

INTERSTATE COMMERCE COMMISSION

FORTY-EIGHTH ANNUAL REPORT
OF THE
DIRECTOR OF LOCOMOTIVE INSPECTION
TO THE
INTERSTATE COMMERCE COMMISSION

FISCAL YEAR ENDED
JUNE 30, 1959



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

OCTOBER 1, 1959.

To the Interstate Commerce Commission:

In compliance with section 7 of the act of February 17, 1911, as amended, the Forty-Eighth Annual Report of the Director of Locomotive Inspection, covering the work of the fiscal year ended June 30, 1959, 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, 10.4 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; this is an increase of 1.6 percent from the results of the preceding year. Six hundred forty-eight locomotives were ordered withheld from service

by our inspectors because of the presence of defects that rendered the locomotives immediately unsafe; this is an increase of 20 locomotives compared with the preceding year.

Results of locomotive inspections made by district locomotive inspectors in performance of duties prescribed under section 1 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—					
	1954	1955	1956	1957	1958	1959
Number of locomotives for which reports were filed.....	39,270	36,992	38,062	37,353	36,905	36,089
Number inspected.....	103,337	96,025	97,348	100,907	95,593	105,347
Number found defective.....	9,994	9,913	11,107	9,887	8,394	10,912
Percentage of inspected found defective.....	9.7	10.1	11.4	9.8	8.8	10.4
Number ordered out of service.....	257	223	644	518	395	648
Number of defects found.....	29,403	29,968	35,566	26,385	21,532	32,330

As indicated in the preceding table there was a decrease in the number of locomotives for which carriers were filing reports on June 30, 1959, as compared to the number being filed on June 30, 1958. The decrease resulted from 932 steam locomotives being retired during the year, while the number of the other than steam and multiple operated electric locomotive units for which reports were filed during the same period increased by 96.

During the year, district locomotive inspectors devoted 10,181 days to regular inspections of locomotives, 340½ days making shop inspections to determine that repairs and tests were being made to meet the requirements of the law and rules, 216½ days investigating accidents, 286½ days investigating complaints regarding possible violations of the law and rules, 295½ days conferring with carrier representatives and officials, and 1565½ days at their respective headquarters reviewing and processing inspection and repair reports filed by the carriers and performing other office work.

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, locomotives 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. Copies of published reports of accident investigations were made available to the general public and distributed to other interested parties, and 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 decreasing accident trend.

Sixty-six accidents occurred in connection with all types of locomotives in which 90 persons were injured. Compared with the preceding year there was a decrease of 6 accidents and an increase of 4 injuries.

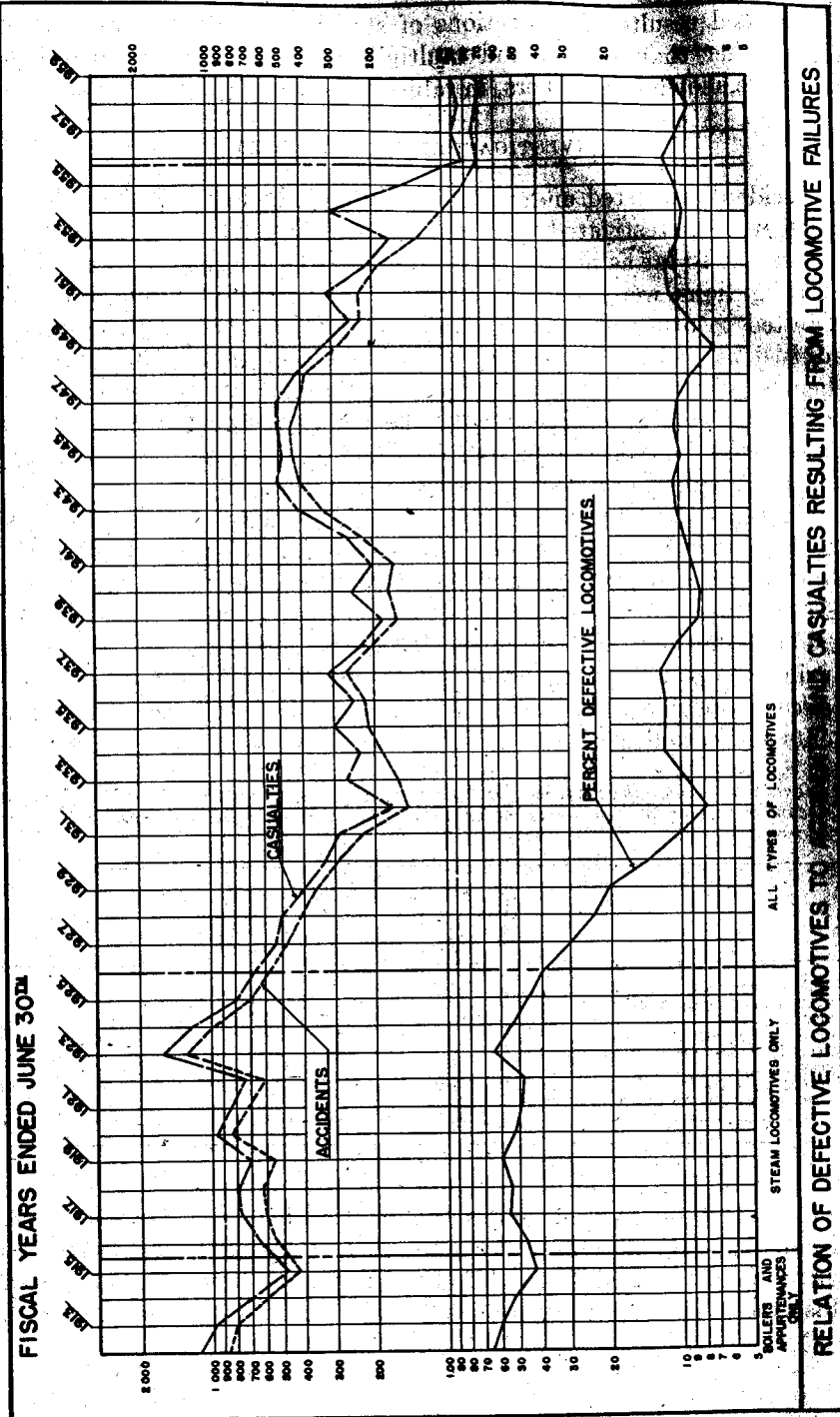
The following table provides details of accidents and casualties during the past 6 years caused by failure of some part or appurtenance of locomotives, and indicates increases or decreases in accidents and casualties:

