



# Test Monitoring Center

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MEMORANDUM: 01-024

DATE: March 16, 2001

TO: High Temperature Foam Mailing List

FROM: Tom Schofield

SUBJECT: D6082 TMC Calibration Severity Special Report

Two labs recently reported abnormally severe D6082 (High Temperature Foam) calibration results on TMC reference oil 1002. As shown in Table 1, labs G and A reported test results that were unusually severe for both Foam Tendency Immediately Before Air Disconnect (FTIB) and for Foam Stability One Minute After Air Disconnect (FS1M). Table 2 shows the expected target values for oil 1002 on both parameters.

Table 1  
Recent Calibration Results on TMC Oil 1002

Lab	CMIR	Drum #	Date Canned	Date Shipped	Date Completed	FTIB (ml Foam)	FTIB $\Delta$ /s	FS1M (ml Foam)	FS1M $\Delta$ /s
G	36142	52	19980903	20000104	20010131	880	7.98	600	12.38
G	37799	52	19980903	20000817	20010209	410	-0.01	30	-0.17
A	39685	52	20010102	20010108	20010221	880	7.98	570	11.72
A	39686	52	20010102	20010108	20010223	870	7.82	560	11.50

Table 2  
Expected (Target) Results for TMC Oil 1002

	s	Lower 95%	Mean	Upper 95%
FTIB	58.78	295	410.63	526
FS1M	45.41	0	37.81	127

Neither lab reported a definitive operational cause for the severe results. Both labs attempted to calibrate again using a second oil assignment (different blind CMIR sample, same TMC oil 1002). On the rerun, lab G passed calibration with very good results, while lab A repeated the extremely severe performance on both parameters. The two samples run by lab G were canned by the TMC at the same time (19980903). It is interesting to note that one failed so severely while the other passed quite as expected (very close to the mean performance). The two samples run by lab A were also poured at the same time (20010102), but several years after those for lab G. All other test results recently reported show no problems, even on samples poured at the same time as the ones listed in Table 1. The unused oil from the four samples in Table 1 were returned to the TMC and confirmed to be oil 1002 (by differential FTIR comparison).

The TMC had dedicated a drum of oil 1002 (TMC Drum #52) for exclusive use for D6082 testing. This drum was mixed, using a drum mixer, before canning a number of aliquot calibration samples. These calibration samples were then stored and used to fill shipping orders over time as required. When more aliquots were needed, the drum content was again mixed and additional samples poured. These samples were again shipped and/or stored as needed. (This same process is being used for TMC 1007 D6082 testing).

The TMC's internal quality control program has provided no reason to believe the oil in drum 52 has degraded. And, overall calibration testing on Oil 1002 does not indicate any conclusive evidence that the oil is actually changing in performance. However, because of the recent unexplained erratic results from two testing laboratories, the TMC has decided to stop shipping from drum 52 and to start using a new drum of Oil 1002 (drum #53) for D6082 calibration testing. This step is being taken as a precaution only. Drum 52 was down to the last 1/3 of the drum volume; drum 53 (the new drum) is a full 55-gallon drum of oil.

The TMC has sent samples to two labs that volunteered to run D6082 screener tests to compare the performance of drums 52 & 53. Each lab agreed to run the samples from each drum side-by-side in the same TMC calibrated baths. The results in Table 3 indicate the samples from drum 53 performed similarly at both labs, and reasonably close to expected performance (targets). The samples from drum 52 show mixed results, with Lab B showing normal performance, and lab A again showing somewhat severe performance (though, this time within the acceptance bands for oil 1002). So, again, we see erratic and unexpected performance from samples taken from drum #52. The very few severe runs reported to date are only mildly suggestive (and not at all convincing or conclusive) that oil 1002 is degrading in any way (either in drum 52 or the whole batch of 1002). It is quite possible that there are other reasons for the erratic results that we are seeing so recently. Only time will tell if this erratic performance carries over to samples taken from the new drum.

Table 3  
D6082 Screener Test Results Comparing TMC Oil 1002 Drum 52 to Drum 53

Lab	CMIR	Oil	Drum	Date Completed	FTIB (ml Foam)	FTIB $\Delta$ /s	FS1M (ml Foam)	FS1M $\Delta$ /s
B	40473	1002	52	20010312	390	-0.35	0	-0.83
B	40474	1002	53	20010312	340	-1.20	0	-0.83
A	40475	1002	52	20010314	520	1.86	80	0.93
A	40476	1002	53	20010314	350	-1.03	0	-0.83

The same mixing SOP will be used on the new drum to ensure homogeneity of the aliquot calibration samples when they are poured at the TMC. However, it is important to note that the TMC has been advised that any anti-foaming agent in formulated engine oils might have a tendency to migrate to the outer "edges" of any contained sample during storage. **Therefore, it might be an important step for D6082 testing to vigorously shake or mix the TMC reference sample (and any other oil sample) in it's original container before pouring it into the Waring blender for effecting Blending Option A of the test method. It is also important not to let the oil sit too long after the mixing process as this might allow the anti-foam additives to migrate to the sides of the container again.** If this were to happen, it is possible that a significant concentration of the anti-foam component will be left clinging to the sides of the container after the sample is poured into the testing cylinder.

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The TMC will keep the technical panel advised of any additional anomalous data that is not seen to be a rare or random event. Please direct any inquiries on this matter to the TMC.

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