not a statistical aberration, but rather an accurate mirror of the safety deficiencies in L&N hazardous materials operations that have been present at least for the last 3 years.

In 1977, the L&N reported 51 (4th among 40 reporting) rail equipment accidents that involved trains hauling a total of 278 (4th) placarded hazardous materials cars. Those accidents damaged 110 such cars (2nd), 19 of which released some or all of their contents (1st), resulting in 3 deaths (1st) and 12 injuries (1st), and necessitating the evacuation of approximately 2,955 people (1st). Although the L&N ranked only fourth with respect to the number of rail equipment accidents involving trains hauling placarded hazardous materials cars, it ranked first in total reported equipment damages resulting from those accidents. L&N's reported

damages of \$6,063,224 constitute 17.4 percent of total equipment damages suffered by all Class I line haul railroads in such accidents during 1977.

Reported statistics for 1976 confirm that the L&N's safety record with respect to the transportation of hazardous materials, while consistently poor during the last 3 years, has been progressively deteriorating during that period. In 1976, the L&N reported 30 rail equipment accidents (5th among 54 reporting) that involved trains hauling a total of 118 (8th) placarded hazardous materials cars. Those accidents damaged 68 such cars (3rd), 11 of which released some or all of their contents (4th), and resulted in 11 injuries (2nd) and the evacuation of approximately 375 persons (9th). Although the L&N ranked third in the number of placarded hazardous materials cars damaged in rail equipment accidents and fourth in the number of such cars that released their contents, it ranked only seventh in the nation among all railroads with respect to the estimated total number of such cars hauled during 1976.

As the foregoing statistics demonstrate, the number of L&N accidents involving trains hauling placarded hazardous materials cars has grown since 1976, and there is every reason to believe that they will increase in the future if the L&N is permitted to continue its present operating practices without additional restrictions. Because many of the placarded hazardous materials cars hauled by the L&N move through, or within, the immediate vicinity of a number of densely populated residential areas, a catastrophe is foreseeable unless appropriate remedial action is taken.

SCOPE OF L&N HAZARDOUS MATERIALS OPERATIONS

The L&N operates over approximately 10,600 miles of track in 13 states (Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Ohio, Tennessee, and Virginia). Trains operating over that track pass through, or in close proximity to, a great number of densely populated metropolitan and suburban areas. Those areas include the following cities and their immediate environs: Alabama - Mobile, Montgomery, Birmingham, Decatur,

Alabama City, Gadsden; Florida - Pensacola; Georgia - Atlanta, Marietta, Dalton; Illinois - Chicago, Hoopeston, Danville; Indiana - Hammond, Terre Haute, Vincennes, Evansville, Bloomington, Bedford, Frankfurt, Indianapolis; Kentucky - Paducah, Henderson, Owensboro, Hopkinsville, Bowling Green, Louisville, Springfield, Frankfort, Lexington, Covington, Newport, Winchester; Louisiana - New Orleans; Mississippi - Gulfport, Biloxi, Pascagoula; Missouri - St. Louis; Ohio - Cincinnati; Tennessee - Memphis, Jackson, Clarksville, Nashville, Columbia, Murfreesboro, Chattanooga, Knoxville.

Large numbers of placarded hazardous materials cars are transported annually over L&N trackage passing through or in close proximity to all the above mentioned cities and towns, as well as numerous other locations within the L&N's system. In 1976, the L&N hauled an estimated 64,200 placarded hazardous materials cars, a total exceeded by only six other railroads. The total number of placarded hazardous materials cars hauled by the L&N during 1976 represented approximately 9.5 percent of the estimated total number of such cars hauled by rail in the United States during that year. In 1977, the L&N hauled an estimated 60,800 placarded hazardous materials cars, which represented approximately 8.9 percent of the estimated total number of such cars that were hauled by rail in the United States during that year. The L&N's volume and market share of such traffic was at substantially the same level during 1978.

