

INTERSTATE COMMERCE COMMISSION

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FIFTIETH ANNUAL REPORT  
OF THE  
DIRECTOR OF LOCOMOTIVE INSPECTION  
TO THE  
INTERSTATE COMMERCE COMMISSION

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FISCAL YEAR ENDED  
JUNE 30, 1961



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

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OCTOBER 3, 1961.

*To the Interstate Commerce Commission:*

In compliance with section 7 of the act of February 17, 1911, as amended, the Fiftieth Annual Report of the Director of Locomotive Inspection, covering the work of the fiscal year ended June 30, 1961, 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, 9.6 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 a decrease of 0.6 percent from the results of the preceding year. Five hundred and four 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 27 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—					
	1956	1957	1958	1959	1960	1961
Number of locomotives for which reports were filed.....	38,062	37,353	36,905	36,069	35,645	35,074
Number inspected.....	97,348	100,607	95,593	105,347	108,629	98,332
Number found defective.....	11,107	9,887	8,394	10,912	11,126	9,399
Percent of inspected found defective.....	11.4	9.8	8.8	10.4	10.2	9.6
Number ordered out of service.....	644	518	395	648	531	504
Number of defects found.....	35,560	26,385	21,532	32,330	32,830	28,308

As indicated in the preceding table there was a decrease in the number of locomotives for which carriers were filing reports on June 30, 1961, as compared to the number being filed on June 30, 1960. The decrease resulted from 421 steam locomotives being retired during the year, and a decrease of 150 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 9,883 days to regular inspections of locomotives, 406 days making shop inspections to determine that repairs and tests were being made to meet the requirements of the law and rules, 248½ days investigating accidents, 582 days on special assignment relating to locomotive inspection including investigating complaints regarding possible violations of the law and rules, 406 days conferring with carrier representatives and officials, and 1,968 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, 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. 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.

Seventy-one accidents occurred in connection with all types of locomotives in which 77 persons were injured. Compared with the preceding year there was an increase of 21 accidents and a decrease of 4 injuries.

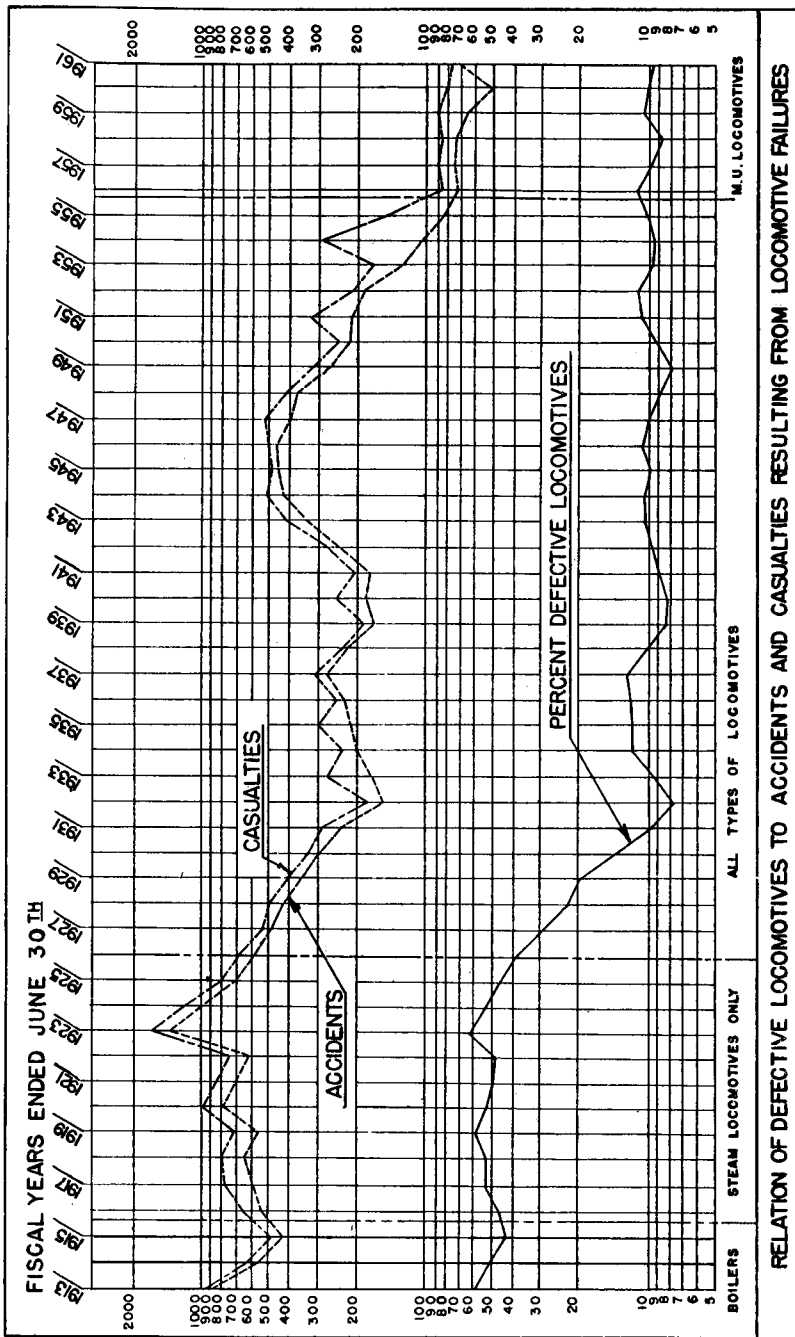
The following table provides details of accidents and casualties during the past 6 years caused by failure of some part or appurtenance of locomotives, and indicates increases or decreases in accidents and casualties:

