

**Federal Railroad Administration**

[FRA Emergency Order No. 17, Notice No. 1]

**Owners of Railroad Tank Cars; Emergency Order Requiring Inspection and Repair of Stub Sill Tank Cars**

The Federal Railroad Administration (FRA) of the United States Department of Transportation (DOT) has determined that public safety compels issuance of this Emergency Order requiring compliance with a program of priority-based inspections, and repairs as necessary, of the stub sill tank car fleet.

**Authority**

Authority to enforce 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 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**

Beginning early in 1990, FRA learned of at least 10 non-continuous center sill tank cars ("stub sill cars") that had pulled apart, i.e., experienced a complete failure, in the draft sill area. (Many freight cars are built so that a fabricated underframe structure transmits train pulling and braking forces under the full length of the car body: In contrast, a "stub sill" tank car uses the tank structure itself and has no underframe.) Four stub pull-aparts happened in Canada and six in the United States. The failures did not cause any deaths or injuries, and no hazardous materials were released. FRA and Transport Canada advised the Association of American Railroads' (AAR) Tank Car Committee of each incident and the Tank Car Committee opened a docket on the matter to investigate and track the situation.

On April 2, 1990, FRA wrote AAR and the Union Tank Car Company

discussing a draft sill failure on a DOT105J400W Union-built tank car on the Kansas City Southern (KCS) at Shreveport, Louisiana. Union responded with information on four failures on the KCS, dating back to 1985, the most recent showing signs of overly high coupling speeds. The four cars were among a group of 157 similar cars built in two orders; the first, quick inspections of them did not show conclusive evidence of old, or long-standing, weld breaks. Union commenced a program of inspecting all welds in the head brace area and repairing cracks longer than 3 inches. In June 1990, Union reported a fifth car with a draft sill failure and the 48 cars also built under the same Certificate of Construction were added to the on-going program, for a total of 206 cars produced on three build orders.

While this was happening in the United States, on February 11, 1991, at the CSX yard in Sarnia, Ontario, tank car DCTX 33181—built to an AMF Beaird design by Hawker Siddeley Canada, Ltd.—incurred a draft sill separation during switching operations. Another sill separation on a similarly designed car in less than two months led AAR to issue an Early Warning Letter (EW-121) on May 2, 1991 advising carriers that 86 cars in the series DCTX or NCTX 33096-33189 might have the potential for sudden and complete stub sill failure at the weld attachment of the sill to the tank.

The Railway Association of Canada and Transport Canada agreed on an accelerated inspection plan on both a sample of stub sill tank cars with a history of accident involvement and a sample of stub sill tank cars more than 10 years old.

On June 13, 1991, FRA and Transport Canada signed a joint letter to AAR urging more speed in the investigation/solution of the stub sill failure problem; on July 17, members of the Tank Car Committee met with representatives of DOT and Transport Canada to discuss and resolve problems associated with stub sill failures. A pattern of frequent meetings ensued and the energies and talents of private industry and governmental agencies were focused on defining both the problem and the solution to it. All parties recognized the public economic consequences of taking cars out of service for inspection and repair and, given the priority for safe transportation, all parties sought to clarify, if not to minimize, such adverse impact as is unavoidable.

At the July 1991 Tank Car Committee meeting in Pueblo, Colorado, Union summarized its inspections to date and reported that one third of the cars it had inspected showed "indications of

problems;" that the design for them was one in common use since 1966; and that Union suspects that damage due to previous derailment was a factor in 4 of the 5 incidents of sill failure. Before the end of July, FRA had formalized an agreement with Union regarding an inspection and repair program that had now grown to total 258 cars.

Also at the Tank Car Committee meeting in Pueblo, the U.S. and Canadian regulatory agencies made a formal request for an inspection program of a random sample of 1,100 stub sill tank cars, a theoretical engineering analysis of the stub sill design (to be completed by February 2, 1992), a report on the results of physical examinations conducted on cracks found in similar-design cars, and a 100 car sample of cars built to the AMF Beaird design by NATX at Texarkana, Texas.

