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DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

Safety Advisory 2007-02

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

ACTION: Notice of Safety Advisory; Specialized Maintenance Equipment.

SUMMARY: FRA is issuing Safety Advisory 2007-02 in order to provide interested parties guidance on the proper application of existing statutory and regulatory requirements concerning self-propelled specialized maintenance equipment. This document also strongly recommends that owners and operators of such equipment properly inspect the equipment and ensure that properly qualified individuals are operating and piloting the equipment while in transit.

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SUPPLEMENTARY INFORMATION: On November 9, 2006, a rail grinder train owned and operated by Harsco Track Technologies (Harsco), a rail services contractor, derailed while in transit from Sparks, Nevada, to Bakersfield, California. The grinder train, classified as maintenance-of-way (MOW) equipment, was operating in a westward direction on a 2.2 percent descending grade on the Union Pacific Railroad (UP) Roseville Subdivision. Ten of the 13 cars in the train derailed, resulting in

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the deaths of two Harsco employees. The consist was being operated by a Harsco operator and a UP pilot conductor. Neither the operator nor the pilot had been qualified on the territory over which the consist was traveling. FRA's post-incident investigation has revealed that numerous serious mechanical and brake defects also existed on the equipment in the involved rail grinder consist.

Presently, FRA is in the process of performing safety inspections on all Harsco's rail-grinding trains and other similar specialized maintenance equipment owned by other service providers to ensure the safe operation of the equipment. Because many of these rail-grinding trains differ in design, it is necessary to inspect each train individually. Harsco has voluntarily halted all operation of their rail-grinding equipment until FRA has completed these safety inspections. FRA's Motive Power & Equipment and Track Divisions will work closely with the affected railroads, equipment owners and operators to expedite these inspections.

Recommended Action: In recognition of the need to ensure safety, FRA recommends that owners, operators, and railroads using specialized maintenance equipment:

- (1) Utilize the interpretative guidance provided in this document to ensure that the equipment is properly inspected and operated;
- (2) Ensure that either the operator or pilot involved in any move of this equipment is qualified on the territory over which the equipment will be traveling; and
- (3) Thoroughly inspect the equipment at the earliest opportunity to ensure that it is safe to operate and is in compliance with all regulatory and statutory requirements.

Failure of industry members to voluntarily take action consistent with the above recommendation may result in FRA pursuing other corrective measures to enforce public safety under its rail safety authority. FRA may modify Safety Advisory 2007-02, issue additional safety advisories, or take other appropriate action necessary to ensure the highest level of safety on the Nation's railroads.

Regulatory and Statutory Application

Subsequent to the incident, and based on FRA's accident investigation, FRA's regional personnel have been aggressively inspecting other similarly equipped and operated train sets. FRA's findings indicate that there is uncertainty among some in the regulated community as to the proper application of the agency's regulations of specialized maintenance equipment. Historically, FRA's method for applying its regulations and relevant statutes to this type of equipment has been consistent. To determine which regulatory and statutory requirements apply to specific equipment, FRA has traditionally looked at the use of the equipment and the purpose of the regulation or statute in question.

Due to the unique design and the hybrid nature of much of this specialized maintenance equipment, which will likely continue to evolve and change, a combination of regulations and statutes are applicable to ensure that the equipment is safe to operate. The regulatory provisions applicable in some measure to this equipment include Title 49 Code of Federal Regulations (CFR) Parts 214, 221, 223, 229, 231, 232, and 240. In addition, statutory requirements contained in Title 49 United States Code (U.S.C.) Sections 20701, 20302, and 20303, also apply. This document is intended to clarify the application of these regulatory provisions and statutory requirements for the benefit of the regulated community and to notify them of FRA's enforcement expectations. FRA believes that providing clarification will assist the industry in avoiding similar future incidents. See Table 1 for a summary of the application of regulatory and statutory provisions for specialized maintenance equipment. Please note that Table 1 is included as a helpful summary to the reader, but is not intended to change or in any

way restrict application of the regulatory or statutory provisions cited within.

Regulatory Application

Due to the unique design of some self-propelled specialized maintenance equipment, it is sometimes difficult to determine whether the particular vehicle is a locomotive under FRA's various regulatory provisions. Virtually all of FRA's regulations contain a definition of ``locomotive,'' however, the definition changes based on the purpose and scope of the particular regulation. If specialized maintenance equipment qualifies as a locomotive, FRA will enforce its regulations including testing, inspection, maintenance, and repair requirements. The determination as to whether a piece of equipment or a vehicle qualifies as a locomotive under a specific regulation is based on how the equipment is being used and the specific purpose of that regulation. Thus, a self-propelled piece of specialized maintenance equipment may be considered a locomotive under one regulatory provision while not being considered a locomotive under another. Likewise, if the equipment qualifies as a ``dual purpose vehicle,'' (See 49 CFR Part 240), FRA will enforce the restrictions placed on those vehicles by Part 240.

