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O T T A W A

April 9th, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES

Investigation No. 1834.

(Further to Report of Investiga-
tion No. 1802, March 1, 1945.)

Examination of Rivetted C.D.P. Track Pins
and Washers.

(Copy No. 10.)

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Origin of Material and Object of Investigation:

As recommended in an earlier O.D.M.L. Report of Investigation (No. 1802, March 1, 1945, requested by Analysis Requisition O.T. 4332, Reference No. 12/4/44), ten used and ten unused C.D.P. track pins (with washers) from the production of Electric Steels Limited, Three Rivers, Quebec, and a similar number from the Hull Iron and Steel Foundries Limited, Hull, Quebec, were supplied to these Laboratories by the Directorate of Tanks and M. T., Inspection Board of United Kingdom and Canada, Ottawa, Ontario, on March 15, 1945.

The used pins supplied had each gone some 749 miles in service.

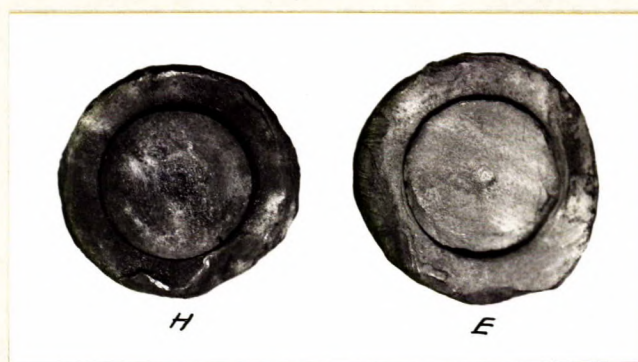
Strain Measurements on Washers:

SR-4 electrical strain gauges were cemented on several loose washers obtained from Hull Iron and Steel Foundries and these washers were rivetted onto pins at both Hull Iron and Steel Foundries and Electric Steels Limited. The rivetting practice was closely observed at both places. Strain readings were taken both before and after rivetting, and again after the peened end was machined away releasing the washer.

Visual Examination:

Every washer and pin submitted was given a close visual examination. The most notable fact brought out by this examination was that all washers on the pins which had been in service and had gone 749 miles were severely deformed (see Figure 1). Several of the peened ends had pieces of metal chipped away. All of the washers were very loose on the pins.

Figure 1.



PHOTOGRAPH OF HULL IRON AND STEEL
AND ELECTRIC STEELS PINS AND WASHERS
WHICH HAD BEEN IN SERVICE FOR 749 MILES.

Note deformation of washers.

Discussion of Results; Conclusions:

1. Strain gauge readings did not give conclusive results. However, there appears to be every indication that Electric Steels Limited have corrected their peening practice so that the pin is no longer being peened excessively.

2. The peening practice is not uniform, since it depends upon the skill of the operator of the hammer.

3. In view of the fact that washers from both firms show severe deformation during service, it is suggested that although overpeening may be a contributing cause of failure the main cause is lack of protection of the washers during service. A peened end may have been satisfactory for lighter vehicles of this type but with a heavier vehicle it appears that some other design is indicated. Perhaps a harder (say, 30 Rockwell "C") and wider washer would be sufficient.

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