On August 9, 1991, AAR issued a circular letter (c-7697) formally establishing the 1,100 car sample examination; this letter also established a three-tier prioritization for tank cars: Priority I, for cars shopped due to accident or derailment damage—inspection and repair are required before the car is returned to service; Priority II, for cars with a history of defects critical to structural integrity—inspection and repair deadlines are established in the notice assigning the cars to this priority, but the usual period is three years; and Priority III, for cars in the 1,100 car random sample—completion to be achieved by December 31, 1991. Also on that same day, the Association issued Early Warning (EW) Letter 122, advising members and private car owners of the high incidence of cracks and serious manufacturing defects in cars built to the suspect AMF Beaird design. EW-122 required a total of 143 cars built by Hawker-Siddeley, of Nova Scotia, and Davie Shipbuilding, of Quebec, to be inspected. Four days later, on August 13, 1991, Transport Canada issued an order under its Railway Safety Act removing from service all tank cars built to the suspect design until they were inspected and all necessary repairs completed. After reviewing the results of an accelerated inspection and repair program, Transport Canada lifted its order on October 22, 1991.

At the request of FRA, the AAR issued a Maintenance Advisory Letter (MA-04) on August 19, 1991, requiring that cars built to the AMF Beaird design by U.S. builders undergo an accelerated inspection program effort to determine whether or not they also had a high

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incidence of cracks and serious manufacturing defects.

By September, the fleet identified by Union Tank Car Company with potential stub sill problems had increased from 258 to 921 DOT105J300W cars built between 1977 and 1981 for vinyl chloride monomer service. During 1991, Union inspected 402 of the cars and found at least some indication of problems on one-fourth to one-third of them. The total count of Union tank cars with draft sill failures had climbed to seven when, at its October 1991 meeting, the AAR Tank Car Committee placed the identified cars into the Stub Sill Inspection Program as Priority II cars, to be inspected and repaired within 3 years.

In addition, the October Committee meeting included a review of the results of the inspections and tests performed in compliance with the AAR's Early Warning Letters and Maintenance Advisories; the Committee decided to notify the nearly 30 affected owners that approximately 7,000 cars were being placed in the AAR's Stub Sill Inspection Program as Priority II cars, with inspections and repairs to be completed in a three-year time frame.

At the January 1992, Tank Car Committee meeting, the committee received a report on the status of the "Priority III" 1,100 car random sample. Subsequent review of the data collected in that sample shows that a significant percentage of stub sill tank cars have defects that could lead to sudden and complete failure of the draft assembly—that is, that the coupler on the car, and the part of the car structure that holds the coupler, could break apart and fall off. The experience to date is that a coupler failure in a yard is dangerous but not catastrophic. Failure at main line track speeds is viewed as much more serious and nearly certain to lead to a derailment. While stub sill tank cars carry the entire spectrum of commodities, from extremely dangerous hazardous materials to clay slurry and tomato paste, it would be a false comfort to think that only those cars containing dangerous chemicals are serious threats to safety—any disruption to a train that might lead to a derailment has the potential for disaster.

The representatives of industry and the railroads who met with representatives of FRA and Transport Canada on March 17, 1992, presented a plan for inspecting tank car stub sills. Its major flaw, in FRA's judgment, was that it allowed too long for completion of the program. Promptness is all the more important in view of information developed during the inspections of dual diameter tank cars required by FRA's

Emergency Order No. 16 (57 FR 11900). One of the fleets inspected during the early days after that order was issued showed stub sill cracks in about 45 percent of the cars. FRA cannot say that this is representative of the stub sill fleet at large, but neither can FRA rule out that possibility. The inspection program must begin now, and must continue as a matter of high priority until it is completed.

FRA recognizes that the ultimate success of this, or any other, safety program depends on a delicate tempering of the need for assured safety with the ability to produce it. There are upwards of 160,000 stub sill tank cars in the North American fleet and FRA cannot reasonably order all of them out of service until they are inspected and repaired. First, only certain designs now show sufficient problems to be included in the AAR priority program, and second, there is a practical limit on how quickly all stub sill cars could be inspected without totally disrupting railroad tank car service and not only causing unjustifiably severe effects on the Nation's economy but potentially hindering other inspection programs (such as Emergency Order No. 16, which addresses greater risks than those posed by tank car stub sills). Instead, FRA has worked with the tank car builders, owners, and the railroads to urge development of a plan and a procedure to inspect these cars at as rapid a pace as inspection capacity, safety priorities, and the demands of transportation allow.

