

Title 49 - Transportation
Chapter II - Federal Railroad Administration
Department of Transportation

(Emergency Order No. 7; Notice No. 1)

Removal of High Carbon Cast Steel Wheels From Service;
Interim Restrictions On Their Use

AGENCY: Federal Railroad Administration (FRA), Department
of Transportation

ACTION: Emergency Order.

SUMMARY: The FRA is issuing an emergency order under
Section 203 of the Federal Railroad Safety Act of 1970
(45 U.S.C. 432). This emergency order restricts the use
of freight cars with high carbon cast steel wheels, pre-
scribes a mandatory program for locating those wheels and
removing them from cars, and requires that all these wheels
be found and removed from service before January 1, 1979.

On March 9, 1978, the National Transportation Safety
Board (NTSB) informed the FRA that its investigation of
several recent derailments had disclosed that the probable
causes or contributing causes of the accidents were the
breaking of these wheels due to overheating. The NTSB also
told the FRA that "until these wheels are replaced or adequate
precautions are instituted for the operation of cars equipped
with these wheels, there is an imminent danger of derailment

with the possible release of hazardous materials". The NTSB concluded by recommending that FRA use its emergency powers to alleviate this danger.

On March 14, 1978, the FRA initiated a special safety inquiry to obtain sufficient information concerning the nature and scope of the safety problem presented by these wheels to devise an effective solution that can be implemented as soon as possible. A public hearing was held on March 17, 1978.

The purpose of this emergency order is twofold:

1) to remove these wheels from all cars as soon as possible; and 2) to prescribe interim precautions for the operation of cars equipped with these wheels.

DATES:

EFFECTIVE DATE: This emergency order becomes effective on date of publication in the Federal Register.

ADDRESSES:

(1) Submission of written comments: All correspondence concerning this emergency order should identify the emergency order number and notice number and be submitted in triplicate to the Docket Clerk, Office of Chief Counsel, Federal Railroad Administration, 400 Seventh Street, S.W., Washington, D.C. 20590.

(2) Examination of written comments: All correspondence concerning this emergency order will be available for examination during regular business hours in Room 5101, Nassif Building, 400 Seventh Street, S.W., Washington, D.C. 20590.

FOR FURTHER INFORMATION CONTACT:

Principal Program Person: Rolf Mowatt-Larssen, Office of Safety, Federal Railroad Administration, Washington, D.C. 20590, 202-426-⁰⁹²⁴~~9024~~.

Principal Attorney: Edward F. Conway, Jr., Office of Chief Counsel, Federal Railroad Administration, Washington, D.C. 20590, 202-426-8836.

SUPPLEMENTARY INFORMATION

Background Information

A total of 270,820 70-ton 1% carbon cast steel wheels (commonly referred to as "70T U-1 wheels") were produced during the period 1958-1969 by the Southern Wheel Company (ABEX). No "70T U-1 wheels" have been produced since late 1969. These wheels are 1 percent carbon steel wheels. The relatively high carbon content in these wheels (all wheels produced since 1970 contain not more than .75 percent carbon) reduces wheel wear. However, it also increases the susceptibility of these wheels to thermal abuse or cracking as a result of heat generated when the brake shoes are applied to these wheels during heavy, prolonged braking.

Because the "70T U-1 wheels" were experiencing a relatively high number of wheel failures, the Association of American Railroads (AAR) amended its Interchange Rules, effective April 1, 1977, to provide that whenever the truck of a freight car with these wheels was dismantled on a repair track, they should be replaced with other type wheels. The AAR further amended its Interchange Rules, effective January 1, 1978 to provide that when a freight car with these wheels was on a repair track for any reason, they should be replaced.

During the month of February 1978, two major accidents occurred which involved the failure of "70T U-1 wheels" and the derailment of trains carrying hazardous materials. The first accident occurred at Waverly, Tennessee, on February 22, 1978. On February 24, 1978, a derailed tank car containing liquified petroleum gas (propane) exploded, resulting in the death of twelve persons and injury to approximately forty-eight persons. The force of the explosion destroyed two city blocks and caused much additional damage.

The second major accident involving the failure of a "70T U-1 wheel" occurred on February 28, 1978 at Bristow, Kentucky (near Bowling Green). Although the accident resulted in no casualties or release of hazardous materials,

thirty-three cars were derailed at a speed of forty-eight miles per hour, causing extensive damage to equipment and lading.

As a result of investigations conducted related to these accidents, the National Transportation Safety Board (NTSB) issued Safety Recommendations R-78-11 through R-78-13 on March 9, 1978. Those recommendations proposed that the FRA:

Use emergency powers to prohibit the use of cars equipped with Southern Wheel Company high carbon wheels from carrying hazardous materials or from being placed in trains moving hazardous materials. (Class I - Urgent Action) (R-78-11.)

Use emergency powers to expedite the replacement of Southern Wheel Company high carbon wheels 70T and UI. (Class I - Urgent Action) (R-78-12.)

Promulgate regulations to establish adequate service records so that similar wheel problems will be promptly detected in the future and corrective action taken. (Class I - Urgent Action) (R-78-13.)

