

INTERSTATE COMMERCE COMMISSION

FIFTY-SECOND ANNUAL REPORT
OF THE
DIRECTOR OF LOCOMOTIVE INSPECTION
TO THE
INTERSTATE COMMERCE COMMISSION

FISCAL YEAR ENDED
JUNE 30, 1963



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**ANNUAL REPORT OF THE
DIRECTOR OF LOCOMOTIVE INSPECTION**

DECEMBER 2, 1963.

To the Interstate Commerce Commission:

In compliance with section 7 of the act of February 17, 1911, as amended, the Fifty-second Annual Report of the Director of Locomotive Inspection, covering the work of the fiscal year ended June 30, 1963, is respectfully submitted.

Summaries are given, by railroads, of all accidents which resulted in serious injury or death to one or more persons due to the failure of parts and appurtenances of locomotives, as reported and investigated under section 8 of the Locomotive Inspection Act. Accidents which occurred as a result of failure of parts and appurtenances of locomotives, which resulted in damage to property or equipment but not serious injury or death, are not included in this report. For additional information concerning railroad accidents, see Accident Bulletin, prepared by the Bureau of Transport Economics and Statistics.

Tables contained in the report show the results of inspection of locomotives, the number of accidents and resultant casualties caused by failure of some part or appurtenance of individual locomotives, and the parts and appurtenances which caused accidents and casualties. The tabulated inspection data cover the number of locomotives for which reports were filed, the number inspected, the number and percentage found defective, the number for which written notices for repairs were issued in accordance with section 6 of the act, and the total number of defects found and reported. Tables are included to show, by railroads, all locomotive defects found by district locomotive inspectors. Data for preceding years are given where possible for comparative purposes.

**GENERAL CONDITIONS OF LOCOMOTIVES
AND INVESTIGATION OF ACCIDENTS**

During the year, 10.7 percent of the locomotives inspected by our inspectors were found with defects or errors in inspection that should have been corrected before the locomotives were put into use. Four hundred and twenty locomotives were ordered withheld from service

by our inspectors because of the presence of defects that rendered the locomotives immediately unsafe; this is a decrease of 68 locomotives compared with the preceding year.

Results of locomotive inspections made by district locomotive inspectors in performance of duties prescribed under section 6 of the act are shown in the following table:

Reports and inspections—steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

	Year ended June 30—					
	1958	1959	1960	1961	1962	1963
Number of locomotives for which reports were filed.....	36,905	36,069	35,645	35,074	34,789	34,473
Number inspected.....	95,593	105,347	108,629	98,332	94,592	79,781
Number found defective.....	8,394	10,912	11,126	9,399	9,050	8,497
Percent of inspected found defective.....	8.8	10.4	10.2	9.6	9.6	10.7
Number ordered out of service.....	395	648	531	504	488	420
Number of defects found.....	21,532	32,330	32,830	28,308	26,032	25,718

As indicated in the preceding table there was a decrease in the number of locomotives for which carriers were filing reports as of June 30, 1963, as compared to the number filed as of June 30, 1962. The decrease resulted from 65 steam locomotives being retired during the year, and a decrease of 251 in the number of other than steam and multiple operated electric locomotive units for which reports were filed during the same period.

During the year, district locomotive inspectors devoted 7,945 days to regular inspections of locomotives, 455 days making shop inspections to determine that repairs and tests were being made to meet the requirements of the law and rules, 303½ days investigating accidents, 963½ days on special assignment relating to locomotive inspection including investigating complaints regarding possible violation of the law and rules, 520 days conferring with carrier representatives and officials, 2,343½ days at their respective headquarters reviewing and processing inspection and repair reports filed by the carriers and performing other office work, and 8½ days in connection with delegated mobilization functions.

Tables I, II, and III in the appendix show details of defective parts and appurtenances of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units reported, inspected, found defective, and ordered out of service. If the reported defective parts shown by the tables are considered, those parts which may be expected to require most maintenance will be indicated, and inspection and repair programs may be set up accordingly.

Detailed results of inspections of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units are shown, by carriers, in tables IV, V, and VI in the appendix.

INVESTIGATION OF ACCIDENTS

Accidents reported under requirements of the law and Commission rules were investigated and appropriate action taken to prevent recurrence so far as possible. All district inspectors were advised of details and causes of unusual accidents to better assist them in their safety promotional contacts. The dissemination of such information combined with the active enforcement of the requirements has been effective in promotion of locomotive safety and has resulted in a generally decreasing accident trend.

Seventy-one accidents occurred in connection with all types of locomotives in which 98 persons were injured. Two of these accidents involving seven injuries occurred during the previous year, but were reported too late to be included in the last annual report. Compared with the preceding year there was an increase of 4 accidents and an increase of 25 injuries.

Of the 71 accidents, 17 were caused by the defective condition of floors, steps, and passageways of diesel-electric locomotives. Fourteen of the 17 resulted from accumulation of oil on walking surfaces of the locomotives, an increase of 10 compared with the preceding year.

Six accidents were caused by defective condition of cab seats, compared with 15 in the previous year.

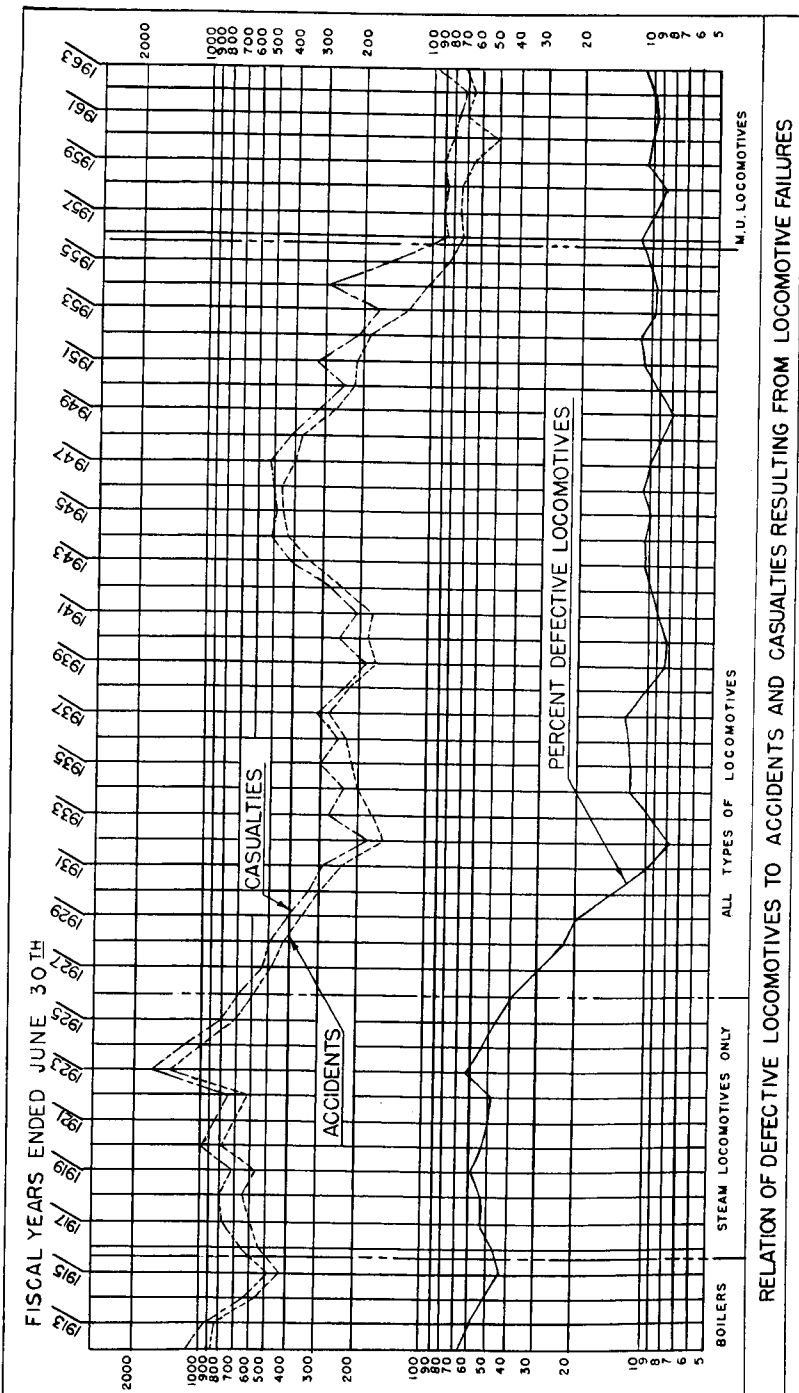
The following table provides details of accidents and casualties during the past 6 years caused by failure of some part or appurtenance of locomotives, and indicates increases or decreases in accidents and casualties:

