

INTERSTATE COMMERCE COMMISSION  
WASHINGTON

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REPORT NO. 3428  
SEABOARD AIR LINE RAILROAD COMPANY  
IN RE ACCIDENT  
AT RALEIGH, N. C., ON  
SEPTEMBER 19, 1951

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SUMMARY

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Date: September 19, 1951  
Railroad: Seaboard Air Line  
Location: Raleigh, N. C.  
Kind of accident: Collision  
Trains involved: Light D-E unit; Work train  
Train number: Extra 405  
Locomotive numbers: D-E unit 1714; Locomotive 405  
Consist: Light unit; Locomotive and caboose  
Speed: 20 to 30 m. p. h.; 7 m. p. h.  
Operation: Servicing movement; Work  
Track: 0.95 percent descending grade  
Time: 7:25 a. m.  
Casualties: 2 injured  
Cause: Inoperative air brakes and defective  
hand brake on Diesel-electric unit

INTERSTATE COMMERCE COMMISSION

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REPORT NO. 3428

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION  
REPORTS UNDER THE LOCOMOTIVE INSPECTION ACT  
OF FEBRUARY 17, 1911, AS AMENDED

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SEABOARD AIR LINE RAILROAD

November 2, 1951

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Accident (rear end collision) at Raleigh, N. C., on September 19,  
1951, caused by inoperative air brakes and defective hand  
brake on a Diesel-electric locomotive unit.

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REPORT OF THE COMMISSION<sup>1</sup>

PATTERSON, Commissioner:

On September 19, 1951, about 7:25 a.m., Seaboard Air Line  
Railroad Diesel-electric locomotive unit 1714, upon which air  
brakes had previously been reported defective, collided with  
the rear end of a work train after failure of the hand brake  
had resulted in uncontrolled movement on a descending grade.  
The conductor and flagman of the work train were seriously  
injured.

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<sup>1</sup>Under authority of section 17 (3) of the Interstate Commerce  
Act the above-entitled proceeding was referred by the Commission  
to Commissioner Patterson for consideration and disposition.

## DESCRIPTION OF ACCIDENT

Diesel unit 1714, in charge of a hostler and helper, departed from inbound track at Raleigh Enginehouse, Raleigh, N. C., about 7:20 a.m. running light en route to sand track. After the movement started the air brakes were found to be inoperative, the hand brake failed and the unit continued without control on descending grade until, while running at an estimated speed of 20 to 30 miles per hour, it struck the rear end of a work train which was moving on a yard track at an estimated speed of 7 miles per hour. The collision occurred about 5 minutes after the movement of the unit started and approximately 3/4 mile from the starting point.

Unit 1714 had completed assignment as yard switcher at Raleigh about 7:10 a.m. During the tour of duty, the air brakes were slow in applying and releasing. On completing the shift the engineer placed the unit on the inbound track at Raleigh Enginehouse and reported the air brake trouble to the machinist-inspector on duty. The hostler was directed to set this unit aside on the sand track at the enginehouse and, about 7:20 a.m., he started the unit, which was headed north, forward in the direction of a switch, 210 feet north of starting point. When the unit was near this switch, which was improperly aligned, the hostler applied the independent brake valve, but the brakes failed to respond. He then applied the automatic brake valve in emergency position but it did not function. While the unit continued northward toward the Johnson Street Yard the hostler attempted to stop the unit by reversing the traction motors but this operation also failed. After unsuccessful efforts were made to apply the hand brake the hostler and his helper jumped to the ground. The unit continued northward through the switching lead in the yard to the ladder track and then into No. 6 yard track where it struck the rear of work extra 405, consisting of Seaboard locomotive 405 and a caboosc, which was moving northward.

The force of the impact drove the rear of the caboosc on top of the front platform of unit 1714 where it came to rest at an angle of approximately 45 degrees. The front of the engine room hood, front footboards, steps, handrails, and both jumper receptacles and conduits were bent and both main reservoir and equalizer air pipes were broken behind the cut-out cocks.

The grade from the engine house to the point of accident averaged approximately 0.95 percent descending.

The conductor and flagman, who were in the cupola of the caboose, were thrown to the floor. Both sustained serious injuries and were subsequently taken in an ambulance to a hospital in Raleigh, N. C.

#### DESCRIPTION OF LOCOMOTIVE UNIT

Locomotive unit 1714, a B-B type road-switcher, model GP-7, was built by the Electro-Motive Division, General Motors Corporation, at Cleveland, Ohio, in May 1950; total weight 234,620 pounds; rated tractive effort 58,655 pounds; diameter of driving wheels when new 40 inches. Power was supplied by one 1500 horsepower Diesel-electric 16-cylinder, V-type, model 16-567-B engine direct connected to the main generator. The unit was mounted on two four-wheel trucks, each axle of which was gear-connected to a traction motor.

The unit had No. 6-BL air brake equipment, including an H-6-L automatic brake valve, an LA-6-P self-lapping independent brake valve, two quick release valves, one in the brake cylinder line of each truck between the truck brake cylinder branch pipes and the distributing valve, and two duplex air gauges. It was equipped with a hand brake with a lever type operating handle. The hand brake chain was connected to the right brake lever of the rear truck and was effective on one pair of wheels only.

The unit was equipped with a control air reservoir, capacity 2500 cubic inches. This reservoir was connected to the main reservoir through a pressure regulator and had a 1/2-inch check valve in the line between the regulator and control air reservoir.