In its safety inquiry conducted to develop additional information on this problem, the FRA was not able to determine the number and distribution of "70T U-1 Wheels" remaining in service.

However, FRA did learn that about 179,500 or two-thirds of all "70T U-1 Wheels" produced by ABEX were purchased by the Family Lines -- the Seaboard Coast Line (SCL), Louisville and Nashville (L&N), and Clinchfield Railroads. The remainder were purchased by 46 other railroads and three car manufacturers.

The L&N is the largest purchaser. It purchased a total of 122,030 of these wheels; 100,968, or 82 percent, were installed as original equipment on new cars and 21,062, or 18 percent, were used as maintenance replacements.

The SCL is second largest purchaser. It purchased 52,997 of these wheels; 44,160, or 83 percent, were installed on new cars and 8,837, or 17 percent, were used as maintenance replacements.

If 83 percent of the wheels purchased by other railroads were also installed on new cars, a total of 224,100 out of all "70T U-1 wheels" produced were installed on new cars. By examining their records, the railroads should be able to identify which new cars received these wheels.

The task of determining on which cars the remaining 45,900 wheels used as maintenance replacements were placed is much more difficult. All of the railroad representatives participating in the public hearing indicated that they do not have records that indicate on which cars these wheels were placed. Moreover, the difficulty of tracing these wheels is further compounded by the fact that railroads routinely replace wheels on the cars of other railroads that they receive in interchange. Consequently, the only way that maintenance replacement wheels can be located is by visually inspecting all of the wheels of 70-ton or less capacity cars. (Seventy-ton capacity wheels are used as replacement wheels on 50-ton capacity cars due to the unavailability of 50-ton replacement wheels.)

In a sampling of 500 of its 5,520 new cars that were originally equipped with these wheels, the SCL found an average of 3.4 "70T U-1" wheels on each of these cars. In other words, 42.5 percent of the wheels inspected in this sampling were "70T U-1 wheels." If the results of this sampling are representative of the number of wheels that are still in service, there may be as many as 114,750 "70T U-1 wheels" still in service.

The FRA did not obtain sufficient information in its safety inquiry to make a comprehensive analysis of the nationwide accident and failure record of "70T U-1 wheels." It has, however, obtained sufficient information to conclude that these wheels have an abnormally high accident and wheel failure rate.

The L&N Railroad has a total of 527,200 wheels in its fleet of 65,000 cars. It purchased a total of 122,030 "70T U-1 wheels." Assuming on the basis of the SCL sampling that 42.5 percent of these wheels are still in service, 51,582 or 10 percent of the wheels in service on the L&N are "70T U-1 wheels." During the period January 1, 1977 to March 13, 1978, the L&N experienced 11 derailments due to wheel failure; six of these derailments involved "70T U-1" wheels. These wheels which constitute only 10 percent of the wheels in the L&N fleet were involved in almost 55 percent of the derailments due to wheel failure.

The SCL Railroad has a total of 507,200 wheels in its fleet of 63,400 cars. It purchased a total of 53,997 "70T U-1 wheels." Assuming on the basis of its sampling that 42.5 percent of these wheels are still in service, 22,948 or less than 5 percent of the wheels in service on the SCL are "70T U-1 wheels." Between January 1, 1973 to March 1, 1978, the SCL experienced 245 wheel failures; a total of 84 or 34 percent of the failures involved "70T U-1 wheels."

These wheels which make up less than 5 percent of the wheels in the SCL fleet accounted for 34.3 percent of wheel failures. Moreover, according to the SCL, approximately 60 percent of the wheel failure derailments during the same 62 month period involved "70T U-1 wheels."

Data relating to wheel failures on railroads other than the Family Lines which have been received by FRA since the public inquiry and certain FRA train accident data also appear to suggest strongly an abnormal rate of failure for "70T U-1" wheels.

The FRA has determined that unusually high failure rates such as those discussed above constitute an emergency situation involving a hazard of death or injury to persons affected by rail transportation activities, including members of the public who might be subjected to the unintentional release of hazardous materials and railroad employees engaged in the operation of trains. A single wheel failure occurring at medium or high speed in a train carrying hazardous materials can result in a powerful explosion or detonation, the contamination of a city water supply, or the poisoning of persons along the right-of-way. While the FRA respects the action taken already by the railroad industry to abate this hazard, and particularly that taken by the Family Line companies, the FRA believes that the public safety will be adequately served only by the exercise of statutory authority

reflected in the order below. Absent the provisions mandated below, compliance with the industry initiatives would be essentially voluntary and would likely require an extended period of time to be completely effective.

By contrast, literal adoption of NTSB recommendation R-78-11 would bring commerce essentially to halt for the period necessary to inspect each of eight wheels on more than 800,000 70-ton or smaller cars in the national fleet. The FRA does not believe that so drastic an action was intended by the NTSB.