The hazardous materials hauled by the L&N include numerous flammable liquids and solids, flammable and nonflammable compressed gases, Class A and Class B explosives, propellants, pesticides, fumigants, insecticides, oxidizers, corrosive materials, radioactive materials, and Class B poisons, including such dangerous and volatile substances as acetone, anhydrous ammonia, butane, ethylene oxide, methanol, xylene phosphorus, aluminum nitrate, calcium nitrate, carbolic acid, aniline oil, uranium hexafluoride, hydrofluoric acid, phosphoric acid, acetic acid, sodium hydroxide, liquefied petroleum gas, coal tar, sulfuric acid, acrylonitrile,

petroleum asphalt, motor fuel antiknock compound, propane, vinyl chloride, butadiene, chlorine, nitric acid, hydrochloric acid, ammonium nitrate, sulfur dioxide, and hydrogen cyanide.

Release of any hazardous material creates a great degree of risk to the health and safety of all persons within the immediate area. Some of these materials are extremely toxic, and a number of the more widely transported hazardous materials, such as anhydrous ammonia and sulfuric acid, can severely burn and kill any person coming into contact with them. For example, the November 9, 1977, Pensacola derailment, referenced earlier, led to the release of anhydrous ammonia that formed a toxic gas cloud, killing two people and seriously injuring 46 others.

FRA ENFORCEMENT EFFORTS

Extensive FRA inspections over the last three years have uncovered serious safety deficiencies in all phases of L&N freight operations that have led directly to numerous derailments of L&N trains. The enhanced risk of a derailment created by those deficiencies, coupled with the substantial volume of placarded hazardous materials cars annually transported by the L&N, combine to create a substantial and constant risk to the public of serious injury and death.

During the first 6 months of 1978, a total of 64 FRA inspectors conducted inspections of all phases of L&N operations to determine the extent of L&N's compliance with the various Federal rail safety statutes enforced by FRA. Those inspections involved an estimated 6,467 inspector-hours. In 1977, 40 FRA inspectors spent an estimated 6,223 inspector-hours inspecting the L&N, and during 1976, 41 FRA inspectors devoted an estimated 7,598 inspector-hours to such inspections. On the basis of the results of both those extensive past inspections and more recent inspections, FRA is convinced that the safety deficiencies that are discussed below continue to exist throughout the L&N's system.

One of the major safety deficiencies in L&N freight operations lies in its failure to comply with minimum Federal standards imposed by the Track Safety Standards (track standards) (49 CFR Part 213). Although the L&N is legally required to inspect for and repair all track conditions that are not in compliance with the track standards and has, in fact, been assessed significant civil penalties for failure to comply with those standards, there is abundant evidence that the L&N is not in compliance with either the track standards or, in some cases, its own track maintenance rules, at numerous locations within its system. That lack of concern for safety has had several tragic consequences, such as the November 9, 1977, Pensacola accident, discussed earlier.

Over the past several years, FRA has conducted numerous inspections of L&N track to determine the extent of its compliance with the track standards. During the first 6 months of 1978, 91 track inspections covering 854 miles of L&N track were conducted by FRA track inspectors. Those inspections disclosed 1,288 instances of noncompliance with the FRA track standards. Also, during February 1978, the FRA track geometry cars were used to inspect 108 miles of L&N track between Louisville and DeCoursey, Kentucky. Forty-five miles of that track were found to be in noncompliance with the requirements imposed by the track standards for the posted track class,^{3/} and 17 of these miles did not meet the minimal requirements imposed for Class I track, over which freight train speed is restricted to not more than 10 miles per hour.

^{3/} The track standards recognize six separate track classes (the highest being Class 6, over which maximum operating speed for freight trains is 110 miles per hour), and prescribe progressively more stringent safety requirements for each such class (49 CFR §213.9).

In 1977, FRA track inspectors conducted 145 inspections covering 2,286 miles of L&N track. Those inspections uncovered 1,527 instances of noncompliance with the track standards. During July 1977, FRA track geometry cars were used to inspect 560 miles of L&N track between Cincinnati, Ohio, and Atlanta, Georgia. Of that total, 204 miles were found to be in noncompliance with the requirements imposed by the track standards for the posted track class. During 1976, FRA track inspectors conducted 203 track inspections covering 2,808 miles of L&N track. Those inspections disclosed 1,971 instances of noncompliance with the track standards.