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—					
	1954	1955	1956	1957	1958	1959
Number of accidents.....	105	83	73	75	72	66
Percent increase or decrease from previous year.....	21.6	21.0	12.0	12.7	4.0	8.3
Number of persons killed.....	3	3	4	0	0	0
Percent increase or decrease from previous year.....	75.0	0	133.3	100	0	0
Number of persons injured.....	302	142	79	90	86	90
Percent increase or decrease from previous year.....	101.3	53.0	44.4	113.9	4.4	14.7

¹ Increase.

The chart on page 4 shows the relation between the percentage of defective locomotives and the number of accidents and casualties which have resulted from defective parts and appurtenances and illustrates the effect of operating locomotives in defective condition.



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

Data is 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—									
	1955		1956		1957		1958		1959	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:										
Engineers.....	1	26	1	10		17		21		23
Firemen.....	1	24	2	33		34		36		31
Brakemen.....		10	1	10		17		11		10
Conductors.....		4		8		7		5		4
Switchmen.....		4		1		1				
Maintenance employees.....	1	4		2		2		1		1
Other employees.....		18		2		2		12		21
Nonemployees.....		42				12				
Total.....	3	142	4	70	0	90	0	86	0	90

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, 1959		
	Accidents	Killed	Injured
Air reservoirs, fittings, safety and check valves.....	1		1
Boiler:			
Flues and tubes including superheater, arch, and water.....	1		1
Fuel explosions in firebox.....	2		2
Brakes and brake rigging.....	1		1
Cab:			
Doors or windows.....	1		1
Seats.....	12		13
Control equipment—mechanical, electrical, pneumatic, or electro-pneumatic.....	1		1
Couplers, draft and drawgear.....	1		1
Electrical equipment:			
Armature journals and bearings.....	1		24
Energized electrical parts.....	1		1
Insulation, short circuits, or electrical flashes.....	6		6
Fires due to liquid fuel or debris.....	1		1
Floors, steps and passageways.....	17		17
Footboards.....	1		1
Handholds.....	1		1
Internal-combustion engines and turbines:			
Crankcase or air-box explosions.....	9		10
Exhaust and cooling systems.....	2		2
Fuel injectors and connections.....	2		2
Oil pumps and filters.....	1		1
Unguarded moving parts.....	1		1
Miscellaneous.....	3		3
Total.....	66		90

LOCOMOTIVE ACCIDENTS

Of the 66 accidents, 17 were caused by the defective condition of floors, steps, and passageways of diesel-electric locomotives. Twelve of the 17 resulted from accumulation of oil on walking surfaces of the locomotives, a reduction of 6 compared with the preceding year.

Twelve accidents were caused by defective condition of cab seats, compared with 8 in the previous year.

One accident occurred on a steam locomotive, resulting in injury to one employee.

SPECIFICATIONS AND ALTERATION REPORTS

In compliance with rule 54 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 5 specification cards and 105 alteration reports 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, 815 specifications and 1,494 alteration reports for locomotive units, and 89 specifications and 402 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, 6 specifications and 45 alteration reports were submitted by carriers. The information contained in these specifications and reports was analyzed and corrective measures were taken when improper design or other discrepancies were found.

INSPECTION AND REPAIR REPORTS

Inspection and repair reports filed with district inspectors during the year totaled 24,866 under rules 51 and 53 of the Rules and Instructions for Inspection and Testing of Steam Locomotives; 404,310 under rules 331 and 332 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam; and 32,750 under rule 451 for Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic.

EXTENSIONS OF TIME FOR REMOVAL OF FLUES

Under rule 10 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 64 applications for extension of time for removal of flues were submitted. After investigation, extensions were granted for the full period requested in 52 applications and after defects disclosed by the investigations were repaired, such extensions were granted in 2 other cases. One extension was granted for a shorter period than requested because of conditions disclosed by the

investigation. Nine applications were canceled for various reasons.

Extensions were granted for the full period requested in the three applications pending on July 1, 1958.

