



Engine Test Monitoring Center

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TO: TECHNICAL GUIDANCE SUBPANEL

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Gentlemen:

At the October 14, 1976 meeting of the Technical Guidance Subpanel, Mr. Franklin requested that the Engine Test Monitoring Center develop a double-blind reference oil system for use with the Sequence VC tests. His opinion was that such a procedure could best be handled through the Engine Test Monitoring Center. We understand that an attempt has been made to operate a double-blind system through the VC Surveillance Panel but it was not possible to retain the required confidentiality. Mr. Bardy suggested that such a system be developed for use with all the Sequence tests.

Current Practice

The most common double-blind system involves supplying reference oils to the testing laboratory through a regular client who provides the material in his usual shipping containers and under his own codes. The fact that the sample is actual by a reference oil is made known to the laboratory only after the test is completed. This procedure is most commonly utilized in checking the performance of the independent laboratories.

A reverse double-blind reference oil is a sample, originally tested as a candidate or commercial product, which is sent back to the laboratory as the reference oil. A reverse double-blind system has the advantage that it can be used to check any laboratory testing commercial products.

Both of the above procedures have been used from time to time by several organizations, and both are currently in use.

Reverse Double-Blind

There are several possible reverse double-blind systems. Perhaps the simplest such system to initiate would consist of picking up samples of commercially available products and resubmitting them as a reference oil to the laboratory making the original evaluation. The same sample could of course also be sent to other industry laboratories. The accumulated data

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would finally be discussed with the laboratory or oil supplier. Such a procedure could be initiated easily and without disclosing to anyone that a check was in progress. The difficulties appear in attempting to evaluate the data. This procedure introduces many possible complications in areas such as blending, canning, labeling, and distributing product. Accordingly, while serving as some sort of an overall check of development and marketing practices, one might never be able to decide if the testing laboratory was actually providing a repeatable evaluation. Also, from the Engine Test Monitoring Center's standpoint, it injects the Center into distribution and marketing areas which are outside of the Center's intended area of operation.

Another variation of this system is to use as reference oils samples of products submitted to groups such as the U. S. Army Engine Oil Reviewing Committee or equipment manufacturers for approval. Such samples could reasonably be expected to have been checked to insure that the composition was at least typical, and thus major mistakes in blending or canning should be avoid. Obtaining such material however could warn the supplier that the product could appear as a reference material. In addition, the probability that the sample tested as a reference is identical to the originally evaluated blend is low. The sample would most likely be reblends of the sample originally laboratory tested. Simple reblending can introduce potential errors. Even when all practical precautions are taken to insure that reblends are identical to the original material we can have difficulty duplicating the performance of a specific material. Accordingly, the retested product may not necessarily provide an evaluation of laboratory repeatability.

The only way to eliminate all of these possible complications and insure that the reverse double-blind sample was actually identical to the material originally tested is to have access to the original blend. The probability of obtaining such a sample is very low.

Finally, the original test data for a given product may consist of only a single result. Thus, although multiple evaluations are eventually conducted, the value of the material as a reverse double-blind reference is limited simply because extensive background data is not available.

It seems to me that the objective of the Engine Test Monitoring Center is to maintain and evaluate test and laboratory performance. The most readily available samples which could be used as reverse double-blind materials introduce a host of development, manufacturing, and marketing complications which are outside of the scope of the Center. Accordingly, unless an unexpected way can be developed to obtain suitable reference samples, it is my personal opinion that a reverse double-blind system is really more of a product monitoring technique and, if used, should be administered by organizations involved with the granting of product approvals.

Double-Blind

A double-blind reference oil system is relatively easily administered with the independent test laboratories by sending the samples through major purchasers of engine oil tests. Proper selection of the reference oil will insure that extensive history is available on the material prior to use.

One of the disadvantages of double-blind systems as currently used is that it imposes an additional financial burden on that organization paying for the reference test result. However, this need not be a major stumbling block. With proper cooperation of the shipping laboratory, I believe that a procedure could be worked out so that the double-blind reference run could be used for stand (lab) certification, and thus avoid the need for additional reference testing.

Use of the double-blind system with oil and additive company (dependent) laboratories is, however, difficult. Personnel involved with the operation of some dependent laboratories believe that it would be impossible to work double-blind samples into their facilities on a confidential basis. Others believe that it would be possible to arrange a system which would retain the sample confidentiality. My own opinion is that any sample coming into the laboratory in an unusual way would rapidly attract attention and would receive special consideration. My opinion is that it would be extremely difficult to work a double-blind system with dependent laboratories unless a special system was devised for each particular laboratory which would take into consideration the types of samples usually handled by that laboratory, the source of these samples, laboratory internal procedures, and the interests and capabilities of the laboratory personnel. Devising a different system for each laboratory becomes time consuming, introduces the possibility of error, and the results may not justify the cost.

Summary

The ideal double-blind system is one that could apply to all laboratories. The reverse double-blind system has this potential if reference oil samples can be obtained which are identical in performance to that originally tested. This may not be possible. Using reblends or other related samples introduces complications. Data interpretation could become difficult.

A double-blind reference oil system can be used with the independent laboratories with no particular difficulty. I believe a system can be devised which would permit the double-blind test result to be used for stand certification, and thus the system need not impose additional reference test costs on industry.

Use of the double-blind reference oil system with dependent laboratories is difficult.

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Comment

My personal opinion is to proceed with the development of a double-blind reference oil system for the independent laboratories as soon as practical. Unless a good source of reference oils can be developed, I do not believe the ETMC should adopt a reverse double-blind system. The net effect is that we could end up with a double-blind system for only the independent laboratories which, at first look, seems discriminatory. On the other hand, the test developers have gradually been cutting back on their efforts to provide test monitoring. The net effect is that the independent laboratories have gradually become the organizations establishing test performance levels, if no other reason than that they account for the bulk of the tests run. Accordingly it seems to me that we should proceed in this direction despite the fact that not all industry laboratories will be monitored equally.

Prior to introducing a double-blind reference oil system, however, the Engine Test Monitoring Center must begin handling the data from the current blind reference tests. This step should be undertaken first, to relieve the test developers of this obligation, and secondly, to give the ETMC control of reference test scheduling which is a necessary part of any double-blind system.

I would appreciate any comments or suggestions.

Very truly yours,

Paul A. Bennett
Administrator

PAB:jaf

cc: ETA Panel