*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—					
	1956	1957	1958	1959	1960	1961
Number of accidents.....	73	75	72	66	50	71
Percent increase or decrease from previous year.....	12.0	12.7	4.0	8.3	24.2	142.0
Number of persons killed.....	4	0	0	0	0	0
Percent increase or decrease from previous year.....	133.3	100	0	0	0	0
Number of persons injured.....	79	90	86	90	81	77
Percent increase or decrease from previous year.....	44.4	113.9	4.4	14.7	10.0	4.9

<sup>1</sup> 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—									
	1957		1958		1959		1960		1961	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:										
Engineers .....		17		21		22		17		14
Firemen .....		34		36		31		21		44
Brakemen .....		17		11		10		11		11
Conductors .....		7		5		4		2		3
Switchmen .....		1						1		2
Maintenance employees						1		2		
Other employees .....		2		1		1		6		3
Nonemployees .....		12		12		21		21		
Total .....	0	90	0	86	0	90	0	81	0	77

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, 1961		
	Accidents	Killed	Injured
Air compressors .....	1	0	1
Air reservoirs, fittings, safety and check valves .....	2	0	2
Boiler:			
Explosions .....	1	0	1
Fuel explosions in firebox .....	1	0	1
Steam valves, piping and blowers .....	3	0	4
Brakes and brake rigging .....	4	0	5
Cab:			
Doors and windows .....	3	0	3
Seats .....	7	0	7
Control equipment—mechanical, electrical, pneumatic or electro-pneumatic .....	1	0	1
Couplers, draft and drawgear .....	1	0	1
Electrical equipment:			
Insulation, short circuits, or electrical flashes .....	12	0	15
Fans and shutters .....	1	0	1
Fires due to liquid fuel or debris .....	1	0	1
Floors, steps and passageways .....	17	0	17
Internal-combustion engines and turbines:			
Crankcase or air-box explosions .....	7	0	8
Exhaust and cooling systems .....	3	0	3
Fuel injectors and connections .....	1	0	1
Miscellaneous .....	5	0	5
Total .....	71	0	77

LOCOMOTIVE ACCIDENTS

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 7 compared with the preceding year.

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

#### SPECIFICATIONS AND ALTERATION REPORTS

In compliance with rule 54 of the Rules and Instructions for Inspection and Testing of Steam Locomotives, 1 specification and 42 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, 470 specifications and 1,124 alteration reports for locomotive units, and 120 specifications and 216 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, six alteration reports 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 7,363 under rules 51 and 53 of the Rules and Instructions for Inspection and Testing of Steam Locomotives; 408,051 under rules 331 and 332 of the Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam; and 31,975 under rule 451 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, 30 applications for extension of time for removal of flues were submitted. After investigation, extensions were granted for the full period requested in 25 applications. Two extensions were granted after defects disclosed by our investigation were repaired. Two applications were canceled and one application is pending. Extensions were granted for the full period requested in the four applications pending on July 1, 1960.