SUITS FOR PENALTIES

During the year, three cases involving six counts for alleged violations of the Locomotive Inspection Act and rules prescribed thereunder were transmitted to United States attorneys for prosecution. Judgment was confessed on all counts, and penalties totaling \$1,500 were assessed.

At the beginning of the year, 11 cases containing 220 counts against 4 railroads for failure to file required inspection reports on locomotives were pending in district courts. Six of these cases involving 104 counts were dismissed, and the remaining 5 cases involving 116 counts are still pending.

The cases dismissed were brought on the basis of violations of rule 203 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam. At the time the actions were instituted, rule 203 was interpreted to mean that locomotives should be inspected at each crew-change point. Consequently, when rule 203 was amended so as not to require inspection at crew-change points, the actions were dismissed.

APPEALS

During the year ended June 30, 1959, nine formal appeals from decisions of district locomotive inspectors were filed by the carriers. In seven cases, the Director of Locomotive Inspection decided in favor of the carriers, and in the other two cases the appeals were denied. No appeals from the decisions of the Director were filed by any carrier.

BETTERMENT OF SERVICE

In continuance of the program for promoting and maintaining uniformity in methods of procedure and inspection practices and to insure uniform understanding of policies, conferences were held during the year with the zone supervisors and inspectors of the Section. The revised rules promulgated in the Commission's Ex Parte No. 174 and Ex Parte No. 203, with pertinent orders covering compliance dates and interpretations of certain rules and instructions were reviewed and discussed at these conferences.

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, 1959, BY ROADS

[A double star (**) indicates accidents not properly reported, as required by Regulations 122, 335, and 454. Complete investigations therefore, could not be made, inasmuch as the Bureau was not apprised of the accidents in sufficient time after they occurred to permit them to be properly investigated.]

ATCHISON, TOPEKA AND SANTA FE RAILWAY:

June 13, 1959, unit 24, Dennison, Ariz. Wood screws securing cab seat pedestal to floor failed, permitting seat to fall; one injured.
One accident; one injured.

CHICAGO, BURLINGTON & QUINCY RAILROAD:

August 24, 1958, locomotive (C&S) 646, near Broomfield, Colo. Employee was burned by flash while attempting to light fire in oil-burning firebox; fire had been extinguished due to a 4-inch crack in weld in side sheet of firebox; one injured.

December 13, 1958, unit 9992, Naperville, Ill. Crankcase explosion resulted from cracked cylinder head and liner; one injured.
Two accidents; two injured.

CHICAGO, ROCK ISLAND & PACIFIC RAILROAD:

August 13, 1958, unit 403, west of Shawnee, Okla. Crankcase explosion resulted from overheated crankshaft main bearings; one injured.

September 18, 1958, unit 401, Choctaw, Okla. Employee came in contact with high voltage electrical equipment while attempting to change battery charging fuse; one injured.
Two accidents; two injured.

ERIE RAILROAD:

March 18, 1959, unit 523, Chicago, Ill. Oil on running board; one injured.
One accident; one injured.

LEHIGH VALLEY RAILROAD:

May 7, 1959, unit, 165, Newark, N.J. Crankcase explosion caused by overheated connecting rod bearing; one injured.

June 9, 1959, unit 143, near Caledonia, N.Y. Employee fell from right front footboard; portion of footboard was broken out and missing from right front top outside corner; one injured.

Two accidents; two injured.

LONG ISLAND RAIL ROAD:

September 17, 1958, multiple operated electric locomotive unit 1860, New York, N.Y. Collision resulting from a brake failure due to a broken clevis; one injured.

One accident; one injured.

MAINE CENTRAL RAILROAD:

April 10, 1959, unit 555, Nicolin, Me. Crankcase explosion caused by overheated crankpin bearing; one injured.

One accident; one injured.

MISSOURI-KANSAS-TEXAS RAILROAD:

November 18, 1958, unit 135, Kansas City, Mo. Oil on engineroom floor; one injured.

One accident; one injured.

MISSOURI PACIFIC RAILROAD:

August 25, 1958, unit 508-B, Dittlinger, Tex. Oil on engineroom floor caused by oil leaking at lubricating oil filter; floor not properly roughened; oil on engineroom floor had been reported 10 times in the 30-day period prior to accident; one injured.

September 16, 1958, unit 4290, League City, Tex. Cab door stuck in open position. While attempt was being made to close the door it suddenly released due to retainer being defective; one injured.

October 3, 1958, unit 600, Palestine, Tex. Removable steps leading from engineroom to cab fell from position while employee was entering cab; steps were not properly secured; one injured.

October 30, 1958, unit (T & P) 1538, Mart, Tex. Cab seat fell over backward due to failure of weld securing seat frame to pedestal assembly; one injured.

Four accidents; four injured.

NEW YORK CENTRAL RAILROAD:

**August 3, 1958, unit 9606, South Bend, Ind. Cab seat back rest gave way when a nail, inserted in place of locking pin in back rest adjustment assembly, worked out of retaining brackets; one injured.

October 18, 1958, unit 614, Charleston, W. Va. Cab seat broke from pedestal due to defective welding connecting pedestal to seat base; one injured.

November 26, 1958, unit 5756, Ardsley, N.Y. Crankcase explosion due to a broken piston. Employee encountered a burst of smoke and oil fumes when he opened engine door to locate source of explosion; one injured.

