Remarks on Doug Landau comments to the RPS of February 2021

Doug Landau's submissions on Steam Locomotive Resistance are mostly related to data collected on the Locomotive Testing Station at Rugby, in much more detail than is needed to draw conclusions on steam locomotives running on the road hauling trains, which is the subject of interest to RPS members. I don't think the RPS website is the place for these discussions about the Rugby LTS and the scientific derivation of relationships for the Resistance of SLs. No members contribute on the subjects. It would be usual for a non-technical Society like the RPS to draw data on SLR from a technical journal, which employs a system of peer review of submissions on the subject, and encourages articles on SLR.

Above this submission are earlier pieces by Doug and myself. One includes several dozen pages with Doug's analyses of mostly Rugby data, which are of limited usefulness/value in my opinion because they are single variable equations for complex relationships, often fitted after Doug has weeded the data. They really require multiple variable regression equations, without the weeding.

I confine my remarks on what he has written this time to:

1 His claim that MR at coupled wheel rims and the pull on the dynamometer (DP) are precisely the same cannot be right, certainly on the road. Between the two are the resistance of the coupled wheel bearings (CWBR), a resolved sum of those bearings carrying much of the weight of the locomotive and the near horizontal tractive forces. If the mechanical resistance is expressed as (ITE – DP), it also includes the work done rotating and oscillating wheels and rods in the drive.

2 The 228-lbs is the minimum value or constant in a CWBR of a medium sized locomotive. It increases to a maximum per unit area with increased loads.

3 He claims that the MR of a Crosti 9F is reduced because the ITE is reduced. The ITE is reduced, however, because the back pressure in the cylinders is so much higher than that of a standard 9F on account of the very restricted exhaust nozzles on the Crosti, rendering the ITE so much lower. I enquired of officers who observed the Crosti 9F at Rugby, and they were unaware of weak frames leading to more parts incurring friction or higher friction. See reference to my 1988 notebook in 6 below, this time p 40. The engine resistance of a Crosti is said to overcome the gain from the boiler. More flexible frames were blamed. Chapelon was asked to report and accepted lesser rigidity of frames as reason for higher loss ITE to DP.

4 The assertion that Damping Resistance (DR) did not and could not exist. Belleville Washers were in the connection to the dynamometer right to the end at Rugby, and required work to operate them. That increased the value of ITE-DP and the TSAR.

5 He has never before published his criticisms of the Perform program. It is such a path breaking and valuable program, with the variables all known, that he could rewrite it if he so chose, using values he considered appropriate.

6 Carling's remarks on the low value of ITE recorded on the LTS appear in the file on reconciliation of results from Mobile Tests and those from the LTS (the subject of Report L116). These are: it is difficult to obtain ITE with great accuracy; error in the indicator, especially at high speeds; determination of area difficult and not very accurate. (Notes taken at Rugby 1988, p 44 of my notebook, copy of which given to Doug in the 1990s).

No doubt these few remarks will incur the wrath of DHL. I hope he sends them to somewhere more appropriate than the RPS website. I shall be happy to respond wherever they appear.
22nd May 2021