#### SUITS FOR PENALTIES

During the year, 9 cases involving 13 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 two cases on four counts and penalties totaling

\$1,000 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. Cincinnati, New Orleans and Texas Pacific Railway Company*, consisting of two causes of action, involved the use of a diesel electric locomotive unit when one of its driving wheel brakes was cut out in violation of rule 204(a). Judgment was confessed on both counts and a penalty of \$500 was assessed.

*U.S. v. Chicago, Rock Island and Pacific Railroad Company*, consisting of two causes of action, involved the use of a diesel electric locomotive unit when a monthly inspection had not been made and a duplicate report of such inspection had not been filed with the district inspector as required by rule 331(a) and when a copy of the last inspection report was not in the cab of the locomotive as required by rule 331(b). Judgment was confessed on both counts and a penalty of \$500 was assessed.

#### CASES PENDING AT THE CLOSE OF THE YEAR

*U.S. v. The New York Central Railroad Company*, consisting of three causes of action, involves the use of three locomotives when monthly inspections as required by rule 331(a) had not been made.

*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 main reservoir had not been given the prescribed hydrostatic and hammer tests as required by rule 206 (a) and (b).

*U.S. v. Wabash Railroad Company*, 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 an employee as a result of a diesel electric locomotive crankcase explosion, as required by rule 335.

*U.S. v. Pennsylvania Railroad Company*, consisting of one cause of action, involves the use of a diesel electric locomotive unit when the oil cooler was leaking oil in violation of rules 203(a) and 262(b).

*U.S. v. Pennsylvania Railroad Company*, consisting of one cause of action, involves the use of one diesel electric locomotive when the main reservoir had not been given the prescribed hydrostatic and hammer tests, as required by rule 206 (a) and (b).

*U.S. v. Baltimore and Ohio Railroad Company*, consisting of one cause of action, involves the use of a diesel electric locomotive unit when the rotair valve was defective, in violation of rule 204(a).

*U.S. v. Missouri Pacific Railroad Company*, consisting of one cause of action, involves 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.

#### 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, 1961, BY ROADS**

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

**ATLANTIC COAST LINE RAILROAD:**

June 11, 1961, unit 764-B, Green Cove Springs, Fla. Flash caused by defective magnet valve; one employee injured.

One accident; one employee injured.

**BALTIMORE AND OHIO RAILROAD:**

July 31, 1960, unit 4555, Ilchester, Md. Rough stop due to undesired emergency brake application caused by defective gasket in airbrake equipment; two employees injured.

January 26, 1961, unit 4565, Strecker, Md. Defective rotair valve handle resulted in inoperative locomotive airbrakes; one employee injured.

Two accidents; three employees injured.

**BOSTON AND MAINE RAILROAD:**

November 28, 1960, unit 1115, Northampton, Mass. Defective sandbox cover; one employee injured.

May 12, 1961, unit 4225-B, Bow, N.H. Crankcase explosion caused by overheated main bearings; one employee injured.

May 14, 1961, unit 1707, Pownal, Vt. Crankcase explosion caused by overheated main bearings; one employee injured.

May 17, 1961, unit 6205, Lawrence, Mass. Failure of cab seat due to defective weld; one employee injured.

June 28, 1961, unit 1573, Holyoke, Mass. Defective cutout cock resulted in insufficient operating clearance; one employee injured.

Five accidents; five employees injured.

**CHICAGO AND NORTH WESTERN RAILWAY:**

March 16, 1961, unit 5029-B, Spooner, Wis. Engine lubricating oil pipe failure; one employee injured.

One accident; one employee injured.

**CHICAGO, BURLINGTON & QUINCY RAILROAD:**

July 26, 1960, unit 151-B, Galesburg, Ill. Fire in high voltage cabinet; one employee injured.

December 4, 1960, unit 164-A, St. Augustine, Ill. Crankcase explosion caused by overheated connecting rod bearing; one employee injured.

Two accidents; two employees injured.

**CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RAILROAD:**

October 8, 1960, unit 428, Taopi, Minn. Employee slipped on smooth floor in radiator compartment; one employee injured.

One accident; one employee injured.

**ERIE-LACKAWANNA RAILROAD:**

March 28, 1961, unit 1021, Leonia, N.J. Employee slipped on oil on passageway; one employee injured.

April 27, 1961, unit 7083, Lanesboro, Pa. Flash in high voltage cabinet; one employee injured.

Two accidents; two employees injured.

**INDIANAPOLIS UNION RAILWAY:**

June 22, 1961, unit 11, Indianapolis, Ind. Derailment caused by traction motor gear casing dropping to track structure; one employee injured.