Accidents and casualties caused by failure of some part or appurtenance of steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

	Year ended June 30—					
	1958	1959	1960	1961	1962	1963
Number of accidents.....	72	66	50	71	67	71
Percent increase or decrease from previous year.....	4.0	8.3	24.2	142.0	5.6	15.9
Number of persons killed.....	0	0	0	0	0	0
Percent increase or decrease from previous year.....	0	0	0	0	0	0
Number of persons injured.....	86	90	81	77	73	98
Percent increase or decrease from previous year.....	4.4	14.7	10.0	4.9	5.2	134.2

¹ Increase.

The chart on page 4 shows the relation between the percentage of defective locomotives and the number of accidents and casualties



RELATION OF DEFECTIVE LOCOMOTIVES TO ACCIDENTS AND CASUALTIES RESULTING FROM LOCOMOTIVE FAILURES

which have resulted from defective parts and appurtenances and illustrates the effect of operating locomotives in defective condition.

Data are given for the past 5 years on the distribution of casualties among railroad personnel by occupations and nonemployees in the following table:

Number of casualties classified according to occupation—steam locomotives, locomotive units other than steam, and multiple operated electric locomotive units

	Year ended June 30—									
	1959		1960		1961		1962		1963	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:										
Engineers.....		22		17		14		23		17
Fire men.....		31		21		44		37		36
Brake men.....		10		11		11		8		9
Conductors.....		4		2		3		2		5
Switchmen.....		1		1		2		1		1
Maintenance employees.....		1		2				2		
Other employees.....		1		6		3				2
Nonemployees.....		21		21						28
Total.....	0	90	0	81	0	77	0	73	0	98

The following table illustrates the parts or appurtenances of locomotives that caused the accidents which occurred during the past fiscal year:

Accidents and casualties resulting from failure of steam locomotives, tenders, locomotives other than steam, multiple operated electric locomotive units, and their appurtenances

Part or appurtenance which caused accident	Year ended June 30, 1963		
	Accidents	Killed	Injured
Air compressors.....	5	0	5
Air reservoirs, fittings, safety and check valves.....	0	0	0
Boiler:			
Explosions.....	0	0	0
Fuel explosions in firebox.....	0	0	0
Steam valves, piping and blowers.....	1	0	1
Brakes and brake rigging.....	6	0	14
Cab:			
Doors and windows.....	4	0	4
Seats.....	6	0	6
Control equipment—mechanical, electrical, pneumatic or electropneumatic.....	1	0	1
Couplers, draft and drawgear.....	0	0	0
Electrical equipment:			
Energized electrical parts.....	1	0	2
Insulation, short circuits, or electrical flashes.....	14	0	31
Fans and shutters.....	1	0	1
Fires due to liquid fuel or debris.....	0	0	0
Floors, steps, and passageways.....	17	0	17
Internal combustion engines and turbines:			
Crankcase or air-box explosions.....	4	0	4
Exhaust and cooling systems.....	1	0	1
Fuel injectors and connections.....	0	0	0
Miscellaneous.....	10	0	11
Total.....	71	0	98

SPECIFICATIONS AND ALTERATION REPORTS

In compliance with rule 54 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, two specifications for steam locomotives were submitted by carriers. Under rules 328 and 329 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam, 1,073 specifications and 1,179 alteration reports for locomotive units, and 56 specifications and 117 alteration reports for heating boilers mounted in locomotive units were submitted by carriers. As required by rule 449 for Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic, 8 specifications were submitted by carriers. The information contained in these specifications and reports was analyzed and corrective measures were taken when discrepancies were found.

INSPECTION AND REPAIR REPORTS

Inspection and repair reports filed with district inspectors during the year totaled 2,669 under rules 51 and 53 of the Rules and Instructions for Inspection and Testing of Steam Locomotives; 383,518 under rules 331 and 332 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam; and 29,850 under rule 51 for Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic.

EXTENSION OF TIME FOR REMOVAL OF FLUES

Under rule 10 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 24 applications for extension of time for removal of flues were submitted. After investigation, extensions were granted for the full period requested in 18 applications. One extension was denied because of conditions disclosed by our investigations. One application was canceled for various reasons and four applications are pending. An extension was granted for the full period requested in the one application pending on July 1, 1962.

SUITS FOR PENALTIES

During the year, 10 cases involving 33 counts for alleged violations of the Locomotive Inspection Act and rules prescribed thereunder were transmitted to United States attorneys for prosecution. Judgment was confessed in 12 cases on 34 counts and 1 count was dismissed. Penalties totaling \$8,500 were assessed. Seven cases, involving nine counts, were pending in the district courts at the end of the year. The following is a brief summary of the cases:

CASES INSTITUTED AND DISPOSED OF DURING THE YEAR

U.S. v. Pennsylvania Railroad Company, consisting of one cause of action, involved use of a diesel locomotive unit when a cooling fan thereon was not guarded against personal contact and its hatch cover plate was in a defective condition in violation of rule 258(a). Judgment was confessed and a penalty of \$250 was assessed.

U.S. v. Pennsylvania Railroad Company, consisting of two causes of action, involved the use of a locomotive unit when the fuel oil cross-over pipe above the right exhaust snubber was broken and leaking, in violation of rules 203(a) and 255(a). Judgment was confessed and a penalty of \$500 was assessed.

U.S. v. Chicago and North Western Railway Company, consisting of one cause of action, involved the use of three locomotive units when the whistle on said locomotive units was inoperative in violation of rule 234. Confessed; penalty \$250.

U.S. v. New York Central Railroad Company, consisting of three causes of action, involved the use of five locomotive units coupled in multiple control when the air brakes on one of the locomotive units were cut out in violation of rule 201(c). Judgment was confessed on two counts and a penalty of \$500 was assessed. One count was dismissed by the United States attorney.

U.S. v. Northern Pacific Railway Company, consisting of 20 causes of action, involved the use of 20 locomotive units when the defendant failed to file with United States district inspector a duplicate of the monthly inspection report, Form No. 1-A, within 10 days after inspection of said locomotives in violation of rules 330 and 331(a). Defendant confessed judgment on all counts and a penalty of \$5,000 was assessed.

U.S. v. Wabash Railroad Company, consisting of one cause of action, involved the use of two locomotive units coupled in multiple control when the slipping or sliding wheel alarms were cut out in violation of rule 201(d). Judgment was confessed and a penalty of \$250 was assessed.

OTHER CASES DISPOSED OF DURING THE YEAR

U.S. v. Northern Pacific Railway Company, consisting of two causes of action, involved the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when said employee came in contact with an electrically energized part or appurtenance of a diesel locomotive unit in violation of rule 335. The Government's Motion for Summary Judgment was granted and a penalty of \$500 was assessed.

U.S. v. Missouri Pacific Railroad Company, consisting of one cause of action, involved the use of a diesel electric locomotive unit when the remote control shut off valve was defective, in violation of rules 203(a) and 321(a). Confessed; penalty \$250.

U.S. v. The New York Central Railroad Company, consisting of one cause of action, involved the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when said employee came in contact with an electrically energized part or appurtenance of a diesel locomotive unit in violation of rule 335. The defendant confessed judgment and a penalty of \$250 was assessed.

U.S. v. New York, Susquehanna & Western Railroad Company, consisting of one cause of action, involved the use of a diesel electric unit on which an out-of-service report had been filed when an inspection and report had not been made before said locomotive was again returned to service, as required by rule 331(d). Judgment was confessed and penalty of \$250 was assessed.