December 22, 1958, unit 5792, Ligonier, Ind. While employee was attempting to extinguish fire in the high voltage cabinet he was forced to abandon cab due to heat and smoke, resulting in his falling from running board; one injured.

January 13, 1959, unit 5940, between Poughkeepsie and Rhinecliff, N.Y. Smoke and oil fumes in cab resulted from a broken intermediate steam generating coil in heating boiler; defects relative to accident were reported six times since December 23; one injured.

January 15, 1959, unit 1096, between Poughkeepsie and Croton, N.Y. Two broken studs securing fuel injection pump to camshaft housing permitted oil to leak over diesel engine, resulting in fumes entering cab; defects relative to accident were reported 22 times since December 15; one injured.

January 21, 1959, unit 605, Toledo, Ohio. Cab seat backrest gave way due to failure of old weld securing left horizontal crossbrace to vertical frame and broken pivot bolt securing right backrest frame to seat frame; one injured.

April 3, 1959, unit 838, Syracuse, N.Y. While attempting to board unit employee slipped and fell from bottom step due to defective tread; one injured.

May 8, 1959, unit 1667, Detroit, Mich. Oil on cab floor; "Clean oil off engine room floors" was reported April 16 and 18; one injured.

May 27, 1959, unit 1032, East Syracuse, N.Y. Undesired automatic train control brake application due to defective ballast resistor; one injured.

Ten accidents; ten injured.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD:

August 28, 1958, unit 1222, Providence, R.I. Exhaust fumes entered cab as a result of a diesel engine air box inspection cover blowing off, due to a broken locking bar; two injured.

September 8, 1958, unit 0500, Framingham, Mass. Oil on running board; oil leak at governor oil hose connection; defects having a bearing on accident were reported eight times since August 8; one injured.

December 2, 1958, unit 0422, Cedar Hill, Conn. Oil on engineroom floor due to leaks in lubricating and fuel oil systems; defects having a bearing on accident were reported 41 times from November 3 to December 2; one injured.

December 12, 1958, unit 0725, Greenbush, Mass. Employee was exposed to smoke and fumes while extinguishing fire resulting from a series of explosions in a defective steam heating boiler; defective condition of the boiler was reported four times prior to accident, and one time following accident; one injured.

February 8, 1959, unit 0460, Providence, R.I. Oil on engineroom floor resulting from improperly applied lubricating oil pipe hose clamps; defects having a bearing on accident were reported 24 times since January 8; one injured.

**February 9, 1959, unit 0771, between New Haven, Conn. and Boston, Mass. Four bolts securing elbow connection to exhaust manifold connection were missing, permitting gas fumes and smoke to escape and enter cab; defects having a bearing on accident were reported five times prior to accident, and three times following accident; one injured.

March 13, 1959, unit 1204, Boston, Mass. Oil on cab floor due to leak in fuel pipe to steam heating boiler; one injured.

April 3, 1959, unit 0409, Worcester, Mass. While attempting to repair broken hose to fuel injection pump fuel oil sprayed in employee's eye; one injured.

May 15, 1959, unit 361, Oak Point, N. Y. Oil on engineroom floor; fuel tank overflow pipe leaking; oil leaks and/or clean oil from floor were reported 12 times prior to and 10 times following accident; one injured.
Nine accidents; ten injured.

PENNSYLVANIA RAILROAD:

August 7, 1958, unit 5686, Long Island City, N. Y. While attempting to extinguish a fire, caused by a defective preventive coil, employee was exposed to smoke and fumes from burning insulation; one injured.

September 1, 1958, unit 9547-A, near New Florence, Pa. Cab seat back rest collapsed due to defective adjustment assembly, to which improper repairs had previously been made; one injured.

September 11, 1958, unit 9003, Delair, N. J. Ammeter gage exploded, scattering broken glass in cab; two bolts securing ammeter motor to ammeter worked out allowing motor to vibrate until it broke internal wires which made contact with gage housing, resulting in short circuit; one injured.

October 15, 1958, unit 8984, Pitcairn, Pa. Fumes entered cab as a result of fuel oil being sprayed on heated engine parts due to a leaking fuel oil filter gasket; defects relative to accident were reported September 17, 19 (two times), and October 5 and 14; one injured.

**October 22, 1958, unit 9778-A, Bedford, Ohio. Cab seat fell over backward due to failure of welding joining inner sleeve to plate assembly at seat base; one injured.

December 16, 1958, unit 4810, New Brunswick, N. J. Defective light bulb socket and switch caused short circuit and electrical flash when employee attempted to turn on light switch; one injured.

December 23, 1958, unit 5939, New York, N. Y. Employee was injured when he jumped from unit to ground to escape flames and smoke from electrical equipment fire; one injured.

December 23, 1958, unit 8530, Old Bridge, N. J. Employee fell between units when a walkway platform collapsed; platform became detached from hinge support due to a broken hinge pin; one injured.

January 25, 1959, unit 8434, Detroit, Mich. Employee was exposed to fumes from exhaust stack which was not properly sealed to prevent fumes from entering cab; defects relative to accident were reported 10 times since January 1; one injured.

February 3, 1959, unit 8938, Dover, Ohio. Uncoupling lever shaft suddenly disengaged from uncoupling lever bail, causing employee's hand to slip from lever and strike end plate of unit; inner uncoupling lever collar was missing, allowing excessive lateral movement, which prevented shaft from engaging lever bail; one injured.