Similarly, if self-propelled maintenance equipment is used in its limited on-track maintenance capacity, the provisions contained in 49 CFR Part 214, Subpart D, apply. However, if self-propelled maintenance equipment is used in the same capacity as a locomotive and is not engaged in an MOW activity, those regulations governing locomotives in Part 229 will apply to the power car. In addition, FRA will apply any applicable regulations to the other vehicles in MOW train sets that are not used to power the train based on FRA's determination as to the type of vehicle they most closely resemble.

49 CFR Part 214

When being used as on-track roadway maintenance machines, specialized maintenance equipment must comply with 49 CFR Part 214, Subpart D: ``On-Track Roadway Maintenance Machines and Hi-Rail Vehicles.'' This subpart contains various requirements regarding the safety equipment required to be on such machines as well as provisions related to their design and operation, which are intended to prevent accidents and casualties. Section 214.527(a), which requires an initial inspection of the equipment, provides in part: ``The operator of an on-track roadway maintenance machine shall check the machine components for compliance with this subpart, prior to using the machine at the start of the operator's shift.'' In addition, in-service brake system failures are addressed in Sec. 214.529(a): ``In the event of a total in-service failure of its primary braking system, an on-track roadway maintenance machine may be operated for the remainder of its tour of duty with the use of a secondary braking system or by coupling to another machine, if such operations may be done safely.'

49 CFR Part 221

Part 221, which addresses the use of rear end marking devices, contains a very broad definition of what constitutes a locomotive. Under Sec. 221.5(c), a ``self-propelled unit designed to carry freight or passenger traffic'' is considered a locomotive. Thus, a self-propelled vehicle designed to carry freight that is conducting a railroad operation on main track, whether coupled to other cars or not, is required to be equipped with a rear end marking device prescribed in Part 221.

49 CFR Part 223

Under Part 223, which addresses glazing requirements, a locomotive is defined as ``a self-propelled unit of equipment designed primarily for moving other equipment,`` and does not include self-propelled passenger cars (See Sec. 223.5). Thus, the power car in an integrated rail grinder train would be considered a locomotive for purposes of Part 223, because it is designed primarily to haul the other MOW equipment in the train set. Consequently, power cars in these types of integrated MOW trains would be required to meet the locomotive glazing requirements contained in Part 223. Similarly, a piece of specialized maintenance equipment designed primarily to move other equipment would also be required to meet the Part 223 glazing provisions.

49 CFR Parts 229 and 232

Part 229 (locomotive standards) and Part 232 (freight power brakes) contain similar definitions of ``locomotive.`` They both exempt ``hi-rail, specialized maintenance, or other similar equipment`` from their requirements. If equipment is within this category, Parts 229 and 232 would not apply. FRA has historically construed the exception for hi-rail and specialized maintenance equipment very narrowly.

FRA considers the specific use of the equipment and the purpose of each of the regulatory provisions when determining if the exception applies. Technical Bulletin (TB) 98-71, issued by FRA in August 1998, illustrates FRA's application of Part 229 in this manner. This TB makes clear that when specialized maintenance equipment is used outside its typical MOW function, it will be considered a locomotive under Part 229. Thus, if a hi-rail or a piece of specialized maintenance equipment is used to haul freight over the railroad outside of its limited MOW operation or outside of repair facilities, then it would be considered a locomotive for purposes of Part 229. TB 98-71 recognizes that most specialized maintenance equipment cannot meet some of the locomotive safety standards contained in Part 229. Through its exercise of enforcement discretion, FRA set out those provisions of Part 229 that are applicable to such vehicles when they are used as traditional locomotives. The following list identifies those portions of Part 229 that are applicable to specialized maintenance equipment when used as traditional locomotives outside their typical MOW function:

Each self-propelled vehicle shall be inspected each calendar day when used and an inspection report and record shall be completed as described in Sec. 229.21;

Each self-propelled vehicle shall receive a periodic inspection as described in Sec. 229.23, and all pertinent data is to be entered on an F6180.49A Locomotive Inspection and Repair Report, which shall be displayed under a transparent cover in the cab of the vehicle;

The vehicle's air brake equipment must be cleaned and tested as often as conditions require, but not less frequently than required in Sec. Sec. 229.25, 229.27, and 229.29;

The main reservoir must comply with Sec. 229.31 regarding either hammer and hydrostatic testing or pre-drilling of the reservoir;