U.S. v. New York Central Railroad Company, consisting of one cause of action, involved the use of a diesel electric locomotive unit when the rear truck brakes were cut out and in a defective condition, in violation of rules 203(a) and 204(a). Defendant confessed judgment and a penalty of \$250 was assessed.

U.S. v. Pittsburgh and Lake Erie Railroad Company, consisting of one cause of action, involved the failure to immediately report to the Director of Locomotive Inspection at his office in Washington, D.C., by wire, an accident resulting in serious injury to an employee when a locomotive cab seat failed, as required by rule 335. Defendant confessed judgment and a penalty of \$250 was assessed.

CASES PENDING AT THE CLOSE OF THE YEAR

U.S. v. Claremont and Concord Railway Company, Inc., consisting of two causes of action, involves the failure to file a specification card, size 8 x 10½ inches, Form No. 4, for a steam locomotive, in the office of the Director of Locomotive Inspection, as required by rule 54, and when a duplicate of the report of the inspection of the interior and exterior of the boiler of the locomotive had not been filed with the inspector in charge, as required by rules 54, 9, and 15.

U.S. v. Georgia Railroad, Lessee Organization, consisting of one cause of action, involves the failure to preserve intact the part or parts of a diesel electric locomotive affected by an accident, as required by section 32 of Title 45 of the United States Code.

U.S. v. Georgia Railroad, Lessee Organization, consisting of one cause of action, involves the failure to immediately report to the Director of Locomotive Inspection, at his office in Washington, D.C., by wire, an accident resulting in serious injury to two employees as a result of a diesel electric locomotive crankcase explosion, as required by rule 335.

U.S. v. The New York Central Railroad Company, consisting of one cause of action, involves the use of a diesel electric locomotive unit when the air brakes were cut out and inoperative, in violation of rule 204(a).

U.S. v. Quincy Railroad Company, consisting of one cause of action, involves the use of steam locomotive when a monthly inspection and report had not been made as required by rule 159.

U.S. v. Union Pacific Railroad Company, consisting of two causes of action, involves the uses of a diesel electric locomotive when said locomotive was not in serviceable condition because proper repairs had not been made as required by a Form No. 5, in violation of section 29 of Title 45 of the United States Code.

U.S. v. Union Pacific Railroad Company, consisting of one cause of action, involves the use of a diesel electric locomotive when said locomotive was not in serviceable condition because proper repairs had not been made as required by a Form No. 5, in violation of section 29 of Title 45 of the United States Code.

BETTERMENT OF SERVICE

An extensive revision of inspection district geographical boundaries was placed in effect on July 1, 1962, to keep abreast of changing trends in the methods of operating and maintaining modern motive power. The revision will assure continued maximum effectiveness

of district inspectors and that the workload of each inspector is substantially the same.

Arrangements were effected whereby all district inspectors were given specialized instruction at a manufacturer's plant for periods of 1 week duration in order that the inspectors be kept currently informed on the latest improvements in the design, construction, and operation of locomotive air brake systems.

APPEALS

No formal appeals from decisions of district inspectors were filed by the carriers.

JOHN A. HALL,
Director of Locomotive Inspection.

ACCIDENTS AND CASUALTIES RESULTING FROM THE FAILURE OF STEAM LOCOMOTIVES, TENDERS, LOCOMOTIVES OTHER THAN STEAM, MULTIPLE OPERATED ELECTRIC LOCOMOTIVE UNITS AND THEIR APPURTENANCES, DURING THE FISCAL YEAR ENDED JUNE 30, 1963, BY ROADS

[A double star ** indicates accidents not properly reported, as required by rules 55, 162, 335, and 454]

ATLANTIC COAST LINE RAILROAD:

January 30, 1963, Unit 873-A, Jacksonville, Fla. Crankcase explosion due to failure of No. 1 crankshaft main bearing; one employee injured.
One accident; one employee injured.

BALTIMORE AND OHIO RAILROAD:

December 27, 1962, Unit 6452, Gassaway, W. Va. Employee suffered electrical arc burns while attempting to open traction motor cutout switch; one employee injured.

April 2, 1963, Unit MU-328, Huguenot, Staten Island, New York. Electrical flash at third rail contact shoe; one employee injured.

April 8, 1963, Unit 6599, Hagerstown, Md. Employee slipped on oil on passageway floor; one employee injured.

June 3, 1963, Unit 4509, Keyser, W. Va. Employee slipped on wet floor due to improper door and window weatherstripping maintenance; one employee injured.

Four accidents; four employees injured.

BOSTON AND MAINE RAILROAD:

April 19, 1963, Unit 1753, Hoosac Tunnel, Mass. Defective dynamic brake circuit; one employee injured.

One accident; one employee injured.

CENTRAL RAILROAD OF NEW JERSEY:

November 24, 1962, Unit 806, Jersey City, N.J. A film of fuel oil on steps, passageway, and handrails caused employee to slip and fall to the ground when alighting from the unit; one employee injured.

May 25, 1963, Unit 2411, Hampton, N.J. Employee inhaled smoke and fumes while attempting to extinguish fire in unit; one employee injured.

Two accidents; two employees injured.

CHESAPEAKE AND OHIO RAILWAY:

February 19, 1963, Unit 7063, Walbridge Yard, Ohio. Crankcase explosion caused by overheated main bearings; one employee injured.
One accident; one employee injured.

CHICAGO AND NORTH WESTERN RAILWAY:

August 15, 1962, Unit 128, Sioux Falls, S. Dak. While attempting repair to broken tube at control air reducing valve employee was struck on head by falling trap door; one employee injured.

February 2, 1963, Unit 4072-B, Roberts, Wis. Employee slipped on oil on engineroom floor; one employee injured.

Two accidents; two employees injured.

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD:

August 20, 1962, Unit 936, Chicago, Ill. Defective fire extinguisher hose due to improper repairs; one employee injured.

September 17, 1962, Unit 905, near Savanna, Ill. Employee slipped on oil on engineroom floor; one employee injured.

Two accidents; two employees injured.

CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD:

February 27, 1963, Unit 93-B, Marble Rock, Iowa. Employee suffered wrist injury due to unexpected movement of cooling fan clutch handle; one employee injured.

One accident; one employee injured.

FORT WORTH AND DENVER RAILWAY:

April 19, 1963, Unit 702-A, Childress, Tex. Employee injured when struck by falling locomotive air horn; one employee injured.

One accident; one employee injured.

KANSAS CITY SOUTHERN RAILWAY:

December 14, 1962, Unit 62-A, Mena, Ark. Flash in high voltage cabinet; one employee injured.

One accident; one employee injured.

LEHIGH VALLEY RAILROAD:

February 14, 1963, Unit 146, South Easton, Pa. Ammeter exploded due to short circuit; one employee injured.

One accident; one employee injured.

LOUISVILLE AND NASHVILLE RAILROAD:

July 20, 1962, Unit 749, Hayden, Ala. Flash in high voltage cabinet; one employee injured.

June 5, 1963, Unit 1825, Lewisburg, Tenn. Employee was injured when struck by falling radiator hatch cover panel; one employee injured.

June 19, 1963, Unit 816, Thomas, Ala. Employee slipped and injured his fingers while attempting to open cab to engineroom door; one employee injured.

Three accidents; three employees injured.

MISSOURI-KANSAS-TEXAS RAILROAD:

July 4, 1962, Unit 83-C, Arcadia, Okla. Crankcase explosion resulting from overheated crankshaft bearings; one employee injured.

November 5, 1962, Unit 82-C, Labette, Kans. Employee slipped on oil on engineroom floor; one employee injured.

February 15, 1963, Unit 69-A, Fort Scott, Kans. Employee injured while attempting to remove a defective pipe nipple from a pipe union; one employee injured.

Three accidents; three employees injured.

MISSOURI PACIFIC RAILROAD:

August 6, 1962, Unit 907-A, Mart, Tex. Employee slipped on oil and water on passageway; one employee injured.

One accident; one employee injured.

NEW YORK CENTRAL RAILROAD:

*May 29, 1962, Unit MU-4709, Woodlawn, N.Y. Fire caused by loose terminal connection at main circuit breaker; one employee and one passenger injured.