February 23, 1959, unit 8844, Valparaiso, Ind. Employee fell when cab seat cushion slipped from position; two securing clamps were missing and the remaining clamps were not properly secured; "Seat cushion #2 side off" was reported February 10 and "Seat loose on #2 side" was reported February 11; one injured.

February 26, 1959, unit 9840-A, Greensfork, Ind. Broken cross bar for securing air box inspection cover permitted cover to fall from position, resulting in smoke and fumes escaping; one injured.

March 3, 1959, unit 5965, Long Island City, N. Y. Employee was exposed to smoke and fumes while extinguishing fire caused by overheated exhaust manifold igniting accumulation of oil and debris on diesel engine; one injured.

March 28, 1959, unit 3912, Long Island City, N. Y. Employee was exposed to smoke and fumes while extinguishing fire from burning insulation in a defective preventive coil; one injured.

May 13, 1959, unit 4774, Frazer, Pa. Derailment and collision caused by a false flange on a slid-flat driving wheel, resulting from a seized traction motor armature bearing; 24 injured.

June 6, 1959, unit 9590-A, Smithville, Ohio. Employee was exposed to smoke and fumes while extinguishing fire originating in battery compartment; metallic hose on CO₂ fire extinguisher built-in system was ruptured and three of four hand-type fire extinguishers were inoperative; one injured.

Sixteen accidents; thirty-nine injured.

READING COMPANY:

October 13, 1958, unit 300-A, Tamaqua, Pa. Wood screws which fastened cab seat base to floor pulled out, permitting seat to overturn; one injured.

April 2, 1959, unit 725, Philadelphia, Pa. Cotter pin securing cab seat in raised position sheared off, permitting seat to suddenly drop to lower position; one injured.

Two accidents; two injured.

ST. LOUIS-SAN FRANCISCO RAILWAY:

August 11, 1958, unit 532, Kimbrough, Ala. Employee sustained laceration of leg on jacket of water cooler due to 3 of 4 screws missing, allowing cooler faucet alcove to project out one-half inch from cooler jacket; one injured.

January 13, 1959, unit 279, West Tulsa, Okla. Cab seat back rest gave way due to support plate being weakened by an old fracture through approximately 34 percent of cross sectional area; one injured.

June 22, 1959, unit 616, Pittsburg, Kan. Defective dowel permitted grab iron to separate from handrail support bracket; one injured.

Three accidents; three injured.

SEABOARD AIR LINE RAILROAD:

February 6, 1959, unit 1504, Tallahassee, Fla. Crankcase explosion caused by failure of crankshaft main bearing; one injured.

One accident; one injured.

SOUTHERN PACIFIC COMPANY:

July 17, 1958, unit 6315, Vina, Calif. Crankcase explosion resulted from overheated main bearings; one injured.

July 23, 1958, unit 6007, Winnemucca, Nev. Employee's hand came in contact with blower-water pump drive belt while attempting to replace heating boiler control cabinet door. Door was displaced due to defective latch; one injured.

**November 9, 1958, unit 6238, near Deeth, Nev. Oil on engineroom floor due to a number of oil leaks from diesel engine; oil leaks and/or oil on engineroom floor were reported 8 times since November 1; one injured.

December 25, 1958, unit 1397, Los Angeles, Calif. Broken air horn pipe permitted sudden blast of air to escape and injure employee's ear; one injured.

January 29, 1959, unit 1077, Oakland, Calif. Cab seat backrest became detached from seat due to a defective bracket; one injured.

February 3, 1959, unit 6403, Sparks, Nev. Employee stepped on jumper cable lying on floor in nose compartment; one injured.

Six accidents; six injured.

SOUTHERN RAILWAY:

**July 7, 1958, unit 6840, Somerset, Ky. While repairing fuel system employee slipped and fell from running board to ground; one injured.

February 19, 1959, unit 2054, Carlisle, S. C. Crankcase explosion caused by an overheated connecting rod bearing; defects relative to accident were reported 9 times since January 21; one injured.

Two accidents; two injured.

TEXAS AND PACIFIC RAILWAY:

December 3, 1958, unit 1552, Jal, N. Mex. Oil on engineroom floor; one injured.

One accident; one injured.

WARASH RAILROAD:

July 16, 1958, unit 1105-A, Ryan, Ill. Oil on engineroom floor; oil leaking from area around valve cover frame and cylinder covers; defects relative to accident were reported 19 times since June 16; one injured

One accident; one injured.