The vehicle must meet the general safety requirements of Sec. Sec. 229.41, 229.43, and 229.45;

A fuel line safety cut-off device is required under Sec. 229.93;

As required by Sec. 229.117, the vehicle must have a speed indicator if it is operated at a speed that exceeds 20 mph;

Interior cab noise must comply with Sec. 229.121;
Vehicle headlights must be fully functional and if operated at speeds in excess of 20 mph over one or more public highway-rail crossings, must comply with auxiliary light requirements Sec. 229.125;

The vehicle must be equipped with an audible warning device as required by Sec. 229.129;

If operated at speeds in excess of 30 mph while hauling cars, the vehicle must be equipped with a working event recorder in compliance with Sec. 229.135;

Wheel requirements under Sec. Sec. 229.73 and 229.75 shall apply; and

Piston travel requirements, if vehicle is so equipped, under Sec. 229.55 shall apply.

FRA has historically applied Part 232 to specialized maintenance equipment when it is being used in the same manner as a locomotive and is engaged in a train movement, regardless of whether the movement is in connection with MOW service. Thus, FRA's application of the exception under Part 232 for ``hi-rail, specialized maintenance, or other similar equipment'' is even more narrow than its application under Part 229. The triggering event for coverage of Part 232 is whether the involved equipment is engaged in a train movement. If so, the power car (or unit) is considered a locomotive under Part 232 and the consist being moved by the power unit will be considered a train. As with any train movement, the power unit must be equipped with a brake system that permits the operator to apply and release the brakes on the cars being hauled. In addition, FRA requires the performance of appropriate brake inspections and tests when such equipment is engaged in train movements (such as travel to and from a work site). The type of brake test to be performed will depend on the distance that the train consist will travel (See 49 CFR 232.205 and 232.215). FRA also requires equipment used in MOW service to receive appropriate periodic maintenance and single car tests under the provisions contained in Subpart D of Part 232.

49 CFR Part 231

This part governs the placement, number, and dimensions of safety appliances on rail equipment. This part applies to all equipment regardless of whether it is used in MOW service. If the piece of equipment falls within one of the specifically identified car types, then it would be required to meet the safety appliance requirements contained in that section of the regulation. However, due to the unique design and purpose of many pieces of equipment used in MOW service, most equipment being used in MOW service will be considered ``cars of special construction'' under Sec. 232.18 of this Part. Under this section, such equipment would be required to have, as nearly as possible based on the design limitations of the vehicle, the same complement of handholds, sill steps, ladders, hand brakes, and running boards as required for a car of the nearest approximate type.

49 CFR Part 240

This Part governs certification of locomotive engineers and addresses the circumstances in which certified locomotive engineers are required to operate certain equipment. This Part contains a definition of ``locomotive'' that is similar to that contained in Parts 229 and 232. However, the exception in Part 240 is for ``specialized roadway maintenance equipment'' and ``dual purpose vehicles operating in accordance with Sec. 240.104(a)(2)'' (See Sec. 240.7). ``Specialized roadway maintenance equipment'' is defined in Sec. 240.104(a)(1) as

roadway maintenance equipment that does not have the capability to move railroad rolling stock. This type of equipment does not require the use of a certified locomotive engineer (LE).

``Dual purpose vehicle'' is defined in Part 240 as a piece of on-track equipment that is capable of moving railroad rolling stock and may also function as roadway maintenance equipment. The use of a dual purpose vehicle will determine whether it meets the exception contained in the definition of ``locomotive.'' Therefore, a railroad may be required to use a certified LE to operate the equipment under certain circumstances. Dual purpose vehicles may be considered locomotives under either Part 229 or Part 232, depending on the use of the equipment. However, that determination is separate from the determination under Part 240 as to whether a certified LE is required to operate the equipment.

Section 240.104(a)(2) sets out three conditions that must be met in order to operate a dual purpose vehicle with an individual who is not a certified locomotive engineer. These conditions require that the dual purpose vehicle: (1) Be operated in conjunction with roadway maintenance and related MOW functions, including traveling to and from the work site; (2) move under the authority of railroad operating rules designated for the movement of roadway maintenance equipment that ensure the protection of the equipment from train movements; and (3) be operated by an individual trained and qualified in accordance with Sec. Sec. 214.341, 214.343, 214.355. In the preamble to the 1999 final rule related to Part 240, FRA discussed the provision permitting the movement of dual purpose vehicles to and from a work site (See 64 FR 60969 (November 8, 1999)). FRA noted that although Sec. 240.104(a)(2) does not place a limit on the distance or type of track that a person who is not a certified LE may operate dual purpose equipment, the provisions do provide limitations based on the type of service being performed. Therefore, when the service falls outside traditional MOW service, a certified LE would be required to operate the equipment.