*June 1, 1962, Unit MU-4569, Mount Vernon, N.Y. Fire caused by loose terminal connection at main circuit breaker; five passengers injured.

July 30, 1962, Unit 6024, Edgerton, Ohio. Failure of cab seat caused by defective backrest swivel pin; one employee injured.

August 2, 1962, Unit 240, New York, N.Y. Fire caused by insulation failure at high voltage line contactor; 1 employee and 11 rail postal clerks injured.

August 7, 1962, Unit 8577, Schenectady, N.Y. Failure of cab seat backrest due to defective swivel pins; one employee injured.

August 10, 1962, Unit 4064, Worcester, Mass. Failure of trainline steam heat valve due to defective bonnet threads; one employee injured.

August 22, 1962, Unit 901, New York, N.Y. Defective cooling oil radiators permitting oil to leak onto step; one employee injured.

August 30, 1962, Unit MU-4513, New York, N.Y. Cab seat collapsed due to defective supporting assembly; one employee injured.

September 13, 1962, Unit 8513, Geneva, N.Y. Cab window channels bent and rusty causing employee to sprain his back while attempting to close window; one employee injured.

* Reported too late to be included in the 1962 annual report.

September 17, 1962, Unit 226, Harmon, N.Y. Undesired emergency brake application caused by defective automatic brake valve rotary valve; one employee injured.

September 28, 1962, Unit 3318, Watertown, N.Y. Employee slipped on oil on engineroom floor plate; one employee injured.

October 20, 1962, Unit 8889, Elkhart, Ind. Fire extinguisher installed in improper bracket fell and injured employee; one employee injured.

December 1, 1962, Unit MU-4530, Ludlow, N.Y. Propulsion cable grounded against high voltage cabinet; one passenger injured.

December 10, 1962, South Schenectady, N.Y. Unit 8212. Employees injured when fumes entered cab when voltage regulator adjustment caused gassing of storage batteries; two employees injured.

January 19, 1963, Unit 1651, Rice's Crossing, N.Y. Employee suffered shoulder injury when cab seat gave way at weld causing him to fall over backward; one employee injured.

March 21, 1963, Unit MU-4607, New York, N.Y. Ineffective brakes resulting in collision with bumping post; nine passengers injured.

May 11, 1963, Unit 1763, Union City, Ind. Failure of air compressor discharge line; one employee injured.

**June 4, 1963, Unit 8221, Jersey City, N.J. Employee slipped on oil on passageway; one employee injured.

June 16, 1963, Unit 8030, De Graff, Ohio. Flash in high voltage cabinet; one employee injured.

June 23, 1963, Unit 9129, Buffalo, N.Y. Employee struck by barring tool while attempting to start diesel engine; one employee injured.

Twenty accidents; 18 employees, 16 passengers, and 11 rail postal clerks injured.

NEW YORK, NEW HAVEN AND HARTFORD RAILROAD:

October 1, 1962, Unit 1400, Putnam, Conn. Employee suffered back injury when he fell, due to failure of hand wheel on water fill valve; one employee injured.

January 4, 1963, Unit 371, Milford, Conn. Employees inhaled smoke and fumes from defective steam heating boiler; two employees injured.

March 16, 1963, Unit 372, Bronx, N.Y. Inhalation of smoke resulting from fire caused by electric flash; two employees injured.

June 10, 1963, Unit 0618, South Boston, Mass. Employee slipped on oil on rear deck; one employee injured.

June 28, 1963, Unit 539, Framingham, Mass. Cab seat failed at seat post; one employee injured.

Five accidents; seven employees injured.

NORTHERN PACIFIC RAILWAY:

April 15, 1963, Unit 707, Duluth, Minn. Employee injured when struck by falling fuse and light bulb container; one employee injured.

One accident; one employee injured.

PENNSYLVANIA RAILROAD:

July 19, 1962, Unit 9475-A, Cleveland, Ohio. Employee suffered back injury while setting hand brake due to handbrake chain being disconnected; one employee injured.

August 8, 1962, Unit 8647, Rimersburg, Pa. Employee slipped on oil on passageway; one employee injured.

September 17, 1962, Unit 4044, between Ada and Lafayette, Ohio. Employee suffered head injuries when cab window fell from front cab wall, due to deteriorated window molding; one employee injured.

October 13, 1962, Unit 8457, Springbrook, N.Y. Employee slipped on oil on engineroom floor; one employee injured.

February 20, 1963, Unit 4902, Wilmington, Del. Undesired emergency brake application caused by a defective vent valve; one passenger injured.

March 25, 1963, Unit 9664-A, Irwin, Pa. Failure of air compressor discharge line; one employee injured.

April 1, 1963, Unit 9002, Philadelphia, Pa. Air hose parted between locomotive and car striking employee; one employee injured.

April 6, 1963, Unit 9576-A, Pittsburgh, Pa. Employee slipped on oil on passageway; one employee injured.

May 21, 1963, Unit 9581-B, Smithville, Ohio. Employee inhaled smoke and fumes while extinguishing fire in traction motor; one employee injured.
Nine accidents; eight employees and one passenger injured.

READING RAILROAD:

June 10, 1963, Unit 273-A, St. Nicholas, Pa. Employee fell from engine compartment doorway while attempting to add water to cooling system; one employee injured.

One accident; one employee injured.

ST. LOUIS SOUTHWESTERN RAILWAY:

February 7, 1963, Unit 925, Genoa, Ark. Overheated air compressor discharge pipe resulted in flash fire in engine compartment; one employee injured.

One accident; one employee injured.

SEABOARD AIR LINE RAILROAD:

April 25, 1963, Unit 4039, Indiantown, Fla. Crankcase explosion due to overheated main bearings; one employee injured.

One accident; one employee injured.

SOO LINE RAILROAD:

June 1, 1963, Unit 203-B Argonne, Wis. Failure of air compressor discharge line; one employee injured.

One accident; one employee injured.

SOUTHERN PACIFIC COMPANY:

August 8, 1962, Unit 8101, Serrano, Calif. Dynamic bra'ing contactors flashed in high voltage cabinet; one employee injured.

January 16, 1963, Unit 6268, Montello, Nev. Employee slipped on oil on passageway floor; one employee injured.

Two accidents; two employees injured.

TEXAS AND PACIFIC RAILWAY:

July 4, 1962, Unit 2007, Weatherford, Tex. Cab to nose compartment door opened violently when unlatched due to defective spring latch on nose compartment door allowing it to blow in while train was moving at 65 miles per hour; one employee injured.

February 3, 1963, Unit 1005, Dallas, Tex. Employee slipped and fell on insufficiently roughened passageway floor; one employee injured.

Two accidents; two employees injured.

UNION PACIFIC RAILROAD:

December 6, 1962, Unit 968-B, Harriman, Wyo. Employee was scalded when coolant surged in expansion tank and overflowed from an uncovered water treatment application pipe; one employee injured.

June 18, 1963, Unit 712, Winifred, Kans. Fire extinguisher fell from defective bracket injuring employee. One employee injured.

Two accidents; two employees injured.

UNION RAILWAY COMPANY:

July 24, 1962, Unit 411, Memphis, Tenn. Employee suffered injury of left leg when struck by broken glass from water-cooler bottle; one employee injured.

One accident; one employee injured.

WABASH RAILROAD:

February 1, 1963, Unit 679, Between Martinsburg and Benton City, Mo. Failure of cab seat backrest positioning device; one employee injured.

One accident; one employee injured.