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

Parts defective, inoperative or missing, or in violation of the rules	Year ended June 30—					
	1954	1955	1956	1957	1958	1959
1 Air compressors.....	304	229	239	83	13	11
2 Arch tubes.....	4	5	1	1	1	2
3 Ashpans and mechanism.....	24	17	13	4		
4 Axles.....	3	3	2			
5 Blow-off cocks.....	121	105	91	30	2	
6 Boiler checks.....	158	94	70	26	9	3
7 Boiler shell.....	79	43	31	20	3	1
8 Brake equipment.....	835	636	565	256	85	35
9 Cabs, cab windows, and curtains.....	296	241	187	101	21	3
10 Cab aprons and decks.....	133	100	113	22	7	3
11 Cab cards.....	27	19	23	18	6	4
12 Coupling and uncoupling devices.....	22	11	17	8	3	6
13 Crossheads, guides, pistons, and piston rods.....	398	256	223	107	22	11
14 Crown bolts.....	20	7	10	2		
15 Cylinders, saddles, and steam chests.....	364	387	251	157	17	7
16 Cylinder cocks and rigging.....	132	130	116	54	11	1
17 Domes and dome caps.....	20	20	23	13	1	
18 Draft gear.....	150	133	107	45	17	8
19 Draw gear.....	79	69	57	23	6	1
20 Driving boxes, shoes, wedges, pedestals, and braces.....	258	226	250	72	21	6
21 Firebox sheets.....	37	20	25	23		1
22 Flues.....	32	27	19	12		2
23 Frames, tail pieces, and braces, locomotive.....	151	100	78	22	5	3
24 Frames, tender.....	14	11	10	4		
25 Gages and gage fittings, air.....	47	42	40	25	8	3
26 Gages and gage fittings, steam.....	89	61	68	28	4	1
27 Gage cocks.....	120	116	113	43	15	5
28 Grate shakers and fire doors.....	90	107	54	24	6	1
29 Handholds.....	146	110	112	33	8	12
30 Injectors, inoperative.....	33	35	3	4	1	1
31 Injectors and connections.....	674	406	379	198	37	15
32 Inspections and tests not made as required.....	24	26	37	24	12	10
33 Lateral motion.....	98	65	48	24	10	2
34 Lights, cab and classification.....	39	35	18	7	4	1
35 Lights, headlight.....	56	34	32	18	5	3
36 Lubricators and shields.....	63	47	38	16	3	1
37 Mud rings.....	65	33	36	6	3	3
38 Packing nuts.....	240	233	253	62	14	10
39 Packing, piston rod and valve stem.....	154	122	106	74	5	8
40 Pilots and pilot beams.....	52	39	34	8	2	2
41 Plugs and studs.....	22	16	15	16		
42 Reversing gear.....	170	151	108	39	11	5
43 Rods, main and side, crankpins, and collars.....	315	221	214	108	22	11
44 Safety valves.....	15	22	17	9	1	
45 Sanders.....	277	155	123	72	9	3
46 Springs and spring rigging.....	834	551	505	212	32	25
47 Squirt hose.....	39	27	26	14		
48 Staybolts.....	108	55	69	20	6	3
49 Staybolts, broken.....	55	27	30	12	9	19
50 Steam pipes.....	87	58	57	27	5	4
51 Steam valves.....	69	33	21	7	2	3
52 Steps.....	255	157	147	42	20	6
53 Tanks and tank valves.....	340	269	217	99	16	5
54 Telltale holes.....	13	6	9	6	1	
55 Throttle and throttle rigging.....	228	179	133	48	9	6
56 Trucks, engine and trailing.....	171	153	96	42	5	2
57 Trucks, tender.....	152	129	123	51	10	11
58 Valve motion.....	174	114	105	55	7	4
59 Washout plugs.....	79	73	83	39	1	2
60 Stokers.....	55	58	68	33	3	2
61 Water glasses, fittings, and shields.....	282	218	193	75	20	9
62 Wheels.....	107	94	70	39	7	13
63 Miscellaneous—Signal appliances, badge plates, brakes (hand).....	263	194	166	68	9	6
Number of defects.....	9,763	7,350	6,487	2,840	592	325
Locomotives reported.....	12,135	8,892	5,875	3,868	2,422	1,490
Locomotives inspected.....	19,999	12,128	8,794	5,983	2,324	967
Locomotives defective.....	2,599	1,784	1,499	737	159	77
Percentage of inspected found defective.....	13.0	14.7	17.0	12.3	6.8	8.0
Locomotives ordered out of service.....	117	96	152	99	22	16