As the foregoing statistics demonstrate, virtually every FRA inspection of L&N track during the past several years has disclosed numerous instances of noncompliance with the track standards, many of which were capable of causing a derailment. This is especially significant from a safety standpoint because the track standards prescribe only minimum safety requirements for track. On the basis of the results of both past and recent track inspections at a variety of locations within the L&N's system and the rapidly increasing number of rail equipment accidents reported to FRA by the L&N as caused by track conditions, FRA is convinced that track conditions at numerous locations within the L&N's system are currently deficient from the standpoint of safety. To cite a recent example, beginning on January 9, 1979, FRA track geometry cars were used to inspect 309 miles of L&N track between DeCoursey, Kentucky and Atlanta, Georgia. That inspection disclosed 175 miles of track not in compliance with the posted track class and 73 miles of track that were not in compliance with Class I track requirements. Although responsible L&N officials received immediate notification of the defects detected during that inspection, a return FRA inspection conducted 6 days later of portions of the track inspected earlier indicated that the L&N

had not taken any action to correct certain of the most serious defects, such as wide gage, discovered during the earlier inspection.

As a result of its inadequate track inspection and repair program, over the past three years the L&N has suffered an increasing number of derailments caused by defective track conditions. In 1976, the L&N reported to FRA 317 derailments that were caused by track conditions. Four Class I line haul railroads reported more such derailments (among 66 reporting) during 1976. It should be noted that all four (Consolidated Rail Corporation (Conrail), Illinois Central Gulf (ICG), Chicago and North Western (CNW), and the Chicago, Rock Island and Pacific) had substantial deferred track maintenance because of recent histories of poor or marginal earnings, and all four operated over more track than the L&N. For 1977, the L&N reported to FRA 322 derailments caused by track conditions, a figure exceeded only by three (Conrail, ICG, CNW) other Class I line haul railroads (among 58 reporting). On the basis of data reports for the first 6 months of 1978, FRA projects that the L&N reported 350 derailments caused by track conditions during 1978, for an increase of 9 percent over 1977.

In addition to its poor safety record with respect to its track, the L&N has widespread safety deficiencies in the inspection and repair of equipment. This is reflected in the substantial number of rail equipment accidents that have been reported annually to FRA by the L&N, including the several discussed earlier which resulted in the release of hazardous materials.

On the basis of reported data for the first 6 months of 1978, FRA projects that for the entire year, the L&N reported 150 derailments caused by equipment. During 1977, the L&N reported 149 derailments caused by equipment, a figure that was exceeded only by 2 of the 58 Class I line haul railroads reporting (Conrail and Burlington Northern (BN)), and each of them hauled considerably more traffic than the L&N during that period. In 1976, the L&N's reported total of 141 derailments

caused by equipment ranked fourth, behind Conrail, BN, and the Southern Pacific, each of which hauled substantially more cars than the L&N during that year.

Statistics for the 30-month period ending June 30, 1978, with respect to rail equipment accidents reported by the L&N from all causes (human, track, equipment and miscellaneous) highlight the safety deficiencies that permeate L&N freight operations.

On the basis of reported data for the first 6 months of 1978, FRA projects that for the entire year, the L&N reported a total of 826 rail equipment accidents from all causes. The projected number of accidents represents an increase of 13 percent over the L&N's reported results in that category for 1977, when it ranked behind only two much larger carriers, Conrail and BN, among 58 reporting Class I line haul railroads. For 1977, the L&N reported 730 rail equipment accidents from all causes, an average of 25.8 accidents per million train-miles. For comparison purposes, the average accident rate per million train-miles for all Class I line haul railroads in 1977 was 13.6. The L&N's accidents in 1977 resulted in total reported damages of \$25,006,153, exceeding by \$3.3 million the next highest total reported by any Class I line haul railroad.

During 1976, the L&N reported a total of 700 rail equipment accidents from all causes, an average of 25.3 accidents per million train-miles. Among all Class I line haul railroads, the average accident rate per million train-miles was 12.9. Only three Class I line haul railroads (Conrail, BN, CNW), among 66 reporting, reported more such accidents during 1976.

