

M11EGR Industry Alarm Summary: Crosshead Weight Loss

The M11EGR Industry Control Chart for CWL has tripped an action alarm for severity, in the mild direction (see attached chart). The results for all tests to date, by reference oil are tabulated below in Table 1. Concern has been expressed that the mild wear results may be due to the difference in new oil viscosity (per past research: SAE 981372). It should be noted that the original blend (PC-9E) of reference oil did not contain a low temperature flow improver (LOFI) that the two subsequent reblend do. On an average basis the mild trend does not show up for oil 830-1 as expected. However, this could be due to lab severity differences that existed at the time that oil was in the system. With the exception of lab A on oil 830-1, all labs are milder on CWL for the oil reblends than on the original oil. All this is not to suggest that the reference oil reblend is the definite cause of the mild trend, however, it must be given due consideration.

Also attached are the lab distribution plots for all four parameters.

**Table 1:
M11EGR Test Results by Reference Oil**

Oil	n	Mean / std. dev.			
		CWL	ASR	FPD	TRWL
PC-9E*	12	15.2 / 3.1	8.4 / 0.33	11.2915 / 0.8535	133.5 / 19.7
830-1	5	15.9 / 3.2	7.7 / 1.0	12.0963 / 0.7740	126.4 / 14.7
830-2	6	10.8 / 2.6	8.4 / 0.38	11.6898 / 1.2726	138.1 / 24.5

*Current Test Targets.

