30M 3-48

Form 955 Standard
**(Adopted June, 1929)**

# The Atchison, Topeka and Santa Fe Railway System

## RAIL FAILURE REPORT

DO NOT WRITE IN THIS SPACE

.....**Lines,** .....**Division,** .....**Opr. Dist.**

**Section No.**.....**Headquarters**.....**Serial No.**.....**Date of Report** .....**19**.....

1. Weight per Yard..... Length.....
2. Brand on Rail.....
3. Stamping on Rail: Heat Number..... Letter..... Ingot.....
4. When Laid: Month..... Year.....
5. Location: Mile Post..... plus.....rails
6. Which Track..... Which Rail.....
7. High or low rail of curve, or tangent.....
8. Number of Curve..... Degree.....
9. Superelevation of high rail.....inches.
10. By whom discovered .....
11. Date removed .....
12. Kind of Ballast .....

DESCRIPTION OF RAIL INSERTED:

13. Brand on Rail Inserted.....
14. Stamping on Rail Inserted:
    Heat Number ..... Letter..... Ingot.....
15. If rail was broken, was break square or angular.....
16. Was break
    - Transverse fissure.....
    - Head check.....
    - Compound fissure.....
    - Bolt hole break.....
    - Other breaks.....
17. Remarks: .....
18. If break was due to transverse fissure, sketch position and shape on rail end diagram, Fig. 1.

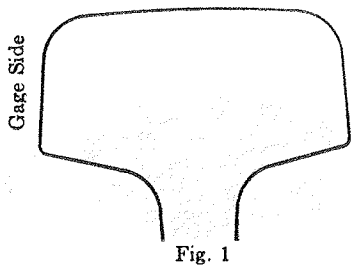

Fig. 1

19. If in bonded territory, was signal set to stop by break.
    .....
20. If rail is not broken, describe failure together with any flaws or defects and state cause as nearly as possible.
    .....
    .....
    .....
21. Draw on diagram (Fig. 2 or 3) defects and lines of break or partial fracture such as long pieces from side of head, horizontal split or half-moon pieces from base.

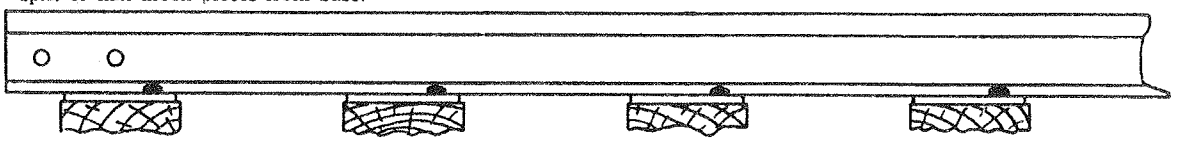
Fig. 2—Side View

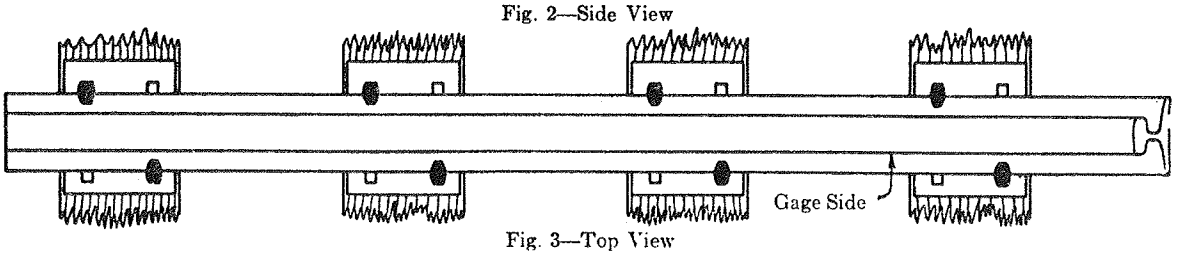

Fig. 3—Top View

22. If an accident or delay to trains was caused by failure, state circumstances. .....
    .....
23. If rail was damaged, describe nature and cause, if known.....
    .....

(See reverse side for instructions and description of failures.)

Correct:

.....
Section Foreman.

The following information to be filled in by Roadmaster:

Will rail be shipped to Engineer of Tests at Topeka for investigation ..... or

rail will be held at.....for annual inspection.

I have personally inspected this failure and approve report.

.....
Roadmaster.