The L&N's safety record demonstrates an apparent lack of dedication to railroad safety on the part of L&N management. The resultant poor safety record has been a matter of considerable concern to FRA, but all actions taken to date to foster improvement in the safety of L&N operations have proved fruitless.

Following its customary practice, FRA first attempted to achieve necessary safety improvements in L&N operations through informal meetings, correspondence, and the assessment and collection of civil penalties for those safety deficiencies that constituted violations of the minimum Federal safety standards imposed by Federal statute and regulation. During fiscal years 1976 and 1977, for example, the FRA transmitted to the L&N 442 alleged safety claims on which penalties of \$301,450 were claimed. That course of action, however, did not result in any noticeable improvement in the L&N's safety record. Therefore, after a review of L&N's record and careful consideration of the matter, FRA decided that stronger action was required.

During the winter and spring of 1977-1978, FRA undertook an intensive program of safety inspections that was designed to ascertain the extent of L&N's compliance with minimum Federal safety standards and to advise the L&N of the safety deficiencies identified. Also, meetings were held between L&N officials and FRA representatives to discuss the L&N's safety problems and the necessary corrective action required. At one of those meetings, May 25, 1978, the L&N admitted that it was not in compliance with all FRA regulations and that its methods to ensure both the safety of operations and compliance with those regulations were wanting. At that meeting, the L&N presented a plan outlining the steps taken, and to be taken, in an effort to correct its safety deficiencies.

FRA hoped that its intensive inspection program, coupled with promised remedial action by the L&N, and a substantial increase in the civil penalties assessed and collected by FRA for Federal safety violations would lead to prompt and significant improvement in L&N's safety record. During fiscal year 1978, FRA settled a number of outstanding safety claims against the L&N for the total of \$513,100 (\$96,000 of which consisted of final assessments for 45 violations of Federal hazardous materials regulations), and transmitted

to the L&N 860 alleged safety claims on which penalties of \$781,600 were claimed. Despite these measures, L&N's safety record has not improved. Because of the failure of these measures to achieve their objective, FRA has determined that more drastic action, in the form of this Emergency Order, is necessary. In FRA's judgment, continued transportation of placarded hazardous materials cars over L&N owned or leased track without certain additional restrictions to ensure the safety of those operations constitutes an unsafe condition and creates an emergency situation involving a hazard of death or injury to the general public.

SUMMARY

As the previously cited statistics and hazardous materials train accident summaries demonstrate, the L&N's poor safety record is not due to any single factor, but results, rather, from a serious breakdown in all phases of its operations that affect safety. Severe safety deficiencies in the L&N's track system, equipment, and operating practices have all contributed to its poor safety record. Because of the breadth and complexity of the L&N's safety problems, the FRA questions whether the L&N is capable of expeditiously rectifying those problems to the point where its hazardous materials operations would not constitute an unsafe condition involving a hazard of death or injury to the public. Consequently, this Order imposes upon the L&N certain conditions designed to minimize the risk to the public from continuation of those operations, pending the L&N's institution of appropriate remedial action. In its determination of the restrictions to be placed on L&N hazardous materials operations, FRA was especially concerned with devising restrictions that would minimize the risk of derailments on track segments with curves and large variations in grade, because large portions of the L&N's system over which hazardous materials are transported have those physical characteristics.

DISCUSSION OF RESTRICTIONS

By analyzing the factual circumstances involved in previous train accidents and through applied research, FRA has identified a number of factors that have led, or contributed, to train derailments in the past, and which are inadequately dealt with by the L&N. Those factors include defective track, placement of empty TOFC (trailer on flatcar)/COFC (container on flatcar) flatcars and long cars (those with a length in excess of 70 feet) behind the hauling locomotives or in the front of a train with heavy trailing tonnage, and the operation of certain six-axle locomotives around curves. The restrictions set forth in this Order are designed to minimize the adverse impact of these factors on trains transporting placarded hazardous materials cars over L&N owned or leased track.