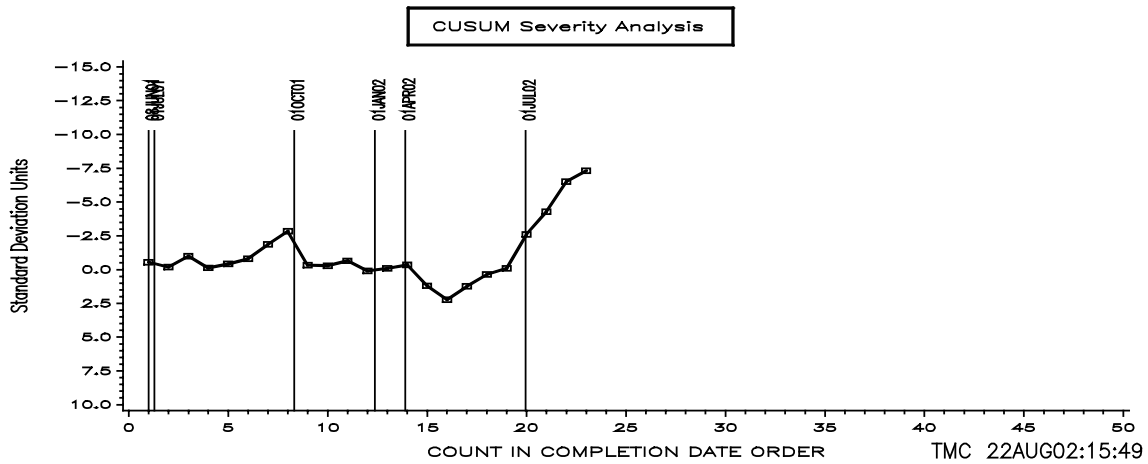
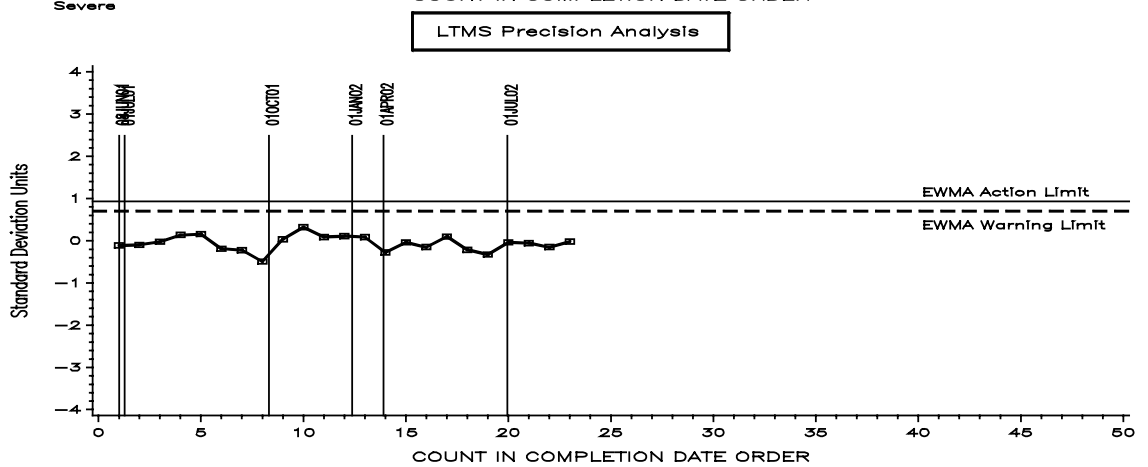
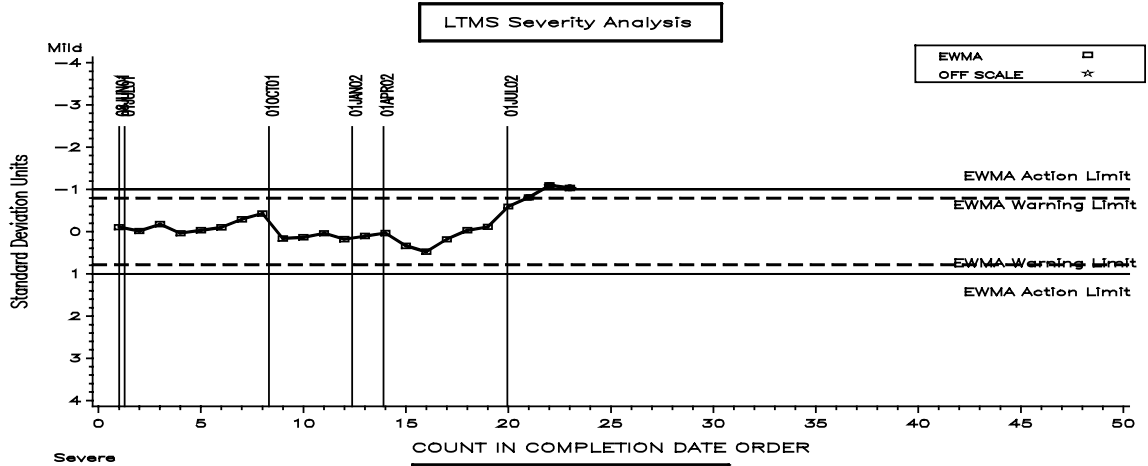
**Table 2:
Average New Oil Viscosity at 100°C**