One accident, one employee injured.

**MISSOURI-KANSAS-TEXAS RAILROAD:**

November 22, 1960, unit 78-D, San Antonio, Tex. Failure of steam valve caused by defective threads on bonnet; one employee injured.

November 28, 1960, unit 54-C, near Ringer, Kans. Employee slipped on water on cab to engineroom steps; one employee injured.

Two accidents; two employees injured.

**MISSOURI PACIFIC RAILROAD:**

December 18, 1960, unit 555-A, Oakdale, La. Cab seat became detached from floor because of improper repairs; one employee injured.

\*\*March 24, 1961, unit 4333, St. Louis, Mo. Failure of cab seat backrest positioning device; one employee injured.

Two accidents; two employees injured.

**NEW YORK CENTRAL RAILROAD:**

July 15, 1960, unit 1817, San Pierre, Ind. Rough train stop caused by defective automatic train stop motor-generator which permitted a drop in voltage output sufficient to automatically set the brakes; one employee injured.

September 26, 1960, unit 1650, Cleveland, Ohio. Fire in high voltage cabinet; two employees injured.

December 8, 1960, unit 1012, near Ellis, N.Y. Cab seat failed at weld securing pedestal to base; one employee injured.

January 6, 1961, unit 257, New York, N.Y. Steam heating boiler flashback; one employee injured.

June 5, 1961, unit 1066, near DeWitt, N.Y. Gas inhalation resulting from defective exhaust manifold; one employee injured.

Five accidents; six employees injured.

**NEW YORK, NEW HAVEN & HARTFORD RAILROAD:**

July 21, 1960, unit 1413, South Worcester, Mass. Employee slipped on oil on passageway; one employee injured.

July 31, 1960, unit 361, New Rochelle, N.Y. Main transformer relief diaphragm ruptured as a result of short circuit in transformer throwing hot coolant in locomotive carbody; two employees injured.

August 16, 1960, unit 2010, Fairfield, Conn. Failure of trainline steam heat remote control valve; two employees injured.

October 14, 1960, unit 0948, New Haven, Conn. Employee slipped on oil on passageway; one employee injured.

January 11, 1961, unit 0424, Apponaug, R.I. Employee slipped on oil on engineroom floor; one employee injured.

January 18, 1961, unit 0782, New Haven, Conn. Employee slipped on oil and water on engineroom floor; one employee injured.

June 1, 1961, unit 554, Branford, Conn. Employee slipped on oil on passageway; one employee injured.

Seven accidents; nine employees injured.

**PENNSYLVANIA RAILROAD:**

July 24, 1960, unit 4896, New York, N.Y. Metallic steam heat connector contacted energized third rail causing electrical flash; one employee injured.

August 9, 1960, unit 9745-A, between Beale and Harris, Pa. Failure of diesel engine high pressure fuel injection pipe; one employee injured.

August 11, 1960, unit 9700-A, between Rochester and Wood Junction, Pa. Engine exhaust gases entering engine compartment; one employee injured.

September 21, 1960, unit 4880, Philadelphia, Pa. Electrical flash and explosion in transformer tap switch group; one employee injured.

September 28, 1960, unit 8905, Bucyrus, Ohio. Employee slipped on oil on passageway; one employee injured.

December 16, 1960, unit 9266, Conway, Pa. Failure of cab seat backrest because of the use of improper screws to secure the backrest; one employee injured.

December 17, 1960, unit 8496, Morrisville, Pa. Employee slipped on oil on step; one employee injured.

December 18, 1960, unit 8960, Pitcairn, Pa. Employee slipped on oil on passageway; one employee injured.

January 8, 1961, unit 4729, Enola, Pa. Employee tripped over insecure plate used to cover hole in passageway; one employee injured.

January 10, 1961, unit 5894-A, Elida, Ohio. Fire in train heating boiler compartment; one employee injured.

January 26, 1961, unit 9037, Philadelphia, Pa. Short circuit caused by defective ammeter; one employee injured.

February 2, 1961, unit 9517-A, Montandon, Pa. Employee slipped on oil on engineroom floor; one employee injured.

February 6, 1961, unit 9831-A, Greensburg, Pa. Short circuit in main generator leads; two employees injured.

February 14, 1961, multiple unit 494, Narberth, Pa. Undesired emergency brake application caused by automatic train stop operation due to low voltage; one employee injured.