Since the March 17 meeting, the time frames of the AAR plan have been shortened with the encouragement of FRA. The culmination of this effort is AAR Operations and Maintenance Circular No. 1 (attached to this order as Appendix A), made final on July 15, 1992, during a meeting of FRA, the Railway Progress Institute (representing tank car builders), and the AAR Tank Car Committee. AAR's O&M Circular No. 1 is a better focused approach than previous industry plans and will accord priority to those segments of the fleet presenting the greatest risk. Cars now in AAR's Priority II will be inspected in 18 months (rather than three years) or less, depending on their accumulated mileage; cars on the same Certificate of Construction as those in the Priority III sample that exhibited serious cracking will be on the same accelerated inspection schedule. Cars that have accumulated more than a half-million service miles will be placed on an even tighter inspection deadline.

More important to the purposes of this notice, AAR's O&M Circular No. 1 is a plan that FRA will enforce, both

because this agency believes that the current history of tank car stub sill cracks and failures represents an emergency situation and because this agency cannot tolerate any further delay in the progress that must be made to inspect the stub sill tank car fleet and restore confidence in that fleet's ability to transport hazardous materials safely. Of course, should further developments indicate that this plan is not sufficient to address the emergency, FRA retains the authority to amend this order in any way it deems necessary.

#### Tank car "Owners"

This emergency order applies to "owners" of tank cars. The freight car safety standards require, at 49 CFR 215.301, that the railroad or private car owner reporting mark be displayed on the car.

Car reporting marks, an alpha/numeric identification such as ABC 1234 that is unique to each piece of railroad rolling stock, are assigned by the Secretary, Transportation Division of the Operations and Maintenance Department of AAR. Reporting marks, and other information about the car, including ownership, mechanical designation, size, and capacity, are part of the Universal Machine Language Equipment Register (UMLER) file, a computer file that serves as the primary source of data about the North American railroad equipment interchange fleet. UMLER is the master file for car hire and car mileage payments and for car movement reports under the TeleRail Automated Information Network (TRAIN II) system.

The specifications for the data contained in UMLER, including the identification of the owner, have been formalized in the Universal Machine Language Equipment Register (UMLER) Data Specification Manual printed, together with a listing of each car in the North American fleet, in *The Official Railway Equipment Register, Tariff ICC RER 6400-Series*, published by International Thomson Transport Press, New York, New York. It is to these data that FRA will look to identify the owner of a tank car.

However, FRA learned, during the inspections conducted under Emergency Order No. 16, that restricting the definition of owner to just "the owner of the reporting mark," was inadequate and could lead to inequities in enforcement.

Tank cars are commonly used under master lease agreements under which the lessee uses the car in exchange for a monthly rental payment. The holder of such an agreement, the lessee, has the

right to control the service of the car, i.e., to designate its next load and destination. A tank car master lease gives the lessee more control than the owner of the reporting mark over the day to day operation of the car; as long as the rental payment is made, neither the reporting mark owner nor the title holding owner (who may be an investment company) may be able to prevent the use of a tank car contrary to this Emergency Order.

FRA believes that the intent of Emergency Order No. 17 will be realized most clearly and most fairly, if all parties understand that, when FRA refers to a tank car "owner," that term is potentially as extensive as FRA's jurisdiction over "persons" and includes whatever interest controls or influences relevant activity involving the tank car. This means that the title holder, the reporting mark owner, and the lessee/shipper are all included as necessary to effect safety. Further, this means that FRA will look to the reporting mark owner to accomplish the inspections subject to this order but that FRA will not hesitate to seek a civil penalty from or take other enforcement action against a lessee/shipper, or any other "person," who impedes the performance of inspections subject to this order or who offers an improper car into transportation.

#### The AAR Inspection Program

AAR's O&M Circular No. 1, issued on July 17, 1992, establishes the "AAR Tank Car Stub Sill Inspection Program." The text of O&M Circular No. 1 is reproduced in Appendix A to this Emergency Order and incorporated herein by reference.