Oil	N	Viscosity (cSt)
PC-9E**	12	15.45
830-1	5	16.18
830-2	6	16.21

**Blend did not contain LOFI.

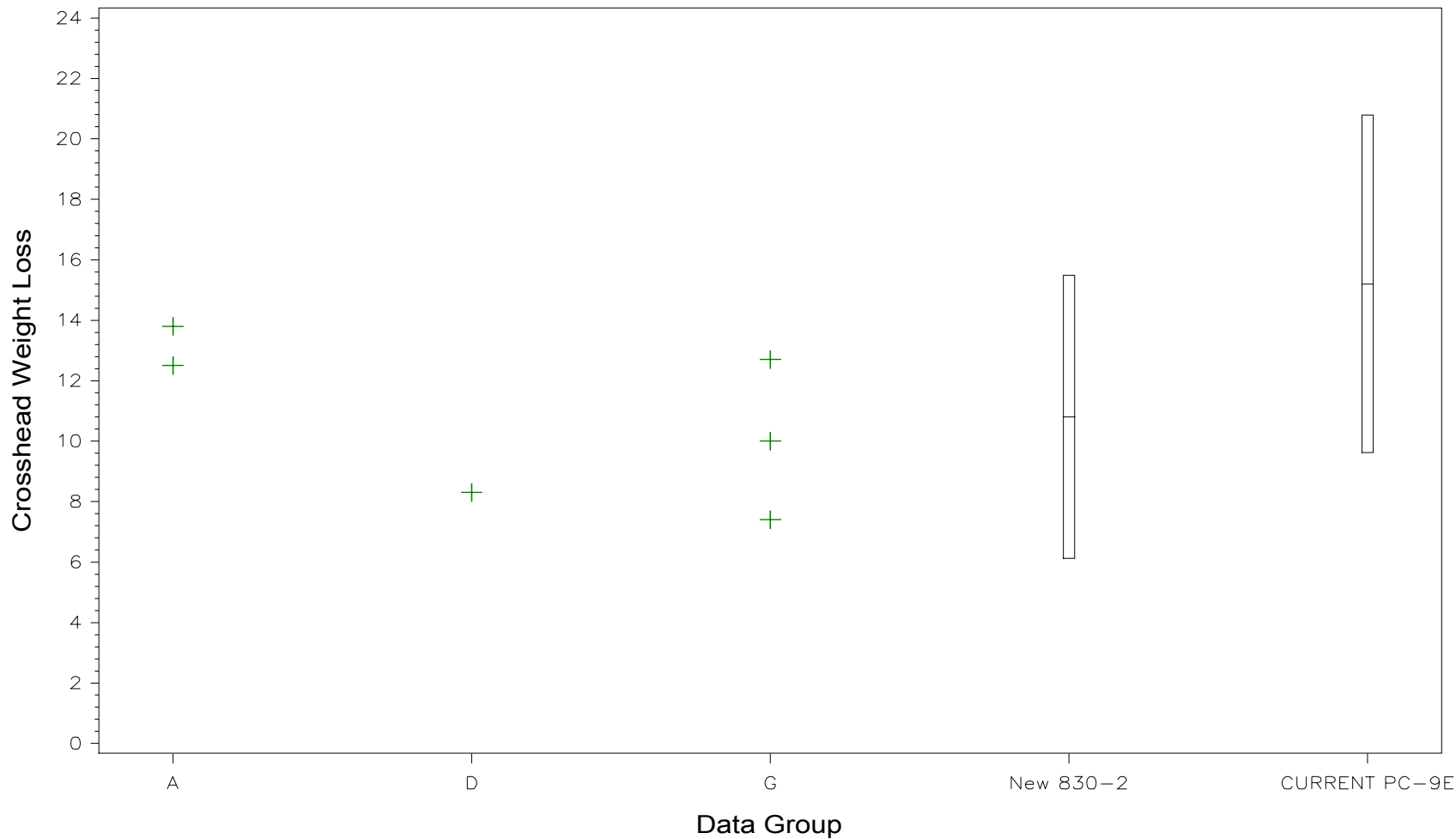
M11EGR INDUSTRY OPERATIONALLY VALID DATA