March 7, 1961, unit 2007-A, Crestline, Ohio. Engine exhaust gases entering cab; one employee injured.

April 25, 1961, unit 4927, Baltimore, Md. Defective threads on train line steam valve; one employee injured.

May 24, 1961, unit 9786-A, Longfellow, Pa. Cap screws missing from cam wiper operating mechanism; one employee injured.

June 7, 1961, unit 9251, Roebling, N.J. Angle cock insecurely fastened to brake pipe; one employee injured.

May 10, 1961, unit 9660-A, Shire Oaks, Pa. Cotter pin missing from uncoupling device; one employee injured.

Nineteen accidents; twenty employees injured.

#### PENNSYLVANIA-READING SEASHORE LINES:

August 24, 1960, unit 6023, Camden, N.J. Explosion in battery containers; one employee injured.

One accident; one employee injured.

#### ST. LOUIS-SAN FRANCISCO RAILWAY:

October 8, 1960, unit 5005, Merriam, Kans. Fire at main generator; one employee injured.

October 19, 1960, unit 273, Tulsa, Okla. Cab door would not remain closed due to broken latch; one employee injured.

January 19, 1961, unit 5206, Dallas, Tex. Defective cab window operating mechanism; one employee injured.

March 22, 1961, unit 309, Capleville, Tenn. Failure of seat box backrest; one employee injured.

Four accidents; four employees injured.

#### SEABOARD AIR LINE RAILROAD:

July 26, 1960, unit 1478, Mulberry Yard, Fla. Employee slipped on oil on passageway; one employee injured.

November 7, 1960, unit 4011, Tampa, Fla. Cab heater fan not properly guarded; one employee injured.

June 9, 1961, unit 3014, Landrum, S.C. Ignition of combustible material under car body and subsequent failure of fire extinguisher; one employee injured.

Three accidents; three employees injured.

#### SOUTHERN RAILWAY:

January 20, 1961, unit 4423, Phillips, Tenn. Crankcase explosion caused by overheated crankshaft bearings; one employee injured.

March 29, 1961, unit 2501, Griffin, Ga. Crankcase explosion caused by overheated main bearing; one employee injured.

May 21, 1961, unit 4373, near Ridgecrest, N.C. Failure of air compressor discharge pipe; one employee injured.

Three accidents; three employees injured.

#### SOUTHERN PACIFIC COMPANY:

October 27, 1960, unit 6463, Yuma, Ariz. Improper cab door handle permitted unexpected opening of door; one employee injured.

December 8, 1960, unit 5308, Fresno, Calif. Inadequate lubrication of automatic brake valve; one employee injured.

December 21, 1960, unit 6234, Eugene, Ore. Failure of cab seat backrest adjusting mechanism; one employee injured.

January 3, 1961, unit 6339, Enid, Ariz. Employee slipped on oil on engineroom floor; one employee injured.

January 28, 1961, unit 6050, Leoncito, N. Mex. Heating boiler explosion; one employee injured.

April 9, 1961, unit 1333, San Jose, Calif. Employee slipped on oil on passageway; one employee injured.

April 25, 1961, unit 1052, Ozol, Calif. Crankcase explosion caused by defective piston; two employees injured.

Seven accidents; eight employees injured.

#### UNION PACIFIC RAILROAD:

March 29, 1961, unit 523, Union Junction, Ore. Employee slipped on oil on engineroom floor; one employee injured.

One accident; one employee injured.

#### WABASH RAILROAD:

\*\*February 16, 1961, unit 710, Moberly, Mo. Crankcase explosion caused by defective piston; one employee injured.

April 17, 1961, unit 616, Centralia, Mo. Main generator flashover; one employee injured.

Two accidents; two employees injured.