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

Parts defective, inoperative or missing, or in violation of the rules	Year ended June 30—					
	1954	1955	1956	1957	1958	1959
1 Air compressors.....	326	419	443	326	282	337
2 Axles, truck and driving.....	4	7	26	34	69	100
4 Batteries.....	82	83	97	85	15	16
6 Boilers.....	175	203	275	208	173	313
8 Brake equipment.....	2,126	2,790	3,259	2,906	2,469	3,477
6 Cabs and cab windows.....	858	1,073	1,600	1,030	963	1,419
9 Cab cards.....	135	150	183	187	145	231
10 Cab floors, aprons, and deck plates.....	1,703	1,677	1,933	1,940	2,020	2,798
11 Clutches.....	5	2	4		2	3
12 Controllers, relays, circuit breakers, magnet valves and switch groups.....	454	802	775	360	348	613
13 Coupling and uncoupling devices.....	139	204	166	116	132	172
14 Current collecting apparatus.....	12	15	17	6	3	4
16 Draft gear.....	291	336	360	253	357	489
17 Draw gear.....	55	140	146	121	128	173
18 Driving boxes, shoes, and wedges.....	154	249	291	154	135	144
20 Frames or frame braces.....	32	14	30	30	17	23
22 Fuel system.....	1,951	1,833	2,555	2,431	2,307	3,343
23 Gages or fittings, air.....	136	226	278	239	166	277
24 Gages or fittings, steam.....	56	48	60	36	58	41
25 Gears and pinions.....	12	27	20	10	19	35
26 Handholds.....	230	219	258	208	217	230
28 Inspections and tests not made as required.....	185	183	748	703	623	682
29 Insulation and safety devices.....	105	188	282	133	228	210
30 Internal-combustion engine defects, parts and appurtenances.....	4,848	5,035	6,356	5,174	3,817	6,555
32 Jack shafts.....		2			1	1
33 Jumpers and cable connectors.....	178	214	553	442	306	355
35 Lateral motion, wheels.....	5	39	14	35	46	25
36 Lights, cab and classification.....	232	198	352	260	321	480
37 Lights, headlight.....	28	33	58	35	32	46
39 Meters, volt and ampere.....	40	43	58	34	24	31
40 Motors and generators.....	813	880	1,122	671	472	787
42 Pilots and pilot beams.....	71	71	78	61	41	75
43 Plugs and studs.....			1			
44 Quills.....	11	22	26	6	32	46
46 Rods, main, side, and drive shafts.....		7	4	5	1	1
48 Sanders.....	1,200	1,492	2,307	2,023	2,310	3,613
49 Springs and spring rigging, driving and truck.....	241	306	363	370	389	542
51 Staybolts, broken or defective.....						
53 Steam pipes.....	154	177	190	164	141	182
54 Steps, footboards, et cetera.....	622	737	1,005	827	232	406
55 Switches, hand-operated, and fuses.....	34	38	48	16	16	11
56 Transformers, resistors, and rheostats.....	6	3	9	10	2	4
57 Trucks.....	503	1,054	1,007	552	510	823
59 Water tanks.....	34	31	49	19	31	32
60 Water glasses, fittings, and shields.....	11	16	14	5	4	2
61 Warning signal appliances.....	121	152	182	154	124	179
62 Wheels.....	257	282	252	256	189	882
63 Miscellaneous.....	1,005	898	1,220	736	762	1,491
Number of defects.....	19,640	22,618	29,054	23,373	20,668	31,171
Locomotive units reported.....	27,135	28,100	29,405	30,740	31,755	31,862
Locomotive units inspected.....	83,338	83,897	88,269	93,187	91,522	102,149
Locomotive units defective.....	7,395	8,129	9,597	9,031	8,067	10,473
Percentage of inspected found defective.....	8.9	9.5	10.9	9.7	8.8	10.3
Locomotive units ordered out of service.....	140	127	492	417	372	628

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—			
	1956	1957	1958	1959
1 Air compressors.....		4	2	1
2 Axles, truck and driving.....			8	87
4 Batteries.....				
6 Boilers.....		18	23	188
8 Brake equipment.....			2	25
6 Cabs and cab windows.....			13	5
9 Cab cards.....	1	8	1	2
10 Cab floors, aprons, and deck plates.....				
11 Clutches.....				
12 Controllers, relays, circuit breakers, magnet valves and switch groups.....			1	2
13 Coupling and uncoupling devices.....				
14 Current collecting apparatus.....		20	25	65
16 Draft gear.....			1	15
17 Draw gear.....			9	2
18 Driving boxes, shoes, and wedges.....			2	3
20 Frames or frame braces.....				
22 Fuel system.....				
23 Gages or fittings, air.....			1	8
24 Gages or fittings, steam.....				
25 Gears and pinions.....				
26 Handholds.....				
28 Inspections and tests not made as required.....	2	7	45	46
29 Insulation and safety devices.....	1	46	22	30
30 Internal-combustion engine defects, parts and appurtenances.....				
32 Jack shafts.....				
33 Jumpers and cable connectors.....	2	5	3	10
35 Lateral motion, wheels.....				
36 Lights, cab and classification.....			1	24
37 Lights, headlight.....				4
39 Meters, volt and ampere.....				
40 Motors and generators.....		3		31
42 Pilots and pilot beams.....				2
43 Plugs and studs.....				
44 Quills.....				
46 Rods, main, side, and drive shafts.....				
48 Sanders.....				
49 Springs and spring rigging, driving and truck.....		25	10	8
51 Staybolts, broken or defective.....				
53 Steam pipes.....				
54 Steps, footboards, et cetera.....		1		1
55 Switches, hand-operated, and fuses.....				5
56 Transformers, resistors, and rheostats.....	12	23	98	222
57 Trucks.....				
59 Water tanks.....				
60 Water glasses, fittings, and shields.....				
61 Warning signal appliances.....		1		1
62 Wheels.....		2		3
63 Miscellaneous.....		7	6	17
Number of defects.....	19	172	272	834
Locomotive units reported.....	2,782	2,745	2,728	2,717
Locomotive units inspected.....	285	1,437	1,747	2,281
Locomotive units defective.....	11	119	168	362
Percentage of inspected found defective.....	3.9	8.3	9.6	16.2
Locomotive units ordered out of service.....		2	1	4

¹ The Rules and Instructions for Inspection and Testing of Multiple Operated Electric Locomotive Units Designed to Carry Freight and/or Passenger Traffic became effective April 1, 1956.