#### Finding and Order

FRA concludes that the continued use of stub sill tank cars, not subject to a rational and enforceable phased program of inspection and repair, poses an imminent and unacceptable threat to public safety. FRA further concludes that reliance solely on an industry program that is not self-enforcing, but depends on the cooperative response of multiple entities and persons, is inadequate to protect the public safety. I find that the unsafe conditions discussed above create an emergency situation involving a hazard of death or injury to persons. 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:

1. That owners of stub sill tank cars shall comply with the AAR Tank Car Stub Sill Inspection Program, and the

AAR Tank Car Stub Sill Inspection Procedure, placed in effect in the Association of American Railroads' O&M Circular No. 1, issued to members and private car owners on July 17, 1992.

2. That owners of stub sill tank cars shall not return cars to service following their inspection until all defects have been repaired and the car is in full compliance with the Federal railroad safety regulations, including the Hazardous Materials Regulations, and the AAR Tank Car Manual.

3. That each owner of stub sill tank cars shall inspect his or her jacketed cars, and his or her cars with non-jacketed thermal protection systems, such that not less than the following proportion of cars of jacketed design (including cars with non-jacketed thermal protection systems) within an owner's fleet then remaining in service shall have been inspected by the end of the corresponding period:

Months elapsed	Proportion of fleet inspected
12.....	One fifth (1/5).
24.....	Two fifths (2/5).
36.....	Three fifths (3/5).
48.....	Four fifths (4/5).
60.....	Five fifths (5/5).

4. That each owner of stub sill tank cars shall inspect his or her non-jacketed cars such that not less than the following proportion of cars of non-jacketed design within an owner's fleet then remaining in service shall have been inspected by the end of the corresponding period:

Months elapsed	Proportion of fleet inspected
12.....	One seventh (1/7).
24.....	Two sevenths (2/7).
36.....	Three sevenths (3/7).
48.....	Four sevenths (4/7).
60.....	Five sevenths (5/7).
72.....	Six sevenths (6/7).
84.....	Seven sevenths (7/7).

5. That cars are considered inspected only when AAR Form SS-2 is submitted to the RPI/AAR Tank Car Safety Project.

6. That, within thirty days of the end of each period set forth in paragraphs 3 and 4 above, each owner of stub sill tank cars shall report in writing to the FRA Office of Safety Enforcement, Hazardous Materials Division, 400 Seventh Street SW., Washington, DC 20590 the total number of jacketed cars (including cars with non-jacketed thermal protection systems) and non-jacketed cars then remaining in service in his or her fleet and the cumulative total of each type inspected in

accordance with Emergency Order No. 17.

#### Relief

Tank car owners may obtain relief from this Emergency Order by inspecting the affected cars as required and repairing them as necessary.

#### Penalties

Any violation of this order shall subject the person committing the 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.

#### Interpretations and Statements of Enforcement Policy

Because this Emergency Order directs compliance with a Tank Car Stub Sill Inspection Program established by AAR, FRA believes that affected members of the public are entitled to know how FRA will discharge its enforcement functions. The following interpretations are offered to assist compliance with Emergency Order No. 17.

1: The Tank Car Stub Sill Inspection Program calls for jacketed cars, and cars with non-jacketed thermal protection systems, "to be shopped, stub sills inspected, and all defects/cracks repaired within 5 years;" and non-jacketed cars "to be inspected and all stub sill defects/cracks repaired within 7 years." Read literally, these statements could be taken to require performing repairs on cars that the owner decides to scrap following the stub sill inspection. FRA will not require cars destined for scrapping to be repaired (unless repairs are necessary to permit safe movement to the point where scrapping will occur), but will insist that repairs be completed before any car is returned to service.

2: Paragraph 6 of the Inspection Program permits AAR to "exempt owners from the 400,000 mile requirement" on a showing by the owner that rebuts the presumption that cars older than 20 years have moved more than 400,000 miles. FRA insists that all requests for mileage exemptions be in writing, that replies granting or denying the requests be in writing, that AAR maintain files on such requests, and that FRA have immediate access to those files during normal business hours.