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

Table with 7 columns: Parts defective, inoperative or missing, or in violation of the rules; 1956; 1957; 1958; 1959; 1960; 1961. Rows include items like Air compressors, Arch tubes, Ashpans and mechanism, Axles, Blow-off cocks, Boiler checks, Boiler shell, Brake equipment, Cabs, cab windows, and curtains, Cab aprons and decks, Cab cards, Coupling and uncoupling devices, Crossheads, guides, pistons, and piston rods, Crown bolts, Cylinders, saddles, and steam chests, Cylinder cocks and rigging, Domes and dome caps, Draft gear, Draw gear, Driving boxes, shoes, wedges, pedestals, and braces, Firebox sheets, Flues, Frames, tail pieces, and braces, locomotive, Frames, tender, Gages and gage fittings, air, Gages and gage fittings, steam, Gage cocks, Grate shakers and fire doors, Handholds, Injectors, inoperative, Injectors and connections, Inspections and tests not made as required, Lateral motion, Lights, cab and classification, Lights, headlight, Lubricators and shields, Mud rings, Packing nuts, Packing, piston rod and valve stem, Pilots and pilot beams, Plugs and studs, Reversing gear, Rods, main and side, crankpins, and collars, Safety valves, Sanders, Springs and spring rigging, Squirt hose, Staybolts, Staybolts, broken, Steam pipes, Steam valves, Steps, Tanks and tank valves, Telltale holes, Throttle and throttle rigging, Trucks, engine and trailing, Trucks, tender, Valve motion, Washout plugs, Water glasses, fittings, and shields, Wheels, Miscellaneous—Signal appliances, badge plates, brakes (hand), Number of defects, Locomotives reported, Locomotives inspected, Locomotives defective, Percentage of inspected found defective, Locomotives ordered out of service.

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

Table with 7 columns: Parts defective, inoperative or missing, or in violation of the rules; 1956; 1957; 1958; 1959; 1960; 1961. Rows include items like Air compressors, Axles, truck and driving, Batteries, Boilers, Brake equipment, Cabs and cab windows, Cab cards, Cab floors, aprons, and deck plates, Clutches, Controllers, relays, circuit breakers, magnet valves and switch groups, Coupling and uncoupling devices, Current collecting apparatus, Draft gear, Draw gear, Driving boxes, shoes, and wedges, Frames or frame braces, Fuel system, Gages or fittings, air, Gages or fittings, steam, Gears and pinions, Handholds, Inspections and tests not made as required, Insulation and safety devices, Internal combustion engine defects, parts and appurtenances, Jack shafts, Jumpers and cable connectors, Lateral motion, wheels, Lights, cab and classification, Lights, headlight, Meters, volt and ampere, Motors and generators, Pilots and pilot beams, Plugs and studs, Quills, Rods, main, side, and drive shafts, Sanders, Springs and spring rigging, driving and truck, Staybolts, broken or defective, Steam pipes, Steps, footboards, et cetera, Switches, hand-operated, and fuses, Transformers, resistors, and rheostats, Trucks, Water tanks, Water glasses, fittings, and shields, Warning signal appliances, Wheels, Miscellaneous, Number of defects, Locomotive units reported, Locomotive units inspected, Locomotive units defective, Percentage of inspected found defective, Locomotive units ordered out of service.



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	1960	1961
1	Air compressors		4	2	1	4	
2	Axles, truck and driving			8	87	53	40
4	Batteries						
5	Boilers						
6	Brake equipment		18	23	188	491	951
8	Cabs and cab windows			2	25	26	11
9	Cab cards	1	8	13	5	8	9
10	Cab floors, aprons, and deck plates			1	2		1
11	Clutches						
12	Controllers, relays, circuit breakers, magnet valves and switch groups			1	2	9	8
13	Coupling and uncoupling devices						1
14	Current collecting apparatus		20	25	65	115	151
16	Draft gear			1	15	11	22
17	Draw gear			9	2	20	16
18	Driving boxes, shoes, and wedges			2	3	3	3
20	Frames or frame braces						
22	Fuel system						
23	Gages or fittings, air			1	8	5	4
24	Gages or fittings, steam						
25	Gears and pinions				4	5	9
26	Handholds		7	45	46	61	14
28	Inspections and tests not made as required	2	46	22	30	52	61
29	Insulation and safety devices	1	1		23	87	78
30	Internal-combustion engine defects, parts and appurtenances						
32	Jack shafts						
33	Jumpers and cable connectors	2	5	3	10	16	13
35	Lateral motion wheels						
36	Lights, cab and classification		1		24	42	23
37	Lights, headlight				4	29	5
39	Meters, volt and ampere						
40	Motors and generators		3		31	23	15
42	Pilots and pilot beams				2	1	
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	17	8
51	Staybolts, broken or defective						
53	Steam pipes						
54	Steps, footboards, et cetera						
55	Switches, hand-operated, and fuses		1		1	3	5
56	Transformers, resistors, and rheostats	1			5	14	19
57	Trucks	12	23	98	222	152	98
59	Water tanks						
60	Water glasses, fittings, and shields						
61	Warning signal appliances						
62	Wheels		1		1		
63	Miscellaneous		2		3	5	37
	Number of defects	19	172	272	834	1,254	1,605
	Locomotive units reported	2,782	2,745	2,728	2,717	2,671	2,633
	Locomotive units inspected	285	1,437	1,747	2,231	2,571	2,400
	Locomotive units defective	11	119	168	362	450	372
	Percentage of inspected found defective	3.9	8.3	9.6	16.2	17.5	15.5
	Locomotive units ordered out of service		2	1	4	11	31