#### EXAMINATION OF PARTS INVOLVED

The two front main reservoir and equalizer pipes which had broken were plugged; the engine started and a blow was then heard at the vent holes of the quick release valves. These valves were removed from the brake cylinder lines and examination disclosed that the working parts, which normally would consist of a piston having sliding fit on the stem of a vent valve and a spring between the piston and vent valve, were missing. The caps covering openings in the top of the valves, through which the working parts were installed or removed, disclosed no evidence of recent application of a wrench. Condition of threads in the vent holes of the valves indicated recent removal of screwed fittings.

The valve bodies, with working parts missing and plugs inserted in the vent holes, were reappplied to the brake cylinder lines and air pressure built up to working pressure. Brakes were tested in all positions and found to operate satisfactorily except for delayed functioning of the quick release feature. The brakes were released, the plugs removed, and with the engine running at idling speed and the main reservoir pressure at 15 pounds, the independent brake valve was placed in full application position. The brakes did not apply, the main reservoir pressure fell with increasing rapidity to 10 pounds in a total of 3 minutes, then remained constant with the engine idling. At first, application of the independent brake caused a loud blow at vent holes, but after main reservoir pressure remained at 10 pounds only a weak blow was heard. Further tests also disclosed that with the automatic brake valve in holding position and the independent brake valve placed in running position after air application, the main reservoir pressure dropped rapidly, but when the independent brake valve was depressed to release position or the automatic brake valve moved to running position, the escape of air through the vent holes stopped.

Several tests on leakage of the control air through the check valve, and the pressure required to properly operate the reverse and power contactors were made. When the main reservoir pressure was depleted it was found leakage through the check valve reduced the pressure in the control air reservoir to 42 pounds in 15 minutes and at the reduced pressure the power contactors could not be operated to reverse in traction motors.

The hand brake was tested and it was found that the pawl did not automatically engage the teeth on the ratchet on the upward or power stroke of the handle. The handle was removed and the working parts within the handle were removed and inspected. It was found that the 3/4 x 2 inch flat steel pawl spring was imbedded in road dirt and grit in the bottom of the operating lever housing. The dirt and grit were removed and all moving parts lubricated, after which the handle and working parts were replaced. The brake could then be operated.

#### INSPECTION AND REPAIR REPORTS

Last annual inspection was made May 15, 1951, at Wildwood, Fla., last quarterly inspection was made August 10, 1951, and last monthly inspection September 10, 1951, both at Hurdlet, N. C.

Daily inspection reports from August 1, 1951 to date of accident were examined, and the following items were found reported:

September 9, at Hermitage, Va., reported by engineer: "Hand brake broken." Report was approved by foreman.

September 19, 7:10 a.m., at Raleigh, N. C., reported by incoming engineer: "Engine brakes slow going on and slow releasing."

#### SUMMARY OF EVIDENCE

The engineer who operated unit 1714 in switching service the night preceding the accident and placed the unit on the inbound track at Raleigh Enginehouse at the end of the shift stated in effect that during his entire tour of duty he noticed that the brakes were slow in applying and releasing and that after he put the unit on the inbound track, he placed the automatic brake valve in holding position and the independent brake valve in full application position; he then circled the unit to inspect it, and during this inspection he heard no blow of air. He further stated that he contacted the machinist-inspector and told him of the poor condition of the brakes. He stated that he used the hand brake during the dinner period and that he had to hold the cog with one hand while operating the handle with the other.

The machinist-inspector on duty when unit 1714 was returned to enginehouse at 7:10 a.m. on September 19 stated in effect that he was preparing to work it up for a 7:15 a.m. shift when he met the inbound engineer who complained vehemently of the poor condition of the brakes. He stated that because of the complaint, he decided to work up another unit for the run and told the hostler to set the unit aside on the sand track. He subsequently stated that he had removed the plugs from the vent holes of the quick release valves.

The hostler stated in effect that he was present when the engineer complained of the condition of the brakes and that after he entered the cab of the unit he heard a slight air blow on the outside but did not consider it unusual; that he glanced at the air pressure gages and though he did not recall indicated pressures he was positive there was more than 130 pounds main reservoir pressure, and that less than 2 minutes had elapsed from the time he glanced at the air gages until he attempted to brake the unit for the improperly aligned switch. He also

stated that he found the independent brake valve in full application position when he entered the cab and that he believed the automatic brake valve was in running position, but it may have been in holding position.

#### DISCUSSION

Prior to the accident the working parts of the quick release valves had been removed and the vent holes plugged. Information was not available at Raleigh as to when or where the change had been made. Between the time the engineer placed the unit on the inbound track and the time the hostler moved the unit the plugs had been removed by the machinist-inspector. This action rendered the air brake system ineffective.

The hand brake was defective. It was designed to operate upon only 2 of the 8 wheels under the unit. Such an arrangement is not an efficient hand brake.

#### CAUSE OF ACCIDENT

It is found that this accident was caused by inoperative air brakes and a defective hand brake on a Diesel-electric locomotive unit.

#### RECOMMENDATION

It is recommended that this carrier install and maintain efficient hand brakes upon its Diesel-electric locomotives so located that they can be safely operated while the locomotives are in motion.

Dated at Washington, D. C., this 9th day  
of November, 1951

By the Commission, Commissioner Patterson.

SEAL

W. P. BAPTEL,  
Secretary.