CROSSHEAD WEIGHT LOSS



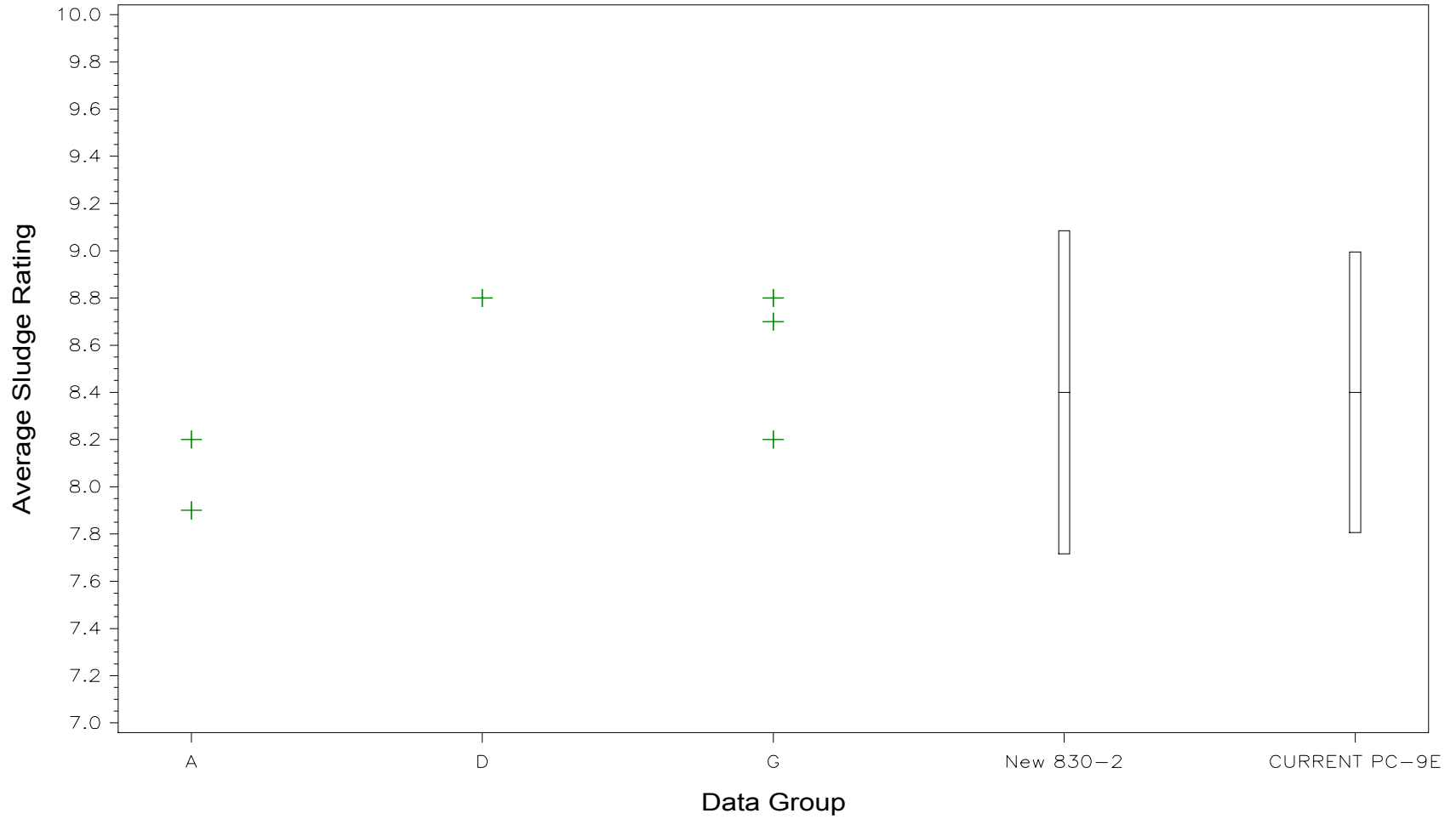
M11EGR: Reference Oil 830-2
Test Target Data Set and Shewart Severity Limits

