

# Donation of the Month

## Railroad Automatic Car Identification

Donor: Robert Johnson  
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Tag from Western Refrigerator Line Company of Wisconsin box car number 9213. Click here to see an image of the box car taken in 1975 <http://www.rrpicturearchives.net/rsPicture.aspx?id=512080>

Waiting on a package is hard, but with a tracking number you can check to see its progress thanks to modern technology such as barcodes, scanners and computers. Companies don't like to wait either and have for years tracked shipments across the globe with waybills. These pieces of paper tracked where and when a train car, tractor trailer or boat stopped for fuel or maintenance. Reliability was only as good as someone's eyesight and penmanship. In the 1960s the railroad industry started looking into a more reliable and automated tracking system.

In the early 1960s the Association of American Railroads looked at four different systems of tracking railcars and locomotives. The system developed by General Telephone and Electronics called KarTrak won. Using a series of thirteen blue, black, red and black and white checkered encoded stripes relayed equipment specific information back to a central server. The code was read by a rail side scanner. Each stripe relayed a specific piece of information as you can see below.

The first (bottom) line is the start label.

2. The second line is the equipment code number. "0" is used for railroad-owned equipment, "1" for privately-owned equipment, and "6" is used for non-revenue equipment.

3. Lines three, four and five are a number indicating the equipment owner, with each reporting mark given a separate number.

4. Lines six through eleven are the car number, padded with leading zeros as necessary. On locomotives, line six indicates the type of unit and line seven the suffix number.

5. The stop label will be on line twelve.

6. The last (top) line is used for the check digit. This check digit is calculated according to the following formula: multiply the first digit by 1, the second by 2, the third by 4, the fourth by 8, the fifth by 16, the sixth by 32, the seventh by 64, the eighth by 128, the ninth by 256, the tenth by 512. Add the results together and divide by 11. The remainder after the last full division by 11 (0 to 10) is the validity digit.

These tags were mounted on the side of railcars and read by track side readers mounted at interchange areas, rail yards, fuel tracks and maintenance areas. By 1975 90% of the railcars in America were equipped with these tags, but the read rate was only 80% due to maintenance issues. Maintenance requirements were instituted but not maintained and by the end of 1978 the system was abandoned.

By the mid-1980s the railroad industry again wanted to tackle automated tracking systems for the industry. This time led by the rail company Burlington Northern extensive testing of nine different systems brought about the introduction of an RFID tracking system developed by TransCore. Between 1992 and 1994 all rail cars were to be equipped with two tags.

Today all railcars in America have RFID tags. TransCore continues to produce the tags and readers and their technology can be found in 24 countries. The new tags have improved from those produced in the 90s and include high speed readability, enhanced memory and on-the-fly programming. While these high tech tags have replaced the first system some of the older cars still sport their barcode stripes.

Photo caption: Tag from Western Refrigerator Line Company of Wisconsin box car number 9213. Click here to see an image of the box car taken in 1975

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