<sup>1</sup> 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 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	Duluth, Missabe & Iron Range	Grand Trunk Western	Lake Superior & Ishpeming	Union Pacific	Roads with less than 10 locomotives	Total
2	Arch tubes								
3	Ashpans and mechanism								
4	Axles								
5	Blow-off cocks								
6	Boiler checks							2	2
7	Boiler shell								
8	Brake equipment							16	16
9	Cabs, cab windows and curtains							2	2
10	Cab aprons and decks							3	3
11	Cab cards								
12	Coupling and uncoupling devices								
13	Crossheads, guides, pistons, and piston rods							3	3
14	Crown bolts								
15	Cylinders, saddles, and steam chests								
16	Cylinder cocks and rigging							1	1
17	Domes and dome caps								
18	Draft gear							2	2
19	Draw gear							1	1
20	Driving boxes, shoes, wedges, pedestals, and braces							1	1
21	Firebox sheets							1	1
22	Flues							3	3
23	Frames, tail pieces, and braces, locomotive							2	2
24	Frames, tender								
25	Gages and gage fittings, air							2	2
26	Gages and gage fittings, steam							5	5
27	Gage cocks								
28	Grate shakers and fire doors								
29	Handholds							5	5
30	Injectors, inoperative							1	1
31	Injectors and connections							4	4
32	Inspections and tests not made as required							8	8
33	Lateral motion								
34	Lights, cab and classification							1	1
35	Lights, headlight								
36	Lubricators and shields								
37	Mud rings								
38	Packing nuts							1	1
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 collars							2	2
44	Safety valves							1	1
45	Sanders							3	3
46	Springs and spring rigging							2	2
47	Squirt hose								
48	Staybolts							6	6
49	Staybolts, broken								
50	Steam pipes							1	1
51	Steam valves								
52	Step							3	3
53	Tanks and tank valves								
54	Telltale holes								
55	Throttle and throttle rigging								
56	Trucks, engine and trailing								
57	Trucks, tender								
58	Valve motion								
59	Washout plugs								
60	Stokers								
61	Water glasses, fittings, and shields								
62	Wheels							1	1
63	Miscellaneous—Signal appliances, badge plates, brakes (hand)							1	1
	Number of defects							89	89
	Locomotives reported	36	22	24	32	12	41	200	367
	Locomotives inspected	1	50					192	243
	Locomotives defective							27	27
	Percentage of inspected found defective							14.1	11.1
	Locomotives ordered out of service							4	4