Therefore, FRA has chosen to mandate the removal of these wheels from service through the use of procedures which will abate the present emergency in a way which is consistent with the ability of carriers to accomplish the task but which negates the possibility of undue delay. Specifically, carriers are prohibited from accepting for shipment after March 31, 1978, any car containing placarded hazardous materials, unless it has been ascertained that the car is not equipped with "70T U-1" wheels. If a car is found to be equipped with such wheels, the car may be moved only to the nearest point as which the subject wheels can be removed. In addition, carriers are required to share available information concerning the identity of cars originally equipped with these wheels and stencil an identifying mark on each car which will indicate whether "70T U-1" wheels are present. Through this process, all cars known to be equipped with such wheels should be stenciled by June 30, 1978. After that date no car listed as having been equipped

with "70T U-1" wheels may be hauled in any train unless it has been stenciled. All 70-ton or less capacity cars placed on a shop or repair track after March 31, 1978, whether originally equipped with such wheels or not, must be inspected and an appropriate stencil applied. No car stenciled as being equipped with these wheels may be hauled in a train containing hazardous materials once the stencil has been applied.

These procedures together with other terms of the order will accomplish two major objectives. First, expeditious action will be taken to assure that cars known to have been originally equipped with the subject wheels which could create the danger of an accident involving hazardous materials are removed from service. Second, the inspection process prescribed by the order, together with such other measures as the industry may institute, will result in the removal of all subject wheels from service by a mandated deadline of December 31, 1978.

Therefore, pursuant to the authority of Section 203 of the Federal Railroad Safety Act of 1970 (45 U.S.C. 432), delegated to the Federal Railroad Administrator by the Secretary of Transportation (49 CFR § 1.49(n)), it is hereby ordered:

1. After March 31, 1978, a 70-ton or less capacity freight car containing any hazardous material required to be placarded by the Department of Transportation Hazardous Materials Regulations ("placarded hazardous material") may not be accepted for transportation unless the car has been inspected to ascertain whether it is equipped with any Southern Wheel Company (ABEX) 33", 70-ton, one-wear 1 percent carbon cast steel wheels manufactured during the years 1958-1969 ("70T U-1 wheels"). In the event it is ascertained that the car is equipped with any "70T U-1 wheel", and the hazardous material is not off-loaded at the point of origin, the car may be moved only to the nearest point where the "70T U-1" wheels can be removed.
2. After June 30, 1978, no car listed under the provisions of paragraph 6 of this order as having been originally equipped with "70T U-1 wheels" may be hauled in any train unless it has been inspected and marked as prescribed in paragraph 7 of this order.
3. No car stenciled as prescribed in paragraph 7b of this order to indicate that it is equipped with "70T U-1 wheels" may be hauled in a train containing any placarded hazardous material.

4. After March 31, 1978, each 70-ton or less capacity car that is on a shop or repair track and has not been stenciled to indicate whether it is or is not equipped with any "70T U-1 wheels", shall be inspected and stenciled as prescribed in paragraph 7 of this order before the car is removed from that shop or repair track.
5. After December 31, 1978, a car with one or more "70T U-1 wheels" may not be hauled in any train.
6. By April 1, 1978, each railroad that purchased any "70T U-1 wheels" shall compile a list of the cars on which these wheels were installed as original equipment and distribute that list to its mechanical forces, all other railroads, and the Associate Administrator for Safety, Federal Railroad Administration, Washington, D.C. 20590.
7. Each railroad that finds on its line a car listed pursuant to paragraph 6 of this order as being originally equipped with "70T U-1 wheels" shall inspect that car to determine whether it still has any of these wheels. This inspection shall be made at the nearest car inspection facility or, if proper protection is provided to the personnel making the inspection, at the point the car is found.

- a. If the car inspected does not have any "70T U-1 wheels" or they are replaced with other wheels, the car shall be stenciled with a "yellow dot" before the car is moved from the point of inspection. The "yellow dot" shall be at least 6 inches in diameter and centered in a black square that is at least 12 inches square and is located immediately to the right of the consolidated stencil on each side of the car.
 - b. If the car inspected has any "70T U-1 wheels" and they are not all replaced with other wheels, the car shall be stenciled with a "white dot" before the car is moved from the point of inspection. The "white dot" shall be at least 6 inches in diameter and centered in a black square that is at least 12 inches square and is located immediately to the right of the consolidated stencil on each side of the car.
8. Each railroad shall immediately destroy its supply of "70T U-1 wheels" in addition to those it removes from cars. This shall be accomplished by cutting a hole through the plate of each wheel.


9. Each railroad shall report in writing to the FRA by the tenth of each calendar month through the month of January 1979, the following information:
- a. The total number of cars inspected during the preceding month under this emergency order.
 - b. The total number of cars on which "70T U-1 wheels" were found and the number of wheels removed and destroyed.
 - c. The total number of cars on which "70T U-1 wheels" were found but were not removed and the number of wheels not removed.

The report shall be addressed to the Associate Administrator for Safety, Federal Railroad Administration, Washington, D.C. 20590.

A civil penalty of \$250 to \$2500 will be assessed for any violation of this order (45 U.S.C. 438).

Opportunity for formal review of this emergency order will be provided in accordance with Section 203 of the Federal Railroad Safety Act of 1970 by written petition.

Issued in Washington, D.C. on **MAR 23 1978**


JOHN M. SULLIVAN
Administrator