The FRA has also focused on restrictions that would minimize the possibility of a release of hazardous materials in the event of a derailment of a train hauling one or more placarded hazardous materials cars. Because statistical evidence (discussed below) indicates that the speed at which a train derails is often the most critical factor in determining whether a placarded hazardous materials car will release its contents, FRA is convinced that the public safety requires this Order to include a speed restriction on all trains hauling such cars over L&N owned or leased track.

Defective Track. As documented above, during the past 3 years the L&N has ranked among the top four railroads in the nation with respect to total reported derailments caused by track conditions. Defective track conditions were reported by the L&N as the cause of a substantial number of the train derailments involving placarded hazardous materials cars summarized earlier, including those occurring near High Cliff (December 13, 1978), Appalachian (November 27 and 30, 1978), Madisonville (October 18, 1978) and Brownsville, February 17, 1977), Tennessee, Pensacola (November 9, 1977) and Mossy Head (May 29, 1978, August 4, 1976), Florida, Castleberry, Alabama (February 2,

1978), and Kennesaw, Georgia (March 20, 1977). Those accidents collectively resulted in 2 deaths, 52 injuries and the evacuation of 6,900 people.

Although the L&N is legally required to inspect its track regularly for deviations from the track standards and to immediately initiate remedial action to correct deviations discovered during such inspections (49 C.F.R. § 213.233), the great number of L&N train accidents caused by track conditions over the past 3 years strongly suggests that the L&N's track inspection and repair program has been woefully inadequate. Consequently, FRA is convinced that extensive track inspections in addition to those now required by Federal regulations are necessary to remedy the results of the L&N's inadequate track inspection and repair program. The increased track inspections imposed by this Order are designed to accomplish two objectives. First, to ensure that the L&N discovers and corrects defects presently existing in its track. Second, to ensure that the L&N detects and repairs future track defects (or conditions that may develop over time into defects) before they cause accidents. In order to redress the former problem this Order requires the L&N, as soon as practicable, to inspect on foot all of its owned or leased track over which placarded hazardous materials cars are transported for compliance with the track standards, and to immediately institute remedial action with respect to any deviations from the track standards that are discovered during those inspections. This Order also requires the L&N to double the frequency of all track inspections it is currently required to perform under 49 C.F.R. Part 213 with respect to all L&N owned or leased track over which placarded hazardous materials cars are transported.

Car Placement. Another factor that increases derailment risk is the placement of empty flatcars and long cars at the front of a train, particularly where such cars are placed directly behind the locomotives and next to shorter cars (as in the case of the November 9, 1977 Pensacola accident, referenced earlier), or in the front portion of the train with most of the train tonnage behind them

(as in the case of an L&N derailment on January 1, 1978 near Campbellsville, Kentucky). In the Campbellsville derailment, the placement at the front of the train of empty long cars next to empty cars that were substantially shorter was deemed a contributing cause of the train's derailment on a curve. Significant lateral forces are generated (particularly during train braking) when such long empty cars, placed in the front of a train next to shorter cars, travel on an ascending or descending grade or through a curve. Those lateral forces are generated as a result of the cars being pulled by the hauling locomotives and restrained by the mass of the trailing cars, and tend to produce rail tipping and displacement or to cause the wheel flange to climb the high rail of the curve, all of which could cause a derailment. Because those forces can be significantly reduced by placing such cars further to the back of the train, this Order requires placement of such cars in the last half of trains transporting placarded hazardous materials cars over L&N owned or leased track.

Train Speed. In its analysis of past accidents involving trains transporting placarded hazardous materials cars, FRA has developed statistical evidence demonstrating that the speed at which such a train derails is often the most critical factor influencing whether one or more such cars will release their contents. The L&N's recent accident history is consistent with this finding. For example, during 1977, the L&N reported to FRA 38 accidents involving trains transporting placarded hazardous materials cars that occurred at speeds estimated by the L&N to be less than 30 miles per hour. Those accidents resulted in the release of hazardous materials from eight cars. During the same period, the L&N reported 14 accidents involving trains transporting placarded hazardous materials cars that occurred at speeds greater than 30 miles per hour. Those accidents resulted in releases of hazardous materials from 11 cars. For the first 9 months of 1978, the L&N reported to FRA 45 accidents involving trains hauling placarded hazardous materials cars that occurred at speeds less than 30 miles per hour. Those accidents resulted in releases