TABLE I.—Number of steam locomotives reported, inspected, found defective, and ordered out of service

	Year ended June 30—					
	1958	1959	1960	1961	1962	1963
1 Air compressors.....	13	11	4	2		
2 Arch tubes.....	1	2				
3 Ashpans and mechanism.....						
4 Axles.....						
5 Blow-off cocks.....	2					
6 Boiler checks.....	9	3	3	2		
7 Boiler shell.....	3	1				
8 Brake equipment.....	85	35	19	16	7	5
9 Cabs, cab windows, and curtains.....	21	3	3	2		1
10 Cab aprons and decks.....	7	3		2	1	
11 Cab cards.....	6	4	2	3	8	2
12 Coupling and uncoupling devices.....	3	6	1			
13 Crossheads, guides, pistons, and piston rods.....	22	11	6	3		
14 Crown bolts.....						
15 Cylinders, saddles, and steam chests.....	17	7	2			
16 Cylinder cocks and rigging.....	11	1	3	1	1	
17 Domes and dome caps.....	1		1		1	
18 Draft gear.....	17	8	6	2	1	1
19 Draw gear.....	6	1	1	1	1	
20 Driving boxes, shoes, wedges, pedestals, and braces.....	21	6	1	1		
21 Firebox sheets.....		1		1		
22 Flues.....		2	1	3		
23 Frames, tail pieces, and braces, locomotive.....	5	3		2	1	2
24 Frames, tender.....						
25 Gages and gage fittings, air.....	8	3	1		1	
26 Gages and gage fittings, steam.....	4	1	3	2		2
27 Gage cocks.....	15	5	2	5		3
28 Grate shakers and fire doors.....	6	1	1			
29 Handholds.....	8	12	5	5	3	2
30 Injectors, inoperative.....	1	1	1	1		
31 Injectors and connections.....	37	15	9	4	2	1
32 Inspections and tests not made as required.....	12	10		8	8	3
33 Lateral motion.....	10	2	1		2	
34 Lights, cab and classification.....	4	1	1	1		
35 Lights, headlight.....	5	3	1			
36 Lubricators and shields.....	3	1				
37 Mud rings.....	3	3			1	
38 Packing nuts.....	14	10	4	1		
39 Packing, piston rod and valve stem.....	5	8				
40 Pilots and pilot beams.....	2	2	1		1	
41 Plugs and studs.....				1		1
42 Reversing gear.....	11	5	1			
43 Rods, main and side, crankpins, and collars.....	22	11	6	2		
44 Safety valves.....	1			1		1
45 Sanders.....	9	3	7	3	2	1
46 Springs and spring rigging.....	32	25	4	2		1
47 Squirt hose.....						
48 Staybolts.....	6	3	1	6	3	
49 Staybolts, broken.....	9	19	8		1	1
50 Steam pipes.....	5	4	2	1		
51 Steam valves.....	2	3	1		1	1
52 Steps.....	20	6	6	3	2	1
53 Tanks and tank valves.....	16	5	3			2
54 Teltale holes.....	1					1
55 Throttle and throttle rigging.....	9	6	5			2
56 Trucks, engine and trailing.....	5	2	2		1	
57 Trucks, tender.....	10	11	7		1	
58 Valve motion.....	7	4				
59 Washout plugs.....	1	2	7		1	
60 Stokers.....	3	2				
61 Water glasses, fittings, and shields.....	20	9	3			3
62 Wheels.....	7	13	1	1	1	6
63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....	9	6	2	1		
Number of defects.....	592	325	149	89	52	44
Locomotives reported.....	2,422	1,490	788	367	257	192
Locomotives inspected.....	2,324	967	356	243	195	157
Locomotives defective.....	159	77	38	27	14	16
Percentage of inspected found defective.....	6.8	8.0	10.7	11.1	7.2	10.2
Locomotives ordered out of service.....	22	16	3	4	3	3

TABLE II.—Number of locomotive units other than steam reported, inspected, found defective, and ordered out of service

	Year ended June 30—					
	1958	1959	1960	1961	1962	1963
1 Air compressors.....	232	337	290	208	203	189
2 Axles, truck and driving.....	59	100	126	91	71	61
4 Batteries.....	15	16	21	25	29	22
5 Boilers.....	172	313	284	213	190	231
6 Brake equipment.....	2,469	3,477	3,617	3,066	2,658	2,810
8 Cabs and cab windows.....	962	1,419	1,407	840	801	878
9 Cab cards.....	145	231	274	181	166	166
10 Cab floors, aprons, and deck plates.....	2,020	2,768	2,461	2,235	2,276	1,982
11 Clutches.....	2	3	6	4	4	
12 Controllers, relays, circuit breakers, magnet valves and switch groups.....	348	613	704	565	504	458
13 Coupling and uncoupling devices.....	132	172	131	144	97	106
14 Current collecting apparatus.....	3	4	11	5	6	4
16 Draft gear.....	357	489	420	402	349	326
17 Draw gear.....	128	173	160	108	123	133
18 Driving boxes, shoes, and wedges.....	135	144	223	148	169	153
20 Frames or frame braces.....	17	23	19	55	81	80
22 Fuel system.....	2,307	3,343	2,702	2,193	2,184	2,205
23 Gages or fittings, air.....	166	277	254	163	142	109
24 Gages or fittings, steam.....	58	41	37	28	28	19
25 Gears and pinions.....	19	35	25	156	505	629
26 Handholds.....	217	230	244	210	181	158
28 Inspections and tests not made as required.....	623	682	1,063	847	685	602
29 Insulation and safety devices.....	228	210	209	163	179	179
30 Internal-combustion engine defects, parts and appurtenances.....	3,817	6,555	7,184	6,124	5,880	6,459
32 Jack shafts.....	1	1		1	1	
33 Jumpers and cable connectors.....	306	355	350	434	346	321
35 Lateral motion, wheels.....	46	25	49	28	63	67
36 Lights, cab and classification.....	321	480	404	269	151	134
37 Lights, headlight.....	32	46	34	18	19	18
39 Meters, volt and ampere.....	24	31	30	22	18	10
40 Motors and generators.....	472	787	821	759	780	704
42 Pilots and pilot beams.....	41	75	64	54	43	27
43 Plugs and studs.....				1		
44 Quills.....	32	46	24	5	17	9
46 Rods, main, side, and drive shafts.....	1	1	5		2	2
48 Sanders.....	2,310	3,613	3,602	3,131	2,351	2,319
49 Springs and spring rigging, driving and truck.....	380	542	512	415	397	391
51 Staybolts, broken or defective.....						
53 Steam pipes.....	141	182	131	93	113	54
54 Steps, footboards, et cetera.....	292	408	372	307	256	298
55 Switches, hand-operated and fuses.....	16	11	17	16	16	13
56 Transformers, resistors, and rheostats.....	2	4	4	6	3	2
57 Trucks.....	510	823	765	692	657	716
59 Water tanks.....	31	32	30	25	22	20
60 Water glasses, fittings, and shields.....	4	2	1	1	3	
61 Warning signal appliances.....	124	179	142	148	127	103
62 Wheels.....	189	382	798	805	755	924
63 Miscellaneous.....	762	1,491	1,400	1,210	997	1,229
Number of defects.....	20,668	31,171	31,427	26,614	24,648	25,320
Locomotive units reported.....	31,755	31,862	32,186	32,074	31,917	31,793
Locomotive units inspected.....	91,522	102,149	105,702	95,689	91,493	78,066
Locomotive units defective.....	8,067	10,473	10,638	9,000	8,702	8,310
Percentage of inspected found defective.....	8.8	10.3	10.1	9.4	9.5	10.6
Locomotive units ordered out of service.....	372	628	517	469	467	413

TABLE III.—Number of multiple operated electric locomotive units reported, inspected, found defective, and ordered out of service