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

Parts defective, inoperative or missing, or in violation of the rules	Toledo, Peoria & Western	Toronto, Hamilton & Buffalo	Union Pacific	Union Railroad	Union Railway	Virginian	Wabash	Washington Terminal	Western Maryland	Western Pacific	Youngstown & Northern	Roads with less than 10 locomotive units	Total
1 Air compressors			9				1			1		2	337
2 Axles, truck and driving				1									100
4 Batteries													16
5 Boilers			9				1						3,313
6 Brake equipment	1		63	2			23	8				71	3,477
8 Cabs and cab windows			20	4			3						1,419
9 Cab cards			3	2									38
10 Cab floors, aprons and deck plates			104				11			32	1	16	2,768
11 Clutches													3
12 Controllers, relays, circuit breakers, magnet valves and switch groups			17	1			5						613
13 Coupling and uncoupling devices			5					1					172
14 Current collecting apparatus													4
16 Draft gear			7				2						489
17 Draw gear			7					1					173
18 Driving boxes, shoes and wedges			1										144
20 Frames or frame braces									2				1
22 Fuel system	6		92	8			22	8				34	3,343
23 Gages or fittings, air			8				2		4			8	277
24 Gages or fittings, steam			4										41
25 Gears and pinions													35
26 Handholds			5	3			1			3		13	230
28 Inspections and tests not made as required			20					6				34	682
29 Insulation and safety devices			7				1			2		6	210
30 Internal-combustion engine defects, parts and appurtenances			305	2			22			85		101	6,555
32 Jack shafts												1	1
33 Jumpers and cable connectors			17									4	355
35 Lateral motion, wheels													25
36 Lights, cab and classification			10				1		2			9	480
37 Lights, headlight													46
39 Meters, volt and ampere			1				1					7	31
40 Motors and generators			5				1			1		7	787
42 Pilots and pilot beams			4						1			1	75
43 Plugs and studs													46
44 Quills													46
46 Rods, main, side, and drive shafts							16					47	3,613
48 Sanders			67							8		6	542
49 Springs and spring rigging, driving and truck	2		10	1									6
51 Staybolts, broken or defective													182
53 Steam pipes			5				2						7
54 Steps, footboards, et cetera	1		11						3			22	408
55 Switches, hand-operated, and fuses													11
56 Transformers, resistors and rheostats													4
57 Trucks			10	1			1					10	823
59 Water tanks			1										32
60 Water glasses, fittings and shields													2
61 Warning signal appliances			3				2			1		3	179
62 Wheels			5	4			2			15	1	41	382
63 Miscellaneous			53				2					34	1,491
Number of defects	10		888	29			131			190	2	591	31,171
Locomotive units reported	14	10	1,217	132	11	120	294	25	126	171	11	1,356	31,862
Locomotive units inspected	31	25	1,189	146	39	120	1,069	12	361	849	31	2,398	102,149
Locomotive units defective	2		338	20			52			68	1	179	10,473
Percentage of inspected found defective	6.5		6.5	13.7			4.9			8.0	3.2	7.5	10.3
Locomotive units ordered out of service			16	4			1			1	1	35	628

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

Parts defective, inoperative or missing, or in violation of the rules	Baltimore & Ohio	Chicago North Shore & Milwaukee	Chicago South Shore & South Bend	Delaware, Lackawanna & Western	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				2		8	29			48	87
4 Batteries											2
5 Boilers											5
6 Brake equipment			2	27		8	120	1	30		188
8 Cabs and cab windows				2			22	1			25
9 Cab cards						1	3	1			5
10 Cab floors, aprons and deck plates							2				2
11 Clutches											1
12 Controllers, relays, circuit breakers, magnet valves and switch groups						1		1			2
13 Coupling and uncoupling devices											13
14 Current collecting apparatus						20	32		13		65
16 Draft gear						1	13		1		15
17 Draw gear											2
18 Driving boxes, shoes and wedges											3
20 Frames or frame braces											3
22 Fuel system											20
23 Gages or fittings, air						1	1	2	4		8
24 Gages or fittings, steam											24
25 Gears and pinions											4
26 Handholds						5	4		30		46
28 Inspections and tests not made as required						1	16	2	4		30
29 Insulation and safety devices											23
30 Internal-combustion engine defects, parts and appurtenances							22	1			23
32 Jack shafts											30
33 Jumpers and cable connectors											32
35 Lateral motion, wheels						1	6	3			10
36 Lights, cab and classification											35
37 Lights, headlight											24
39 Meters, volt and ampere							13		11		4
40 Motors and generators							3				37
42 Pilots and pilot beams											39
43 Plugs and studs											31
44 Quills											40
46 Rods, main, side, and drive shafts							2	1	1	25	42
48 Sanders											2
49 Springs and spring rigging, driving and truck											43
51 Staybolts, broken or defective											44
53 Steam pipes											46
54 Steps, footboards, et cetera											48
55 Switches, hand-operated, and fuses											44
56 Transformers, resistors and rheostats											46
57 Trucks											51
59 Water tanks											53
60 Water glasses, fittings and shields											54
61 Warning signal appliances											55
62 Wheels											56
63 Miscellaneous											57
Number of defects						53	311	14	394		834
Locomotive units reported	55	138	65	281	280	705	370	224	463	136	2,717
Locomotive units inspected	33	102	52	365	138	304	432	152	486	167	2,231
Locomotive units defective		2	5	25		21	102	10	197		362
Percentage of inspected found defective	2.0	9.6	6.8			6.9	23.6	6.6	40.5		16.2
Locomotive units ordered out of service							2		2		4