3: Paragraph 7 of the Inspection Program gives the Tank Car Committee authority to determine the priority inspection program for groups of cars demonstrating a pattern of defects critical to stub sill integrity. FRA has no essential objection to that procedure as

long as the Committee's actions do not extend any of the time deadlines established in paragraphs 2 through 6 of the Inspection Program.

4: This Emergency Order requires each owner to inspect a proportionate number of its cars each year the Inspection Program is in effect. The decision to include this detail in the Emergency Order is based, first, on the need to gather inspection data quickly to continue the assessment of all segments of the stub sill tank car fleet, of the various designs used in different types of service, and of the danger these cars appear to represent to the public, and, second, on the need to spread the burden of this program throughout all owners of stub sill tank cars. The AAR Inspection Program could be read to permit all jacketed cars, for instance, to be inspected between the fourth and fifth anniversaries of O&M Circular No. 1, but FRA cannot continue to wait for the industry to gather stub sill inspection data; such delay would significantly increase the risk of additional service failures. Preliminary data available to FRA suggest that, aside from the cars assigned by Emergency Order No. 17 to inspection deadlines of 24 months or less, there are about 80,000 cars to be inspected within 5 years and about 40,000 cars to be inspected within 7 years. FRA therefore expects the industry to inspect about 16,000 jacketed cars and about 5,700 non-jacketed cars each year of the Inspection Program. Further, as the description of tank car "owners," above, makes clear, FRA insists that all persons who control the use or service of tank cars subject to this Emergency Order cooperate to abate the hazard posed by the continued use of uninspected stub sill tank cars.

#### Notice to Affected Persons

Notice of this Order will be provided by publishing it in the *Federal Register*. Copies of this Emergency Order were sent by mail or facsimile prior to publication to the AAR, 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 tank cars (including owners of stub sill cars identified by AAR as potential candidate cars for inclusion in the Priority II category) as follows: ACF Industries, Inc.; Aeropres Corp.; Amoco Canada Petroleum Company, Ltd.; Amoco Chemical Company; Amoco Oil Company; Baden Investment Company; 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; Denco Petroleum, Inc.; General American Transportation Corporation; General Electric Railcar Services Corp.; GLNX Corporation; HBG Enterprises of Tampa, Inc.; Home Oil Company Limited; Mallard Transportation Company; Mapco Gas Products, Inc.; Mile-High Railcar Services, Inc.; Mobil Oil Corporation; OXY NGL Inc.; Petrosol International, Inc.; Phillips 66 Company; PLM Transportation Equipment Corp.; PTO, Inc.; Rapco Transportation Company; Rocky Mountain Transportation Services; SAZ Transportation Corporation; Suburban Propane/Petrolane; Sun Refining and Marketing Company; Temco Corporation; Texas Petrochemicals Corporation; Transportation Equipment, Inc.; Trident NGL, Inc.; Trinity Industries, 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 49 CFR part 211 (see 211.47, .71-.75).

Issued in Washington, DC on September 3, 1992.

Gilbert E. Carmichael,  
Administrator.

#### Appendix A

##### *Association of American Railroads' O&M Circular No. 1*

The text of the Association of American Railroads' O&M Circular No. 1, as issued on July 17, 1992, over the signature of Harvey H. Bradley, Vice-President, Operations and Maintenance Department is as follows:

AAR O&M Circular No. 1—Tank Car Stub Sill Inspection Program

1. Stub sills on all cars, when shopped for any reason in owner-approved shops, are to be inspected and all defects/cracks repaired.
2. All jacketed cars and all cars with non-jacketed thermal protection systems are to be shopped, stub sills inspected, and all defects/cracks repaired within 5 years.
3. All non-jacketed cars are to be inspected and all stub sill defects/cracks repaired within 7 years.
4. All cars assigned to the AAR Priority Inspection Program by the Tank Car Committee as of the effective date of this Circular are to have stub sills inspected and all defects/cracks repaired within 18 months, except that cars that have accumulated more

than 500,000 miles must be inspected in accord with the accelerated schedule described in paragraph 6, below.

5. Cars built to the same Certificate of Construction as those reported on the 1100-car survey with transverse weld cracks greater than 3 inches, or longitudinal weld cracks greater than 6 inches, are to be inspected and all defects/cracks repaired within 18 months, except that cars that have accumulated more than 500,000 miles must be inspected in accord with the accelerated schedule described in paragraph 6, below.