Parts defective, inoperative or missing, or in violation of the rules	Year ended June 30—					
	1958	1959	1960	1961	1962	1963
1 Air compressors.....	2	1	4	—	2	1
2 Axles, truck and driving.....	8	87	53	40	34	6
4 Batteries.....	—	—	—	—	—	—
5 Boilers.....	—	—	—	—	—	—
6 Brake equipment.....	23	188	491	951	835	141
8 Cabs and cab windows.....	2	25	26	11	12	4
9 Cab cards.....	13	5	8	9	4	5
10 Cab floors, aprons, and deck plates.....	1	2	—	1	—	1
11 Clutches.....	—	—	—	—	—	—
12 Controllers, relays, circuit breakers, magnet valves and switch groups.....	1	2	9	8	16	—
13 Coupling and uncoupling devices.....	—	—	—	1	—	—
14 Current collecting apparatus.....	25	65	115	151	99	58
16 Draft gear.....	1	15	11	22	9	2
17 Draw gear.....	9	2	20	16	16	4
18 Driving boxes, shoes, and wedges.....	2	3	3	3	5	2
20 Frames or frame braces.....	—	—	—	—	—	—
22 Fuel system.....	—	—	—	—	—	—
23 Gages or fittings, air.....	1	8	5	4	1	—
24 Gages or fittings, steam.....	—	—	—	—	—	—
25 Gears and pinions.....	—	4	5	9	4	5
26 Handholds.....	45	46	61	14	11	2
28 Inspections and tests not made as required.....	22	30	32	61	55	29
29 Insulation and safety devices.....	—	23	87	78	29	1
30 Internal-combustion engine defects, parts and appurtenances.....	—	—	—	—	—	—
32 Jack shafts.....	—	—	—	—	—	—
33 Jumpers and cable connectors.....	3	10	16	13	10	17
35 Lateral motion, wheels.....	—	—	—	—	—	—
36 Lights, cab and classification.....	—	24	42	23	16	—
37 Lights, headlight.....	—	4	29	5	2	—
39 Meters, volt and ampere.....	—	—	—	—	—	—
40 Motors and generators.....	—	31	23	15	21	8
42 Pilots and pilot beams.....	—	2	1	—	—	—
43 Plugs and studs.....	—	—	—	—	—	—
44 Quills.....	—	—	—	—	—	—
46 Rods, main, side, and drive shafts.....	—	—	1	—	—	—
48 Sanders.....	—	—	—	—	—	—
49 Springs and spring rigging, driving and truck.....	10	8	17	8	28	20
51 Staybolts, broken or defective.....	—	—	—	—	—	—
53 Steam pipes.....	—	—	—	—	—	—
54 Steps, footboards, et cetera.....	—	—	3	5	20	—
55 Switches, hand-operated, and fuses.....	—	1	14	19	7	2
56 Transformers, resistors, and rheostats.....	—	5	19	98	66	34
57 Trucks.....	98	222	152	98	66	34
59 Water tanks.....	—	—	—	—	—	—
60 Water glasses, fittings, and shields.....	—	—	—	—	—	—
61 Warning signal appliances.....	—	1	—	—	—	—
62 Wheels.....	—	3	5	37	23	6
63 Miscellaneous.....	6	17	1	3	5	6
Number of defects.....	272	834	1,254	1,605	1,332	354
Locomotive units reported.....	2,728	2,717	2,671	2,633	2,615	2,488
Locomotive units inspected.....	1,747	2,231	2,571	2,400	2,904	1,558
Locomotive units defective.....	168	362	450	372	334	171
Percentage of inspected found defective.....	9.6	16.2	17.5	15.5	11.5	11.0
Locomotive units ordered out of service.....	1	4	11	31	18	4

TABLE IV.—Number of steam locomotives reported, inspected, found defective, and ordered out of service, et cetera—by carriers

Parts defective, inoperative or missing, or in violation of the rules	Chicago, Burlington & Quincy	Denver & Rio Grande Western	Lake Superior & Ishpeming	Union Pacific	Roads with less than 10 locomotives	Total
1 Air compressors.....	—	—	—	—	—	—
2 Arch tubes.....	—	—	—	—	—	—
3 Ashpans and mechanism.....	—	—	—	—	—	—
4 Axles.....	—	—	—	—	—	—
5 Blow-off cocks.....	—	—	—	—	—	—
6 Boiler checks.....	—	—	—	—	—	—
7 Boiler shell.....	—	—	—	—	—	—
8 Brake equipment.....	—	—	—	—	5	5
9 Cabs, cab windows, and curtains.....	—	1	—	—	—	1
10 Cab aprons and decks.....	—	—	—	—	—	—
11 Cab cards.....	—	—	—	—	2	2
12 Coupling and uncoupling devices.....	—	—	—	—	—	—
13 Crossheads, guides, pistons, and piston rods.....	—	—	—	—	—	—
14 Crown bolts.....	—	—	—	—	—	—
15 Cylinders, saddles, and steam chests.....	—	—	—	—	—	—
16 Cylinder cocks and rigging.....	—	—	—	—	—	—
17 Domes and dome caps.....	—	—	—	—	—	—
18 Draft gear.....	—	—	—	—	1	1
19 Draw gear.....	—	—	—	—	—	—
20 Driving boxes, shoes, wedges, pedestals, and braces.....	—	—	—	—	—	—
21 Firebox sheets.....	—	—	—	—	—	—
22 Flues.....	—	—	—	—	—	—
23 Frames, tail pieces, and braces, locomotive.....	—	—	—	—	2	2
24 Frames, tender.....	—	—	—	—	—	—
25 Gages and gage fittings, air.....	—	—	—	—	—	—
26 Gages and gage fittings, steam.....	—	—	—	—	2	2
27 Gage cocks.....	—	1	—	—	2	3
28 Grate shakers and fire doors.....	—	—	—	—	—	—
29 Handholds.....	—	—	—	—	2	2
30 Injectors, inoperative.....	—	—	—	—	1	1
31 Injectors, and connections.....	—	1	—	—	1	1
32 Inspections and tests not made as required.....	—	—	—	—	3	3
33 Lateral motion.....	—	—	—	—	—	—
34 Lights, cab and classification.....	—	—	—	—	—	—
35 Lights, headlight.....	—	—	—	—	—	—
36 Lubricators and shields.....	—	—	—	—	—	—
37 Mud rings.....	—	—	—	—	—	—
38 Packing nuts.....	—	—	—	—	—	—
39 Packing, piston rod and valve stem.....	—	—	—	—	—	—
40 Pilots and pilot beams.....	—	—	—	—	—	—
41 Plugs and studs.....	—	—	—	—	1	1
42 Reversing gear.....	—	—	—	—	—	—
43 Rods, main and side, crankpins, and piston rods.....	—	—	—	—	—	—
44 Safety valves.....	—	—	—	—	1	1
45 Sanders.....	—	—	—	—	1	1
46 Springs and spring rigging.....	—	—	—	—	1	1
47 Squirt hose.....	—	—	—	—	—	—
48 Staybolts.....	—	—	—	—	—	—
49 Staybolts, broken.....	—	—	—	—	1	1
50 Steam pipes.....	—	—	—	—	—	—
51 Steam valves.....	—	—	—	—	1	1
52 Steps.....	—	—	—	—	1	1
53 Tanks and tank valves.....	—	—	—	—	2	2
54 Teltale holes.....	—	—	—	—	1	1
55 Throttle and throttle rigging.....	—	2	—	—	—	2
56 Trucks, engine and trailing.....	—	—	—	—	—	—
57 Trucks, tender.....	—	—	—	—	—	—
58 Valve motion.....	—	—	—	—	—	—
59 Washout plugs.....	—	—	—	—	—	—
60 Stokers.....	—	—	—	—	—	—
61 Water glasses, fittings, and shields.....	—	1	—	—	2	3
62 Wheels.....	—	—	—	—	6	6
63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....	—	—	—	—	—	—
Number of defects.....	—	6	—	—	38	44
Locomotives reported.....	10	22	—	—	138	192
Locomotives inspected.....	5	29	—	—	123	157
Locomotives defective.....	—	3	—	—	13	16
Percentage of inspected found defective.....	—	10.3	—	—	10.6	10.2
Locomotives ordered out of service.....	—	—	—	—	3	3