## INSTRUCTIONS

A. The Section Foreman will fill in and send this report to the Roadmaster the same day the rail is removed from track.
B. Brand on Rail (Question 2) appears several times on web of rail in "Raised Letters." Give one complete set which indicates the mill where rolled, rail section and when rolled (for example, "Colorado Sec. 110 R. E. 1111-1929 O. H.")
C. Heat Number, Rail Letter and Ingot Number (Question 3) appear in indented letters in web of rail on side opposite the brand (for example, Heat No. "1234," Letter "C," ingot "10").
D. Form 955 is required for each failure in rails of 90-lb. or heavier which were rolled within twenty years of date of failure as follows:
   (a) Rails which failed from any cause in main track of Main Lines, whether new or second-hand when laid.
   (b) Rails which failed from any cause in main tracks of Branch Lines, which were new when laid.
E. Form 955 is required for each failure in rails, of all weights regardless of how old, new or second-hand or where used, if the failure is due to transverse fissure; even rails which break from transverse fissure in shipment or in handling shall be so reported.
F. Form 955 is required for failure in rails of any weight or age, new or second-hand, if it, in failing, caused a wreck or a derailment in Main Track of Main or Branch Lines.
G. Division, Section Number, Mile Post Location, Which Track and Date of Failure shall be painted on the web of each failed rail.

## DESCRIPTION OF RAIL FAILURES

1. BROKEN RAIL:
   (a) Transverse fissure failed rails start to break on the inside of the rail head and work outwardly. It is a characteristic break, the fact of which shows an area oval in shape, smooth and generally silvery in appearance, with a small rough spot or nucleus near its center. (See Fig. 4.)
   (b) Head check failed rails start to break on the gage corner of rail usually in the low rail of sharp curves. The head check progresses inwardly, first in an oblique plane and then turns to a vertical transverse plane. (See Fig. 5.)
   (c) Compound fissure result from a horizontal split which has turned to a vertical transverse plane. Compound fissure can be distinguished from a transverse fissure by the absence of a nucleus; also the compound fissure has a rounded surface while, as a rule, transverse fissures result in a square break. (See Fig. 6.)
   (d) Bolt hole breaks occur through a bolt hole.
   (e) Other breaks: There may or may not be any flaws apparent in other breaks (See Fig. 7). Broken rail failures which cannot be allocated to a, b, c, or d, above, should be allocated to ther breaks, but rail should be examined carefully at point of break to ascertain the cause, such as cracked web, broken base, driver burn or otherwise damaged. Give particulars under Remarks, Question 17.

Nucleus

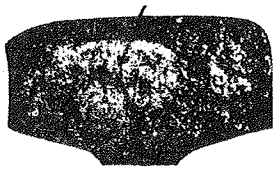
Fig. 4

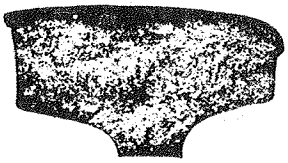
Fig. 5

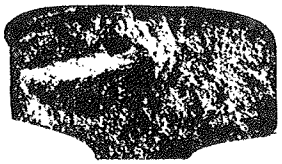
Fig. 6

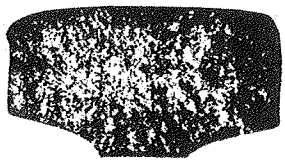
Fig. 7

2. HEAD FAILURES:
   (a) Horizontal split head is indicated by a short horizontal crack on the side of the rail head, usually on the gage side, accompanied by a mashed or spotted condition on running surface. (See Fig. 8.)
   (b) Vertical split head, as the term implies, is a rail split vertically. It is usually accompanied by a distortion of the under side of the head (See Figs. 9 and 10).

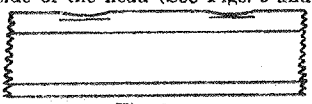
Fig. 8

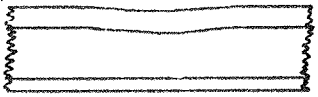
Fig. 9

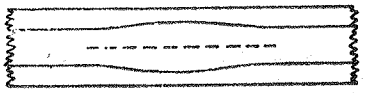
Fig. 10

   (c) Flowed or crushed head is a rolling out towards the sides but the under side of the head is not disturbed. (See Fig. 11.)


Fig. 11

   (d) Scrappy rails are those having foreign inclusions in the metal.
3. WEB FAILURES:
   (a) Fillet cracks are fine, hair line, longitudinal cracks appearing in the fillet at the junction of the head and web, usually on the gage side of rails, on low side of curves.
   (b) Cracked web may be either angular or longitudinal (See Fig. 12).


Fig. 12

4. BASE FAILURES:
   This term covers all breaks in base of rail, usually half-moon breaks (See Fig. 13).

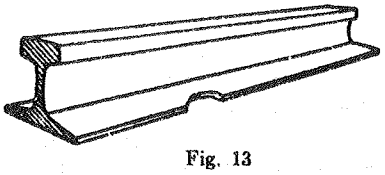
Fig. 13