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

	Texas Pacific-Missouri Terminal R. R. of New Orleans	Pacific	Toledo, Peoria & Western	Toronto, Hamilton & Buffalo	Union Pacific	Union Railroad	Union Railway	Wabash	Washington Terminal	Western Maryland	Western Pacific	Youngstown & Northern	Roads with less than 10 locomotive units	Total
1	Air compressors				7								1	208
2	Axles, truck and driving				6	1								91
4	Batteries													25
5	Boilers				8			1						213
6	Brake equipment		3		54			17			14		55	3,066
8	Cabs and cab windows				9	1	1	1			1		14	840
9	Cab cards				15						6		7	181
10	Cab floors, aprons and deck plates				86			12			20		9	2,235
11	Clutches													4
12	Controllers, relays, circuit breakers, magnet valves and switch groups				16		3	1			2		9	565
13	Coupling and uncoupling devices				2			3					2	144
14	Current collecting apparatus													5
16	Draft gear							7					12	402
17	Draw gear				4									108
18	Driving boxes, shoes and wedges				7								4	148
20	Frames or frame braces				4									55
22	Fuel system				78	2	4	8					25	2,193
23	Gages or fittings, air				5						4		2	163
24	Gages or fittings, steam				1									28
25	Gears and pinions							15					1	156
26	Handholds							1					7	210
28	Inspections and tests not made as required				16	1		1			2		29	847
29	Insulation and safety devices				6			1					16	163
30	Internal-combustion engine defects, parts and appurtenances				204	2		33			39	1	40	6,124
32	Jack shafts													1
33	Jumpers and cable connectors				8			1			3		5	434
35	Lateral motion, wheels													28
36	Lights, cab and classification				1			1					1	269
37	Lights, headlight													18
39	Meters, volt and ampere													22
40	Motors and generators				15			4			1		2	759
42	Pilots and pilot beams				3			1					1	54
43	Plugs and studs													1
44	Quills													5
46	Rods, main, side, and drive shafts													
48	Sanders		4		101		1	23			16		56	3,131
49	Springs and spring rigging, driving and truck				7	2							6	415
51	Staybolts, broken or defective													
53	Steam pipes							6			1			93
54	Steps, footboards, et cetera		1		7			1					11	307
55	Switches, hand-operated, and fuses				1									16
56	Transformers, resistors and rheostats													6
57	Trucks				20	1	1	2			1		17	692
59	Water tanks													25
60	Water glasses, fittings and shields													1
61	Warning signal appliances				3			1						148
62	Wheels				14			2			1		41	805
63	Miscellaneous				18			9			3		7	1,210
	Number of defects	8			726	10	10	152		1	114	1	380	26,614
	Locomotive units reported	11	15	10	1,363	134	11	317	25	126	177	11	1,375	32,074
	Locomotive units inspected	23	45		5,136	87	22	974	11	292	861	12	2,196	95,689
	Locomotive units defective		5		323	6	3	74		1	61	1	134	9,000
	Percentage of inspected found defective	11.1			6.3	6.9	13.6	7.6		0.3	7.1	8.3	6.1	9.4
	Locomotive units ordered out of service				7		2	3		1	2		19	469

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	Erle-Lackawanna	Illinois Central	Long Island	New York Central	New York, New Haven & Hartford	Pennsylvania	Reading	Total	
1	Air compressors											
2	Axles, truck and driving						24			16	40	
4	Batteries											
5	Boilers		1									
6	Brake equipment				8	13	828	9	92		951	
8	Cabs and cab windows						11				11	
9	Cab cards					4	3	2			9	
10	Cab floors, aprons and deck plates						1				1	
11	Clutches											
12	Controllers, relays, circuit breakers, magnet valves and switch groups					3	5				8	
13	Coupling and uncoupling devices								1		1	
14	Current collecting apparatus					32	117	1	1		151	
16	Draft gear						15	1	6		22	
17	Draw gear						8	1	7		16	
18	Driving boxes, shoes and wedges					2	1				3	
20	Frames or frame braces											
22	Fuel system											
23	Gages or fittings, air							2	2		4	
24	Gages or fittings, steam											
25	Gears and pinions						9				9	
26	Handholds				1	5	5		3		14	
28	Inspections and tests not made as required				1	5	32	20	3		61	
29	Insulation and safety devices					2	76				78	
30	Internal-combustion engine defects, parts and appurtenances											
32	Jack shafts											
33	Jumpers and cable connectors					4	8		1		13	
35	Lateral motion, wheels											
36	Lights, cab and classification						22		1		23	
37	Lights, headlight						5				5	
39	Meters, volt and ampere											
40	Motors and generators					4	1	2	8		15	
42	Pilots and pilot beams											
43	Plugs and studs											
44	Quills											
46	Rods, main, side, and drive shafts											
48	Sanders											
49	Springs and spring rigging, driving and truck				2	2		2	2		8	
51	Staybolts, broken or defective											
53	Steam pipes											
54	Steps, footboards, et cetera						3				5	
55	Switches, hand-operated, and fuses						15	1	3		19	
56	Transformers, resistors and rheostats											
57	Trucks				3	3	18	1	73		98	
59	Water tanks											
60	Water glasses, fittings and shields											
61	Warning signal appliances											
62	Wheels				3	17	5		12		37	
63	Miscellaneous					1	1		1		3	
	Number of defects	1			18	99	1,213	42	232		1,605	
	Locomotive units reported	55	138	65	270	280	667	351	221	450	136	2,633
	Locomotive units inspected	19	65	29	228	70	422	580	214	635	138	2,400
	Locomotive units defective		1		9		29	229	18	86		372
	Percentage of inspected found defective	1.5			3.9		6.9	39.5	8.4	13.5		15.5
	Locomotive units ordered out of service				2		9	10	1	9		31