Hot box detector, tilted upward at an angle, views journals from bottom to top as they recede.

L&N Installs Hot Box Detector

Words "hot box" are illuminated on a marker below the searchlight head when the signal is controlled to Stop aspect by operator, to tell engineman why he is being stopped. Telephone at controlled signal provides communication to operator, who informs crew of the exact location of the hot box, as recorded by the detector tape. All photos courtesy of L&N magazine.

NINE MILES south of Paris, Ky., on the Cincinnati-Atlanta mainline, the Louisville & Nashville has installed a Servo Corporation hot box detector to check northbound freight trains. The pengraph recorder is located in the Paris station, which has an operator on duty 24 hours daily. The detector location is accessible by road, and is just far enough from Paris so that the operator has time to evaluate the tape and set the signal at Paris yard.

Because of the predominance of hot boxes occurring in this area of the line, the operating department had, for some time, issued instructions that all northbound trains must stop for a complete journal inspection at Poindexter, Ky., 18 miles north of Paris. Thus locating the detectors just south of Paris was a "natural" point for catching hot journals.

During a 40-day period, the hot box detector checked 378 northbound L&N trains. Of this number, the detector indicated that 56 trains were running with abnormally heated journals. During this period, 54 trains were stopped, and of this number, 33 were found to have defective journals. This indicates that 61 per cent of the trains stopped had hot boxes. But 11 trains were stopped that had marginal indications, and

upon checking no hot boxes were found. Discounting marginal indications, detection is 77 per cent.

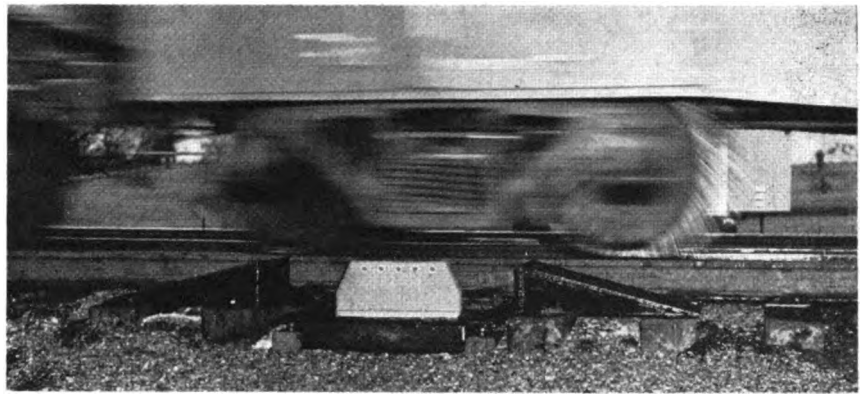
"The detector should be located on a piece of smooth tangent track which is well maintained to gauge and securely anchored. Also, the detector should be at least 1,000 ft from a curve or switch, at a point such that the engineer will not be required to use his brakes, as the heat from applying the brakes will affect the detectors. Also, escaping steam from a leaky steam line on a passenger train will affect the detectors. Therefore passenger trains are disregarded at this time," so states P. P. Ash, Superintendent Communications and Signals, L&N.

"There are two theories on the location of the detectors," Mr. Ash says. "The first theory is that the detectors should be located 30 to 40 miles out of a terminal, to check trains after leaving the yard. This theory is based on the fact that after leaving a terminal, in the first miles the journal will heat up and then lubricate itself, and the temperature will settle down. But if a hot box is to develop in about 30 or 40 miles, the temperature of the journal will rise considerably.

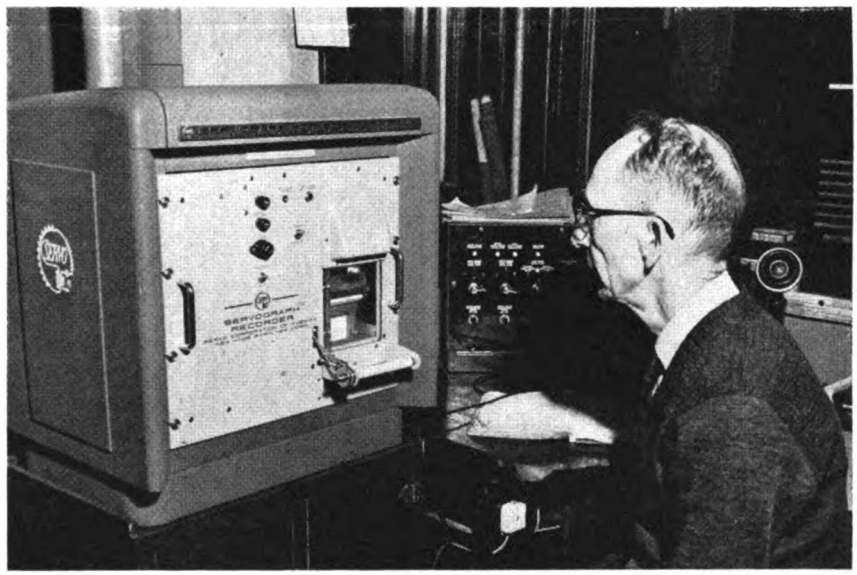
"The other theory is that the detector should be located some distance before trains are to enter a yard and to use the detector for detecting hot journals for inspection. The yardmaster turns over his information to the car inspectors to give them a chance to give preferred attention to such journals. In view of the fact that the problem is so large, it has been decided to take one division at a time on the L&N. At the present time the Birmingham division (Cincinnati-New Orleans line near Birmingham, Ala.) has been picked for six installations to give a good coverage. We shall use both methods for detecting hot boxes, namely, when a train is about 30 or 40 miles from a yard, and also before a train is to enter a yard.

"The detectors will not be located exactly the same distance from a terminal or in approach to a terminal, as each will have its own individual characteristics, due to terrain, speed of train, etc. As an aid in selecting a location, the record of hot boxes on each division should be tabulated to show where the most hot boxes occur within a certain distance after leaving a terminal."

Procedure for Hot Box Inspection



1 Pair of detectors view journals on both sides of passing freight cars.



2 Paris operator watches tape through recorder window. Seeing a tall . . .

3 . . . pip for a hot box, sets signal to Red; hot box marker is lighted.