

[4910-06]

U.S. DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

FRA Emergency Order No. 16

Notice No. 3

Owners of Railroad Tank Cars; Railroads

Modification of Emergency Order Requiring

Inspection and Repair of Dual Diameter Tank Cars

The Federal Railroad Administration [FRA] of the United States Department of Transportation finds that Emergency Order No. 16, Notice No. 1 (57 FR 11900; April 7, 1992) and Notice No. 2 (57 FR 22014; May 26, 1992) should be modified. This Notice summarizes the status of the inspection and repair work performed to date and modifies the required sample size for small fleets.

**Authority**

Authority to enforce the Federal railroad safety laws, including laws pertaining to the transportation of hazardous materials by railroad, has been delegated by the Secretary of Transportation to the Federal Railroad Administrator. 49 CFR § 1.49. Railroads, shippers of hazardous materials, and owners of tank cars are subject to FRA's safety jurisdiction under the Federal Railroad Safety Act of 1970, 45 U.S.C. §§ 421, 438, and the Hazardous Materials Transportation Act, as amended, 49 App. U.S.C. § 1804. FRA is authorized to issue emergency orders where an unsafe condition or practice creates "an emergency situation involving a hazard of death or injury to persons." 45 U.S.C. § 432(a). These orders may immediately impose "such restrictions or prohibitions as may be necessary to bring about the abatement of such emergency situation." (*Ibid.*)

**Background**

On April 2, 1992, the FRA issued Emergency Order No. 16, effective 12:01 a.m. April 4, 1992 (57 FR 11900, April 7, 1992), requiring owners of dual-diameter tank cars to develop a sampling plan for inspecting such cars with a 99 percent confidence level that no more than one percent of the dual-diameter cars of any given design type would contain a structural imperfection in the critical transition welds. Any defects discovered were to be repaired before returning the car to service and any discovery of a weld defect would subject all cars built to that design to an inspection requirement. Emergency Order No. 16 prohibited the loading or offering into transportation of any dual-diameter tank car until its owner had submitted a sampling plan and, once the plan had been submitted, the order further required cars that were

part of the sample to be inspected before loading and not later than 60 days after the effective date of the order.

The FRA amended the order on May 26, 1992 by modifying the number of cars to be inspected in the initial 60 days; extending the time for completing inspections of cars included in the sample plans; specifying that the prohibited imperfections were those that may initiate crack growth; clarifying the identity of the "owner" of a tank car; and publishing an FRA approval of an alternative inspection protocol using ultra-sound technology.

Since issuance of the order, FRA has gained considerable insight into the structural integrity of dual-diameter design types. Unlike the car that failed near Dragon, Mississippi, many of these cars have sill structures with reinforcement plates extending beyond the large diameter circumferential weld. Such a design appears to redistribute the induced train action forces (i.e., draft, buff, vertical, and inertial loads) throughout the tank. In a letter dated April 8, 1992, Union Tank Car Company provided calculations showing that, depending on the thickness of the reinforcement plate and the tank shell, the extended-plate design will increase the theoretical fatigue life of the critical joint by a factor of 3.9 to 8.9. FRA's review of the Union calculations, combined with the results of the inspections reported thus far under this Emergency Order, shows that tank car designs calling for a reinforcement plate extending beyond the large diameter circumferential weld do not show the shell cracking that led to the failure at Dragon, Mississippi.

As of August 21, 1992, owners of tank cars under the inspection program have performed inspections of 2,201 tank cars, or 93 percent, of a sample size of 2,357, and 37 percent of a total population of 5,974 dual-diameter tank cars. Sampling was based on a hypergeometric distribution (finite lot size). Such a sampling scheme provides a high degree of confidence that the appearance of defects on non-inspected tank cars will be less than a pre-specified number, in this case 1 percent.

In response to Notice No. 1 of this Emergency Order, owners identified nine specific design types with car populations ranging from 100 to 1970 cars. Finite lot sizes (the number of cars of each population group required to be sampled) were developed based on the population of each design type of dual-diameter car. Despite its benefits, the problem with this method of choosing sample fleets is that it tends to impose a disproportionate burden on small fleet sizes, particularly those where the design type has fewer than 500 cars. For example, one car owner reported that, for his design type, hypergeometric distribution required him to look at over 78 percent of his fleet at the same time other, larger, fleets required inspection of only 25 percent of their total car population.