TABLE V.—Number of locomotive units other than steam reported,

Parts defective, inoperative or missing, or in violation of the rules	Akron, Canton & Youngstown	Aliquippa & Southern	Alton & Southern	Ann Arbor	Apalachicola Northern	Archison, Topeka & Santa Fe	Atlanta & St. Andrews Bay	Atlanta & West Point	Atlantic Coast Line	Baltimore & Ohio	Bangor & Aroostook
1 Air compressors						27			5	6	
2 Axles, truck and driving										4	
4 Batteries											
5 Boilers						9			1	9	
6 Brake equipment				2		63			28	95	4
8 Cabs and cab windows				1		25		5	8	13	1
9 Cab cards						6			1	2	3
10 Cab floors, aprons and deck plates						78			18	72	5
11 Clutches											
12 Controllers, relays, circuit breakers, magnet valves and switch groups					2	5			16	15	
13 Coupling and uncoupling devices						2			2	4	
14 Current collecting apparatus											
16 Draft gear			2			5		1	2	5	
17 Draw gear						2				1	
18 Driving boxes, shoes and wedges						2				21	
20 Frames or frame braces						2			5	6	
22 Fuel system		1				76		3	28	58	5
23 Gages or fittings, air						1		1	1	2	
24 Gages or fittings, steam						1				1	
25 Gears and pinions									16	27	1
26 Handholds						3			3	13	
28 Inspections and tests not made as required				1		17			6	26	
29 Insulation and safety devices						2		1	6	9	
30 Internal-combustion engine defects, parts and appurtenances				12		101		1	77	171	4
32 Jack shafts											
33 Jumpers and cable connectors						15			4	16	
35 Lateral motion, wheels									1	7	
36 Lights, cab and classification						1			1	5	
37 Lights, headlight									1		
39 Meters, volt and ampere						1					
40 Motors and generators						14			13	38	
42 Pilots and pilot beams						1			1		
43 Plugs and studs											
44 Quills											
46 Rods, main, side, and drive shafts											
48 Sanders				1		153			29	38	1
49 Springs and spring rigging, driving and truck						7			2	8	
51 Staybolts, broken or defective											
53 Steam pipes						5			2		
54 Steps, footboards, et cetera			4			4			11	6	
55 Switches, hand-operated, and fuses										2	
56 Transformers, resistors and rheostats											
57 Trucks						9			11	23	1
59 Water tanks											
60 Water glasses, fittings and shields											
61 Warning signal appliances						3					
62 Wheels			1			21		4	22	58	
63 Miscellaneous		1		1		26			25	36	
Number of defects	2	7	17	17	4	684		17	352	802	25
Locomotive units reported	18	17	26	23	11	1,863	14	28	590	1,227	31
Locomotive units inspected	34	14	31	39	46	4,503	56	71	1,376	2,492	81
Locomotive units defective		1	3	3	3	264		4	116	340	9
Percentage of inspected found defective		7.1	9.7	7.7	6.5	5.9		5.6	8.4	13.6	11.1
Locomotive units ordered out of service						7		1	11	14	1

inspected, found defective, and ordered out of service, et cetera—by carriers

Belt Rwy. of Chicago	Bessemer & Lake Erie	Birmingham Southern	Boston & Maine	Butte, Anaconda & Pacific	Camas Prairie	Canadian National	Canadian Pacific	Canton	Central of Georgia	Central Railroad of New Jersey	Central Vermont	Chesapeake & Ohio	Chicago & Eastern Illinois	Chicago & Illinois Midland	Chicago & North Western	Chicago & Western Indiana	Chicago, Burlington & Quincy	Chicago Great Western	Chicago, Milwaukee, St. Paul & Pacific	Chicago River & Indiana	
			5						3	2		4			8				1	5	1
			17						1	5		3			1				1	1	2
			69						2	3		3			7				4	4	4
	2	4	51						15	38		77	1		219				60	6	5
		1	13						2	2		2	2		26				3	3	6
	1		82						3	39		20	1		4				23	2	10
		3	2						1	6		7			77				3	8	11
			4												6				1	1	12
			22												10				4	4	13
										2					3				1	1	16
										2					4				5	7	17
										3					4				1	1	18
										3					4				1	1	20
	2		147	3					14	37	6	25	3		85				6	4	22
			24						3	1		1			2				1	1	23
												2			6						24
	1		17						2	10	1	13			44				8	1	25
			11						1	4		4		1	3				2	6	26
	1		30						2	8	4	6	1		26				6	2	28
			6						1	2		15	1	1	9				2	2	29
		1	481						48	152	23	94	8		143				18	3	30
			41						1	5	2	2	1		6				6		32
															9				7		33
			9							3					5				1		35
			1												2						36
			1												1						37
			25						3	5		1			1						39
	1		1						1	7	2	15			28				2		40
															2						42
																					43
																					44
			102						3	7	3	55	4		54				1	23	46
		1	11	1					3	6	1	6	4		27				2	1	48
																					49
			2																		51
			5							5		2	10		8				2		53
													1								54
																					55
																					56
			82							4	3				43				4	5	57
										2	8	5	19								59
																					60
			2										3		3						61
	7														32				8	4	62
	1		34							1	3				46				6		63
	16	1	10	1,296	5	1	61	149		125	449	54	453	30	5	961			118	33	423
	52	51	18	342	40	13	79	113	14	143	178	33	1,004	102	15	807	12	692	133	865	20
	41	35	50	1,613	69	16	89	119	5	460	360	187	1,785	244	48	1,783	6	2,195	406	2,235	
	5	1	7	344	2	1	17	36		30	92	20	166	15	3	309		66	19	177	
	12.2	2.9	14.0	21.3	2.9	6.3	19.1	30.2		6.5	25.6	10.7	9.3	6.1	6.3	17.3		3.0	4.8	7.9	
				17	1		1	2		5	3	1	3			11			1	1	10

TABLE V.—Number of locomotive units other than steam reported, inspected,

Parts defective, inoperative or missing, or in violation of the rules	Pacific Electric	Patapsco & Back Rivers	Pennsylvania	Pennsylvania-Reading Seashore Lines	Peoria & Pekin Union	Philadelphia, Bethlehem & New England	Piedmont & Northern	Pittsburgh & Lake Erie	Pittsburgh & West Virginia
	1 Air compressors			11					
2 Axles, truck and driving			3						
4 Batteries			2						
5 Boilers			23	9					
6 Brake equipment			269	5					
8 Cabs and cab windows			42		1				
9 Cab cards	1		3	1					
10 Cab floors, aprons and deck plates			112						
11 Clutches									
12 Controllers, relays, circuit breakers, magnet valves and switch groups			73			1			
13 Coupling and uncoupling devices			6						
14 Current collecting apparatus			2						
16 Draft gear			17						
17 Draw gear			6						
18 Driving boxes, shoes and wedges			7						
20 Frames or frame braces			4						
22 Fuel system	1		138	1					
23 Gages or fittings, air			4						
24 Gages or fittings, steam			2						
25 Gears and pinions			112	2					
26 Handholds			6						
28 Inspections and tests not made as required			24	6					
29 Insulation and safety devices			21						
30 Internal-combustion engine defects, parts and appurtenances			449	29				9	
32 Jack shafts									
33 Jumpers and cable connectors			30	1					
35 Lateral motion, wheels			19						
36 Lights, cab and classification			1						
37 Lights, headlight			1						
39 Meters, volt and ampere			1						
40 Motors and generators			98	11					
42 Pilots and pilot beams									
43 Plugs and studs			9						
44 Quills									
46 Rods, main, side, and drive shafts									
48 Sanders	1		117		2			4	
49 Springs and spring rigging, driving and truck			59	2					
51 Staybolts, broken or defective									
53 Steam pipes			20						
54 Steps, footboards, et cetera			3						
55 Switches, hand-operated, and fuses			1						
56 Transformers, resistors and rheostats			1						
57 Trucks			78	3				1	
59 Water tanks			2						
60 Water glasses, fittings and shields			149						
61 Warning signal appliances			79						
62 Wheels									
63 Miscellaneous									
Number of defects	3		2,008	70	3	1		16	
Locomotive units reported	44	51	2,706	46	15	28	16	113	25
Locomotive units inspected	81	54	4,799	127	30	85	39	144	14
Locomotive units defective	1		670	25	1	1		9	
Percentage of inspected found defective	1.2		14.0	19.7	3.3	1.2		6.3	
Locomotive units ordered out of service			19						

