

**Lubrizol Presentation
to the
HDEOCP on
M-11 EGR Crosshead Wear
Lab-to-Lab Variation**

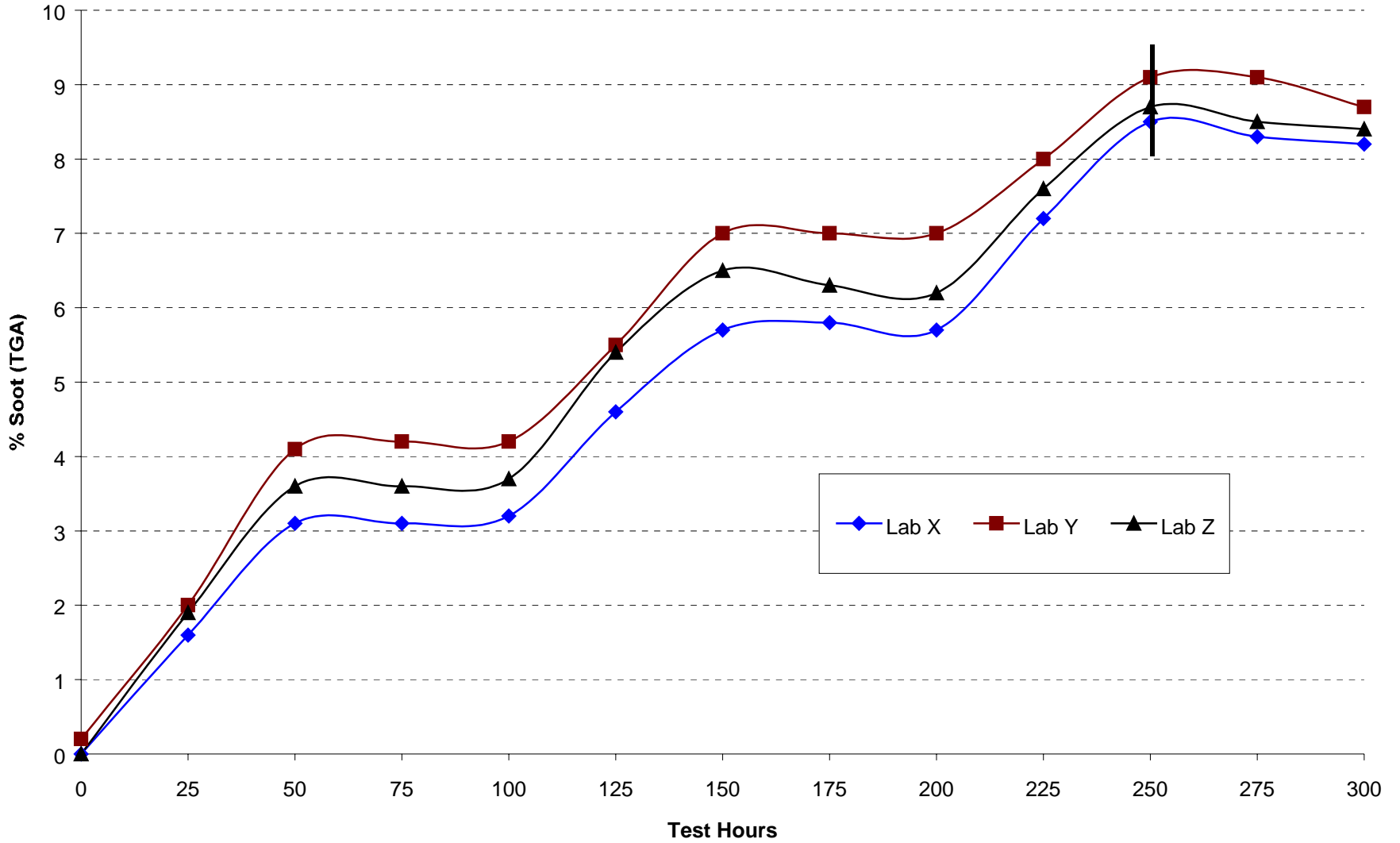
December 5, 2000

M-11E GR Test Results

Oil	C*	C	C
Lab	X	Y	Z
Avg. Crosshead Wear, mgs	7.2	26.1	62.2
Avg. Crosshead Wear @8.5% Soot, mgs	7.2	21.0	56.6
% Soot at 250 hrs.	8.5	9.1	8.7
EOT Date	11/27/00	11/22/00	11/28/00

*15W40 PC-9 Prototype – Single blend ran at all three labs

M11 EGR Soot Generation



Conclusions

- The data represents a direct lab-to-lab comparison of M-11 with EGR crosshead wear on the exact same oils.
- All three labs reported that they ran a clean valid test with no anomalies.
- Lubrizol has serious reservation concerning the lab-to-lab variation on the critical crosshead wear parameter.
- We would like to see data from other stakeholders to either support or refute these results.
- We, as an industry, need to investigate further.

Recommendations

- Additional time is needed to allow for the investigation of M-11 EGR crosshead wear variability before we start the matrix. Time is available with no delay in the completion of the overall matrix if we start the M-11 EGR matrix such that it will EOT at the same time as the longest test, the CAT 1Q.
- Continue to investigate parts, build, and procedure for root causes of the crosshead wear lab-to-lab variability.