

STUDY
ON
ACCIDENTS
CAUSED BY
MAINTENANCE-OF-WAY CARS

Prepared By:

Gloria D. Swanson
Planning and Evaluation Division
Office of Safety
December 1987

Study on Accidents Caused by Maintenance-of-Way Cars

o Review of Rail-Equipment Accident/Incident Reports

- Period covered: January 1980 - July 1987.
- FRA's Accident/Incident database was screened to retrieve all equipment-caused accidents. The car causing the derailment was then matched to the 1984 UMLER file. If the car was present on the UMLER file, it was assumed that it was not an MOW car. When this method was tried, over 4,000 records were printed. This list was further reduced to 739 accidents when the following assumptions were made:
 1. The railroad responsible for MOW would only use its own railroad car;
 2. Privately owned cars would not be used; and
 3. All work trains should be used.

However, it was decided that this method would not include cars involved in mergers if the car initials had not been changed. A second list was prepared to print all the mismatches. This list involved an additional 2,292 accidents.

- Total accidents reviewed - 3,031.
- Request was made and the following railroads provided FRA with a list of their MOW equipment:
 - CSX
 - BN
 - SP
 - SOO
 - CR
 - UP
 - NW

The cars involving UP and ATSF under the first list of 739 accidents were checked out with UP and ATSF by phone.

- The above-listed railroads' MOW car lists were then checked against the car numbers in the accident list and 27 matches were found.
- Only one of the 27 accidents was investigated by FRA. Review of FRA's investigation report revealed that the accident was not caused by the MOW car involved. This accident was then dropped from the list of 27 accidents.
- Total accidents found based on the above is 26.

- Overview of these 26 accidents.

1. Eight occurred in 1980; two in 1981; two in 1982; four in 1983; four in 1984; five in 1985; one in 1986; and none in 1987.
2. There were no injuries or fatalities.
3. Total damages for all 26 accidents were \$1,058,090.
4. Eighteen accidents involved freight trains.
5. Four accidents involved work trains.
6. Three accidents involved yard/switching trains.
7. One accident involved a single car.
8. Causes listed:

<u>No. of Accidents</u>	<u>Cause Code</u>	<u>Definition</u>
2	408	Hand brake (including gear) broken or defective
1	410	Other brake defects, cars
1	431	Coupler mismatch, high/low
3	432	Coupler drawhead broken or defective
2	433	Coupler retainer pin/cross key mission
1	443	Truck bolster broken
2	445	Truck, stiff, improper lateral or improper swiveling
1	450	Broken or bent between wheel seats
7	451	Journal (plain) failure from overheating
2	464	Worn flange
1	485	Bottom outlet car door open
1	486	Bottom outlet car door attachment defective
1	499	Other mechanical and electrical failures, car
1	430/ 599	Knuckle broken or defective; other train operation/human factors

- It should be noted that this review would not include:
 1. Any accidents where the car was destroyed in the accident and did not show up on the railroad's list of MOW equipment; and
 2. Any cars that have become MOW equipment since 1984.

o Review of FRA Accident Investigation Files

- Period covered: 1978-1985.
- A key word search for any record that contained a "Maint" in the probable cause, contributing factors, or explanation for each accident was made through FRA's computerized railroad accident investigations file.
- Seventeen accidents were identified where the key word "Maint" was used. Further review indicated that none of the 17 accidents identified were caused by MOW equipment.
- It should be noted that this type of search would not pick up an accident where just the car number, i.e., burnt journal ~~car~~ car number 123456, was used in describing the probable cause, contributing factors, or explanation for each accident; and the description did not identify the car involved as an MOW car.
- Since the database only covers accidents through 1985, accidents investigated in 1986 and 1987 were not included in this review. However, we did review one accident involving an MOW car that occurred in 1987 and was investigated by FRA. This accident involved the B&O and occurred on August 4, 1987, near Corriganville, Maryland. This accident was caused by the overheating of an L2 plain bearing and journal on an MOW car, resulting in the L2 journal burning off and derailling the car plus the following 3 cars. No casualties or injuries were sustained as a result of this accident, and property damage was \$72,000.
- It is also noted that a review of FRA's accident investigation report on the accident which occurred in Crystal City, Missouri, on July 18, 1983, and involved the BN railroad revealed that FRA's published probable cause for this accident was "The track buckled under a train movement. The train was being operated at 12 mph over the maximum authorized speed. The engineer was using dynamic braking, contrary to carrier instructions, and the temperature was 97 degrees F."

This cause does not correspond with NTSB's accident investigation report on the accident, wherein they state the probable cause of the accident as "...the displacement of the outer rail in a curve by a truck on a maintenance- of-way car, which would not slue to the track curvature because of a cracked and displaced centerplate...."

FRA's accident investigation report also states that "...we do not believe a broken center plate on car BN 958200 was the cause...."

- o Based on the above, 27 accidents were identified as being maintenance-of-way cars. There were no injuries reported as a result of these accidents with a total of \$1.1 million in property damage.