6. All stub sill cars having actual or estimated accumulated mileage in excess of 400,000 miles must be inspected and all defects/cracks repaired in accord with the following schedule:

- Greater than 800,000 miles: inspected within 4 months;
- Greater than 600,000 miles: inspected within 7 months;
- Greater than 500,000 miles: inspected within 13 months;
- Greater than 400,000 miles: inspected within 18 months, except that non-insulated cars must be inspected within 24 months. In cases where total car mileage cannot be reasonably estimated from existing records, owners shall use a straight line projection from the average mileage over the past six years. If the average mileage over the past six years is unavailable, owners shall assume that any car older than 20 years has accumulated mileage in excess of 400,000 miles, unless the owner can show that the cars are more likely than not to have accumulated less than 400,000 miles. In such cases, the AAR may exempt owners from the 400,000 mile requirement.

7. If inspections reveal any patterns of defects/cracks critical to stub sill structure integrity, owners shall inspect cars according to an assigned priority inspection program as determined by the AAR Tank Car Committee.

8. Cars built or rebuilt, and cars whose draft sills have been upgraded through an AAR-approved alteration, and thoroughly inspected after January 1, 1984, and all cars having had stub sills thoroughly inspected within the last 2 years, are exempt from further inspection, except for compliance with AAR Field Manual Rule 88 B.

9. All inspection data is to be submitted to the RPI/AAR Tank Car Safety Project for analysis.

10. Cars inspected pursuant to this program may not be returned to service until all defects noted are repaired and the car is in full compliance with the Federal railroad safety regulations and the AAR *Specifications for Tank Cars*.

11. Cars inspected pursuant to this program shall be marked with a two inch green square on diagonally opposite sill webs.

12. Car owners are to maintain records and dates of all stub sill inspections, including hard copies of completed Forms SS-2.

#### *Priority Inspection Program*

The Priority Inspection Program, established by the AAR Tank Car Committee is described by the Committee as follows:

The AAR Priority Inspection Program requires inspection and repair, if necessary, of all stub sills on tank cars with a history of defects and/or cracks, critical to the structural integrity, which could cause failure of the sill or its components. Any cars subsequently assigned to this program must be inspected and repaired as necessary within three years, or as established by AAR Early Warnings, Maintenance Advisories or other publications.

#### O&M Circular No. 1—Tank Car Stub Sill Inspection Procedure

Inspections must be conducted at facilities that have the capability and experienced personnel to administer the testing methods utilized. Liquid penetrant examinations must be conducted in accord with Section W11.63 of M-1002, *Specifications for Tank Cars*. Acoustic Emissions (AE) testing must be conducted in accord with Annex Z of the AAR's *Procedure for Acoustic Emission Evaluation of Tank Cars and IM-101 Tanks*. Insulated cars must have inspection ports fabricated in accord with the car builder's recommendations. Draft gear must be removed if attachment welds are obscured by design (reference Figure #5), except it is not necessary to remove draft gear if welds are inspected using fiber optics or if sill is tested by the acoustic emission (AE) method. Inspection ports are not required for AE testing. Area to be inspected must be cleaned as may be required by the inspection method to be utilized.

#### Inspection

Refer to Figure (1-8) which most closely reflects stub sill design on car being inspected. Weld attachments of draft sill-to-pad, draft sill-to-head brace (if used), head brace-to-pad, and pad-to-tank must be examined. All of these welds that are accessible must be examined by visual means, enhanced by magnification if necessary, by liquid penetrant method, or by other equivalent or superior testing method. Welds that are not accessible, such as welds that are covered by a head shield, may be examined visually using fiber optic or equivalent technology.

#### Reporting

Inspection results are to be recorded on Form SS-2 and submitted to the car owner, who is to arrange for transfer of the data to computer format. Car owner must submit all Form SS-2 data monthly in computer-readable format.

Defects other than those recorded on the SS-2 form should be separately reported to car owner.

(Note: Because the AAR's O&M Circular No. 1 has been sent to all AAR members and to private car owners, FRA is not reproducing the inspection program's internal reporting forms or diagrams in the Federal Register.)

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