found defective, and ordered out of service, et cetera—by carriers—Continued

	Portland Terminal	Reading	Richmond, Fredericksburg & Potomac	River Terminal	Sacramento Northern	St. Louis-San Francisco	St. Louis Southwestern	Savannah & Atlanta	Seaboard Air Line	Soo Line	South Buffalo	Southern Pacific	Southern	Spokane, Portland & Seattle	Steelton & Highspire	Tennessee Central	Terminal R.R. Association of St. Louis	Texas & Pacific	Texas Mexican	Texas Pacific-Missouri Pacific Terminal R. of New Orleans	Toledo, Peoria & Western		
						3	2					9	13										1
		1				1			1			14	2										2
						1				1		2	2										4
			1			4						12	4										5
		8	19		4	41	14		57	17		130	99	9		4	5	22				6	
		1	1			23	9		8	4		30	47	3		3	6	5				8	
						2			5			34	3									9	
	2	4	8		1	19	9		11	13		170	81			13	7	15				10	
																							11
		7	1		1	3	2		2	4		52	10	4								12	
						1			2			12	4	2								13	
		1				1	3		2			15	17									14	
						3			2			6	3									16	
						2			1			6	13	1								17	
						1	2		1			6	3									18	
						2			1			6	3									20	
	2	7	4		5	23	19	1	16	6		148	75	6		3	3	6				22	
							1		1			10	5	1								23	
												1	1									24	
							7	15	8	3		22	7									25	
							1	1	2			9	4	1								26	
							4		2			52	22	1								28	
									3			4	7									29	
	9	25	42		2	71	51	1	56	27	3	695	155	2		7	22	30				30	
																							32
																							33
																							35
																							36
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																							60
																							61
																							62
																							63
	14	103	118		19	251	176	6	269	115	3	1,798	845	58		52	82	148				5	
	16	370	67	21	13	407	134	13	548	230	43	2,044	945	109	12	19	101	217	21	12		15	
	50	931	183	9	21	1,282	601	22	1,237	542	45	6,934	2,736	375	22	76	204	499	33	32		51	
	4	32	47		8	93	47	2	85	55	1	616	311	27		17	40	46				1	
	8.0	3.4	25.7		38.1	7.3	7.8	9.1	6.9	10.1	2.2	8.9	11.4	7.2		22.4	19.6	9.2				2.0	
	1		1			6	5		10	1		14	22	2		4	1	8					

TABLE V.—Number of locomotive units other than steam reported, inspected, found defective, and ordered out of service, et cetera—by carriers—Continued

	Toronto, Hamilton & Buffalo	Union Pacific	Union Railroad	Wabash	Washington Terminal	Western Maryland	Western Pacific	Youngstown & Northern	Roads with less than 10 locomotive units	Total
1 Air compressors.....	5									189
2 Axles, truck and driving.....	2			1		2				61
3 Batteries.....	1			2						22
4 Boilers.....	3						1			231
5 Brake equipment.....	79	46					5	58	2,810	2,810
6 Cabs and cab windows.....	15	12					1	16	878	878
7 Cab cards.....	15						2	12	166	166
8 Cab floors, aprons and deck plates.....	68	23					8	8	1,982	1,982
9 Clutches.....										
10 Controllers, relays, circuit breakers, magnet valves and switch groups.....	8		5				1	9	458	458
11 Coupling and uncoupling devices.....	2		6					3	106	106
12 Current collecting apparatus.....										4
13 Draft gear.....	9		2				1	9	326	326
14 Draw gear.....	4								133	133
15 Driving boxes, shoes and wedges.....	3								153	153
16 Frames or frame braces.....	2		1					5	80	80
17 Fuel system.....	69	19					5	35	2,205	2,205
18 Gages or fittings, air.....	2						1	5	109	109
19 Gages or fittings, steam.....	1		1					1	19	19
20 Gears and pinions.....	2	19						3	629	629
21 Handholds.....	3		5					6	158	158
22 Inspections and tests not made as required.....	27		1					36	602	602
23 Insulation and safety devices.....	7							7	179	179
24 Internal-combustion engine defects, parts and appurtenances.....	125	76					82	62	6,459	6,459
25 Jack shafts.....								1	321	321
26 Jumpers and cable connectors.....	16						2	3	67	67
27 Lateral motion, wheels.....			1						134	134
28 Lights, cab and classification.....	1		2						18	18
29 Lights, headlight.....									10	10
30 Meters, volt and ampere.....	7		7				1	4	704	704
31 Motors and generators.....								2	27	27
32 Pilots and pilot beams.....									9	9
33 Plugs and studs.....									2	2
34 Quills.....									68	68
35 Rods, main, side, and drive shafts.....									8	8
36 Sanders.....	100	18					4		2,319	2,319
37 Springs and spring rigging, driving and truck.....	10	4							391	391
38 Staybolts, broken or defective.....									54	54
39 Steam pipes.....	3	4							298	298
40 Steps, footboards, et cetera.....	4	5					1	12	13	13
41 Switches, hand-operated, and fuses.....									2	2
42 Transformers, resistors and rheostats.....									10	10
43 Trucks.....	9	3					1	10	716	716
44 Water tanks.....	1								20	20
45 Water glasses, fittings and shields.....									103	103
46 Warning signal appliances.....	3		2						56	924
47 Wheels.....	3		7						8	1,229
48 Miscellaneous.....	26	4					2			
Number of defects.....	639	277					118	447	25,320	25,320
Locomotive units reported.....	10,144	128	315	21	124	175	13	1,397	31,793	31,793
Locomotive units inspected.....	2,434	67	757	15	279	624	7	2,056	78,066	78,066
Locomotive units defective.....	269		101			50		135	8,310	8,310
Percentage of inspected found defective.....	6.2		13.3			8.0		6.6	10.6	10.6
Locomotive units ordered out of service.....	10		5					25	413	413

TABLE VI.—Number of multiple operated electric locomotive units reported, inspected found defective, and ordered out of service, et cetera—by carriers

	Baltimore & Ohio	Chicago North Shore & Milwaukee	Chicago South Shore & South Bend	Erie-Lackawanna	Illinois Central	Long Island	New York Central	New York, New Haven & Hartford	Pennsylvania	Reading	Total
1 Air compressors.....							1				1
2 Axles, truck and driving.....						4			2		6
3 Batteries.....											
4 Boilers.....											
5 Brake equipment.....				1		21	64	3	51	1	141
6 Cab and cab windows.....						1	2			1	4
7 Cab cards.....						1	1		3		5
8 Cab floors, aprons and deck plates.....									1		1
9 Clutches.....											
10 Controllers, relays, circuit breakers, magnet valves and switch groups.....											
11 Coupling and uncoupling devices.....											
12 Current collecting apparatus.....						30	27	1			58
13 Draft gear.....									2		2
14 Drawgear.....						1			3		4
15 Driving boxes, shoes and wedges.....						2					2
16 Frames or frame braces.....											
17 Fuel system.....											
18 Gages or fittings, air.....											
19 Gages or fittings, steam.....											
20 Gears and pinions.....							2		3		5
21 Handholds.....						1			1		2
22 Inspections and tests not made as required.....						2	13	4	6	4	29
23 Insulation and safety devices.....							1				1
24 Internal-combustion engine defects, parts and appurtenances.....											
25 Jack shafts.....											
26 Jumpers and cable connectors.....							15		2		17
27 Lateral motion, wheels.....											
28 Lights, cab and classification.....											
29 Lights, headlight.....											
30 Meters, volt and ampere.....											
31 Motors and generators.....	1					4			3		8
32 Pilots and pilot beams.....											
33 Plugs and studs.....											
34 Quills.....											
35 Rods, main, side, and drive shafts.....											
36 Sanders.....											
37 Springs and spring rigging, driving and truck.....											
38 Staybolts, broken or defective.....											
39 Steam pipes.....											
40 Steps, footboards, et cetera.....											
41 Switches, hand-operated, and fuses.....											
42 Transformers, resistors and rheostats.....											
43 Trucks.....		1		1			2	4	26		34
44 Water tanks.....											
45 Water glasses, fittings and shields.....											
46 Warning signal appliances.....											
47 Wheels.....	3										6
48 Miscellaneous.....						1	4	1			6
Number of defects.....	5			5		69	132	18	119	6	354
Locomotive units reported.....	48	138	65	267	280	641	253	219	441	136	2,488
Locomotive units inspected.....	22	61	13	124	137	215	250	173	440	123	1,558
Locomotive units defective.....	1	5		5		25	58	12	66	4	171
Percentage of inspected found defective.....	1.6			4.0		11.6	23.2	6.9	15.0	3.3	11.0
Locomotive units ordered out of service.....	1					1		1			4