FRA recognizes that most specialized maintenance equipment is unique in both its design and operation, and that to require a certified LE to operate such equipment when it is moved from one work site to another would be operationally restrictive and potentially unsafe since in most instances, an LE certified under Part 240 will not be familiar with the specific operation of specialized maintenance equipment. Thus, safety is better served by permitting an individual familiar with the specific piece of equipment to operate it from one work site to another with the aid of a pilot, where appropriate. Although Federal regulations do not specifically address the territorial qualifications of either the operator or any pilot that may be utilized when operating a dual purpose vehicle under the provisions of Sec. 240.104(a)(2), FRA believes that safe railroading dictates that such individuals should be qualified and familiar with the territory over which the equipment will be operated. Thus, FRA strongly recommends and encourages the use of individuals that are qualified on the territory over which the equipment will be operated when such equipment is traveling to and from a work site.

Statutory Application

49 U.S.C. 20701

Section 20701 states that:

[a] railroad carrier may use or allow to be used a locomotive or tender on its railroad line only when the locomotive or tender and

its parts and appurtenances--(1) are in proper condition and safe to operate without unnecessary danger of personal injury; (2) have been inspected as required under this chapter and regulations prescribed by the Secretary of Transportation under this chapter; and (3) can withstand every test prescribed by the Secretary under this chapter.

Courts have consistently found that vehicles capable of moving other equipment are considered to be locomotives under 49 U.S.C. 20701 when they are used in the same capacity as a locomotive. This conclusion is irrespective of the vehicle's assembly or appearance, and whether or not it is engaging in MOW service. Thus, even when a unit used to power equipment does not look like a traditional locomotive (e.g. burro cranes, hi-rail vehicles, track mobiles), or has been modified to be an integral component of a MOW trainset (e.g., power unit of an integrated rail grinder train, specially modified locomotive, etc.), such equipment is considered to be a locomotive and must therefore comply with the statutory requirements contained in Sec. 20701 .

In situations where this specialized maintenance equipment is determined to be excluded from the specific coverage of FRA's regulations but is being used as a locomotive, FRA directly applies the statutory requirements of Sec. 20701. In these situations, the safety rationale supporting the regulatory requirements contained in 49 CFR parts 229 and 214 that concern locomotives and roadway maintenance machines, may be relevant because the equipment is being used in a similar manner. Accordingly, when enforcing this statutory provision, FRA will utilize the requirements contained in 49 CFR parts 229 and 214 as guidance in determining whether the involved equipment is safe to operate. This approach was specifically identified when FRA issued the Locomotive Safety Standards, and has been applied in this manner since that time. The March 1980 preamble to the final rule on Locomotive Safety Standards states that statutory provisions are applicable to specialized maintenance equipment (See 45 FR 21093 (March 31, 1980)). The preamble discusses enforcement of the statutory provision via issuance of a Special Notice for Repair. Historically, FRA has also enforced this provision by assessing civil penalties directly under the statutory provision when serious noncompliance is discovered. FRA intends to continue this practice.

49 U.S.C. 20302 and 20303

Sections 20302 and 20303 of Title 49 of the U.S.C. contain specific requirements related to safety appliances on all vehicles used by a railroad. Section 20302(a)(4) requires that a locomotive (including a power car in a MOW train set) be equipped with a power-driving wheel brake and appliances for operating the train-brake system. Section 20302(a)(5) requires that the vehicles in a train be equipped with power brakes and that all the vehicles on an associated train line be equipped with power brakes, as per 20302(a)(5). In addition, Section 20302(a)(1) requires that vehicles be equipped with efficient hand brakes, sill steps, automatic couplers, and other safety appliances that ensure the safety of employees as they mount and dismount equipment.

Section 20303 restricts the use and movement of vehicles with defective or inoperative safety appliances. This section only permits the movement of a vehicle with defective safety appliances to the nearest available place where the necessary repairs can be performed. Guidelines for determining locations where necessary repairs can be performed can be found in 49 CFR 232.15(f). The guidance provided in the Federal regulations related to freight power brakes is based on the

voluminous case law related to the court's historical application of the statutory mandate. For a complete discussion of this guidance, interested parties are encouraged to read the preamble to the final rule related to Part 232 (See 66 FR 4125-29, 4152-53 (January 21, 2001)). Sections 20302 and 20303 address all vehicles used on rail lines and are directly applicable to MOW equipment. Civil penalty violations have been and will continue to be issued directly under these sections when appropriate.

Issued in Washington, DC on January 22, 2007.
Jo Strang,
Associate Administrator for Safety.
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