Crosshead Weight Loss



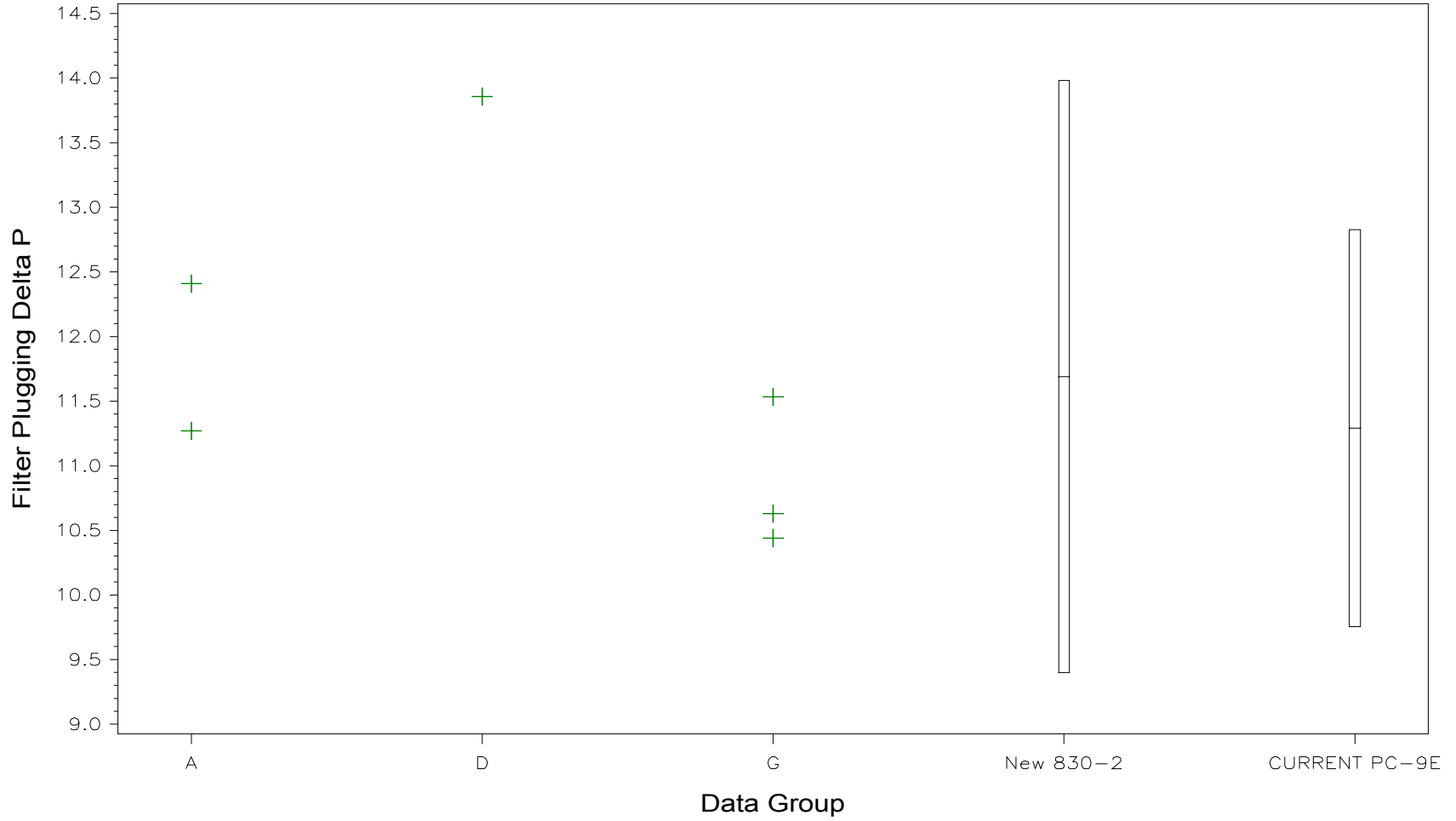
M11EGR: Reference Oil 830-2
Test Target Data Set and Shewart Severity Limits

Average Sludge Rating



M11EGR: Reference Oil 830-2
Test Target Data Set and Shewart Severity Limits

Filter Plugging Delta P



M11EGR: Reference Oil 830-2
Test Target Data Set and Shewart Severity Limits

Average Top Ring Weight Loss