from four cars. During that same period, the L&N reported nine accidents involving placarded hazardous materials cars that occurred at speeds greater than 30 miles per hour. Those accidents resulted in releases from nine cars. A number of the most serious L&N hazardous materials accidents, referenced earlier, occurred at speeds estimated to be greater than 30 miles per hour, including those at Wilcox, Alabama (May 11, 1976), Pensacola, Florida (November 9, 1977), Castleberry, Alabama (February 2, 1978), and Waverly, Tennessee (February 22, 1978), which collectively resulted in 103 injuries, 18 deaths, and the evacuation of approximately 2,050 people.

Placement of a limitation on the speed of trains transporting placarded hazardous materials cars is also important because it minimizes the risk created by certain other factors that could cause a derailment, such as train action and the operation of certain six-axle locomotives on curved track.

Train action, the forces generated by and among units of rolling stock in a moving train, is one of the major causes of derailments.^{4/} The magnitude of that force will increase directly with a number of factors, including the number of cars, tonnage and speed of the train involved. Consequently, the speed restriction imposed by this Order will reduce the magnitude of train action in many L&N trains transporting placarded hazardous materials cars, thereby lessening the derailment risk created by that factor.

^{4/} The L&N has identified train action as the primary cause of three derailments reported to FRA within the last 2 years that involved trains transporting placarded hazardous materials cars and resulted in either the release of hazardous materials or the evacuation of private citizens from their homes. Those accidents occurred at Lebanon Junction, Kentucky (January 18, 1977), Acworth, Georgia, (December 24, 1977), and Bowling Green, Kentucky, (April 25, 1978).

The speed limitation imposed by this Order should also reduce the derailment risk, discussed below, created by the operation of certain types of six-axle locomotives at higher speeds around curves. As noted above, there are a substantial number of curves on many portions of the L&N's track system over which placarded hazardous materials cars are transported. For every curve, there is a particular speed, termed balance or equilibrium speed, which permits a train moving around that curve to maintain equal balance between the high and low rail of the curve. When balance speed on a curve is exceeded by certain types of six-axle locomotives, those locomotives generate lateral forces substantially in excess of those generated by four-axle locomotives moving around that curve at the same speed. When lateral forces reach a certain level for a fixed duration of time, a derailment may occur because of rail tipping and displacement, or by reason of a wheel climbing the high rail of the curve.^{5/} Because the rate at which the lateral forces generated on curves by certain six-axle locomotives greatly increases when the speed of a train exceeds the balance speed of the curve, the speed limitation contained in this Order should materially reduce the derailment risk created by the movement of such locomotives around certain curves.

Therefore, pursuant to authority contained in section 203 of the Federal Railroad Safety Act of 1970 (45 U.S.C. §432), delegated to me by the Secretary of Transportation (49 CFR 1.49(n)), I hereby order that, effective 12:01 p.m., February 9, 1979:

^{5/} During the past 15 months, the L&N has reported a number of derailments to FRA involving trains being hauled by one or more six-axle locomotives that occurred as the trains moved around a curve in which the primary cause was identified as rail tipping and displacement or a wheel climbing the high rail of the curve. Those derailments include accidents occurring at Hanson (January 7, 1979), Simpsonville (January 6, 1979), and Rockhold (March 1, 1978), Kentucky, Cartersville, Georgia (March 13, 1978), Ellettsville, Indiana (January 15, 1978), and Pensacola, Florida (November 9, 1977).

1. No train containing a placarded hazardous materials car shall be operated at speeds greater than thirty (30) miles per hour over track owned or leased by the L&N.

2. The controlling locomotive unit in each train transporting a placarded hazardous materials car over track owned or leased by the L&N shall be equipped with an operational (accurate to within 5 miles per hour) speed indicator, provided, however, that this requirement shall not become effective until 12:01 a.m., of the tenth (10th) calendar day following the effective date of this Order.