While it is important to choose an inspection level that will yield confidence in the objectives of the program, FRA believes that the inspection results to date on more than 2,200 tank cars are remarkably uniform and are consistent with equitably relieving the inspection burden on small populations of tank cars. It is plain to say that, other than the design removed from service following the complete shell failure at Dragon, no other designs have been similarly restricted despite the provision that any appearance of a structural defect that may

initiate crack growth is the basis for removing all cars of the same design-type from service until inspected. It thus appears more likely than previously could be established that the crack phenomenon is related to a single design (or design feature) rather than being an inherent characteristic of the dual-diameter fleet as a whole.

It is FRA's judgement that, for design types with a population of less than 500, when owners successfully inspect at least 50 per cent of the population of that design type, they may be deemed to have established its serviceability. However, the threat of a dual-diameter shell failure remains at least a statistical possibility as long as any of these cars are in service and FRA will continue to insist that discoveries of structural defects in the critical area established in Notice No. 1 (that is, along the A1, A2, B1 and B2 circumferential welds, two inches on either side of the weld and within twenty-four inches of either side of the lower longitudinal centerline) that may initiate crack growth be immediately reported.

### **Finding and Order**

I find that the emergency situation involving a hazard of death or injury to persons that led to the issuance of Emergency Order No. 16, has not been completely abated and, accordingly, pursuant to the authority of 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), it is ordered that Emergency Order No. 16, Notice No. 1, as amended by Notice No. 2, be further amended as follows:

1. Owners of dual-diameter tank cars with a design type population of 500 or fewer cars (other than GATX Design 16 cars) who have inspected a minimum of 50 percent of the population of that design type and found no structural defect that may initiate crack growth are relieved of the duty of inspecting, under Emergency Order No. 16 as amended, the remaining non-inspected cars of that design type now listed as part of a sample plan.

2. Owners of dual-diameter tank cars who find, whenever and by whatever means, an imperfection as defined in Appendix W of the Tank Car Manual, and the imperfection is a structural defect that may initiate crack growth, shall immediately notify FRA and any other owners of cars built to that design type (to the extent the owner knows of such other owners). Thereafter, owners of cars of that design type must ensure that all such cars are inspected in accordance with paragraph 8 of Notice No. 1 of this Order or with the alternative ultra-sound techniques authorized by Notice No. 2 before permitting any further loading of such cars.

### **Relief**

Tank car owners may obtain relief from this Order by performing the inspections and making the reports as required.

## **Penalties**

Each violation of this Emergency Order shall subject the person committing such violation to a civil penalty of up to \$20,000. 45 U.S.C. §§ 432, 438. FRA may, through the Attorney General, also seek injunctive relief to enforce this order. 45 U.S.C. § 439.

## **Notice to Affected Persons**

Notice of this Order will be provided by publishing it in the Federal Register. Copies of this Notice No. 3 of Emergency Order No. 16 were sent by mail or facsimile prior to publication to the Association of American Railroads, the American Short Line Railroad Association, the Regional Railroads of America, the Railway Progress Institute, all members of the AAR Tank Car Committee, and to owners of dual-diameter tank cars as follows: ACF Industries, Inc., Aeropres Corp., Bay Cities Gas, Canadian Enterprise Gas Products Ltd., CGTX, Inc., Chevron U.S.A. Products Company, Coastal Chem, Inc., CONOCO Inc., Continental Tank Car Corporation, General American Transportation Corporation, GLNX Corporation, Home Oil Company Limited, Mallard Transportation Company, Mobile Oil Corporation, Petrosol International, Inc., Phillips 66 Company, PLM Transportation Equipment Corp., SAZ Transportation Corporation, Suburban Propane/Petrolane, Sun Refining and Marketing Company, Texas Petrochemicals Corporation, Trident NGL, Inc., Union Tank Car Company, United States Rail Services, Inc., Vista Chemical Company, Willard Grain & Feed Inc., and ZIP Transportation Company, Inc.

## **Review**

Opportunity for formal review of this Emergency Order will be provided in accordance with section 203(b) of the Federal Railroad Safety Act of 1970, 45 U.S.C. § 432(b), and section 554 of Title 5 of the United States Code. Administrative procedures governing such review are found in 49 CFR Part 211 (see § 211.47, .71-.75).

## **Effective Date**

This amendment to Emergency Order No. 16, Notice No. 1 and 2, shall be effective immediately upon issuance.

Issued in Washington, D.C. on August 27, 1992.

/s/ G.E. Carmichael

Gilbert E. Carmichael  
Administrator