3. The L&N shall double the frequency of all track inspections that it is presently required to perform under 49 C.F.R. Part 213 with respect to all L&N owned or leased track over which placarded hazardous materials cars are transported. For example, all inspections that are now required to be performed weekly shall be performed twice weekly, twice weekly inspections shall be performed four times weekly, and so forth.

4. As soon as practicable, the L&N shall inspect on foot all track that it is required to inspect under 49 C.F.R. Part 213 over which placarded hazardous materials cars are transported for compliance with the requirements of that part, and shall immediately institute remedial action with respect to each deviation from the requirements of 49 C.F.R. Part 213 discovered during such inspection. On the thirtieth (30th) day following the effective date of this Order, and every thirty (30) days thereafter until the inspection required by this paragraph is completed, the Vice President-Operations of the L&N shall transmit to FRA's Associate Administrator for Safety a report stating the status of the L&N's compliance with the requirements of this paragraph.

5. No empty TOFC (trailer on flatcar)/COFC (container on flatcar) flatcar and no empty railroad freight car with a length over the pulling face of its coupler in excess of seventy (70) feet shall be placed in the first half of a train transporting placarded hazardous materials cars that is operated over track owned or leased

by the L&N. For the purposes of this paragraph, the term empty TOFC/COFC flatcar shall be deemed to include any such car transporting one or more empty trailers or containers.

6. The L&N shall conduct an investigation of each accident/incident (as that term is defined in 49 CFR §225.5(b)) that occurs on track that it owns or leases and involves a train transporting a placarded hazardous materials car and shall forward to FRA's Associate Administrator for Safety, within ten (10) calendar days after such accident/incident, a detailed analysis of the factual circumstances and probable cause(s) of that accident/incident. That detailed analysis shall be signed by each of the L&N's officials investigating the accident/incident and shall include a signed statement from each member of the operating crew involved regarding the factual circumstances of that accident.

7. The Vice President-Operations of the L&N shall prepare and transmit to the Chief Counsel of FRA, as soon as practicable, a written report, signed by the President of the L&N, detailing the remedial actions taken, and to be taken, by the L&N to improve the safety of its train operations involving placarded hazardous materials cars.

8. This Order shall remain in effect until FRA finds that the L&N has taken reasonable steps to improve the safety of its train operations involving placarded hazardous materials cars and an authorized representative of the Federal Railroad Administrator informs the President of the L&N that the Order is withdrawn. Dependent upon the L&N's progress in rectifying its safety deficiencies, FRA will consider gradual removal of the conditions set forth in this Order.

The provisions of this Order shall not apply to any train transporting a placarded hazardous materials car over track owned or leased by the L&N that started in transit prior to the effective date of this Order and that is in transit to its final terminal over such track upon the effective date of this Order.

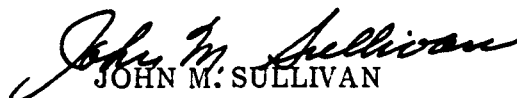
For the purposes of this Order, the phrase "track owned by the L&N" shall be deemed to include all track as to which the L&N possesses legal or equitable title.

A civil penalty of \$2,500 will be assessed for each violation of this Order (45 U.S.C. 438). The FRA may also petition the appropriate United States district court for such equitable and other relief as it deems necessary or advisable to safeguard the health and safety of the public.

This Order does not authorize the L&N or any other railroad to operate trains not containing placarded hazardous materials cars in a manner or over track that is not in compliance with the Track Safety Standards (49 CFR Part 213). Any such operation may subject each such railroad to the assessment of the penalties prescribed by the Federal Railroad Safety Act of 1970 (45 U.S.C. 438).

Opportunity for formal review of this Order will be provided in accordance with sections 203 of the Federal Railroad Safety Act of 1970 (45 U.S.C. 432) and 554 of title 5 of the United States Code. Petition for such review must be submitted in writing to the Office of Chief Counsel, Federal Railroad Administration, Washington, D. C. 20590 in accordance with 49 CFR 211.47.

Issued in Washington, D. C., on February 7, 1979.


JOHN M. SULLIVAN

Administrator