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**Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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Reply to:

Scott Parke  
ASTM Test Monitoring Center  
6555 Penn Avenue  
Pittsburgh, PA 15206

July 27, 2006

To: Engine Oil Elastomer Compatibility Surveillance Panel

Enclosed are the minutes of the Engine Oil Elastomer Compatibility surveillance panel teleconference held July 18, 2006. Please address any corrections during the time allotted for minutes approval at the next meeting.

Scott Parke  
Secretary Engine Oil Elastomer  
Compatibility Surveillance Panel

Attachments

cc: <ftp://ftp.astmtmc.cmu.edu/docs/bench/eoec/minutes/TELECONFERENCE%202006-07-18.pdf>

distribution: Email



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## TELECONFERENCE MINUTES

### ENGINE OIL ELASTOMER COMPATIBILITY SURVEILLANCE PANEL

HELD JULY 18, 2006

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#### 13:35cdt VAMAC LIMITS

Chairman Becky Grinfield (Southwest Research) called the teleconference to order at 13:35cdt. The participant list is shown as attachment 1.

Becky began the meeting by announcing that limits for VAMAC have recently been agreed upon and moved that the panel accept them for incorporation into the D4485 appendix. The panel unanimously agreed on the following limits:

Volume Change	%	+TMC1006/-3
Hardness	Points	+5/-TMC1006
Tensile Strength	%	+10/-TMC1006
Elongation	%	+10/-TMC1006

#### 13:40cdt OUTLIER SCREENING

Scott Parke (TMC/secretary) previously contacted the panel to point out that the current procedural requirements for outlier screening allow two different labs to report different results for the same test data (attachment 2).

Becky Grinfield asked Dennis Malandro (Infineum) to give the panel his thoughts regarding outlier screening for the EOEC test. Dennis discussed several ideas and said that his primary desire was to adopt a so-called “robust method” of screening. Dennis and Janet Buckingham (Southwest Research) discussed several methods. In order to recommend the best method, Dennis emphasized the importance of knowing the distribution of the data with particular attention to the “tails”. Scott

Parke asked how an accurate estimation of the distribution of the data could be made if the data from one of the labs has had all the extreme values removed up until now. Dennis agreed this might be a problem; he'll have to review the available data.

Greg Shank (Mack/Volvo) expressed his support for outlier screening of some sort but emphasized his conviction that whatever is decided, all labs should be do the same thing. Renzie Silver asked for a listing of common causes for extreme data values; it was becoming clear that excluding extreme values resulting from definable physical causes might go a long way toward eliminating the problem of outliers altogether and that all other data ought to be reported. The group came up with the following common occurrences:

1. Grip slippage
2. Specimen breakage outside the test area
3. A nick to the test specimen
4. An obvious material flaw (such as an air bubble)

Becky Grinfield moved the following:

Report the value of all post-test measurements except those data points experiencing one of the above listed problems. In those cases, put an asterisk (\*) in the data field and explain in the comment section of form 7 which of the above problems occurred. Do not report more than two (2) of the six (6) points for any given parameter in this way. Effective immediately.

Gil Reinhard seconded the motion which passed 8-0-1 (for-against-waive).

Becky asked Dennis Malandro if this action might obviate the need for further inquiry into outlier screening techniques. Ed Outten (Infineum) said he'd still like to see what Dennis determines. Dennis agreed to continue and report his findings back to the panel at a future meeting.

The call concluded at 14:16cdt.

## Attendance:

Representative	Organization
Jason Bowden	OHT
Becky Grinfield	Southwest Research
Larry Kasper	Southwest Research
Janet Buckingham	Southwest Research
John Loop	Lubrizol
Jennifer Keiter	Lubrizol
Julie Suhadolnik	Lubrizol
Diane Misich	Lubrizol
Ed Outten	Infineum
Dennis Malandro	Infineum
Gil Reinhard	Intertek
Mark Sutherland	Chevron
Greg Shank	Mack/Volvo
Renzie Silver	Mack/Volvo
Doug King	Dupont
Scott Parke	Test Monitoring Center
John Zalar	Test Monitoring Center

According to the EOEC procedure, outlier screening is optional. Presently, some labs use it; others do not. If lab X and lab Y both record the exact same test data and X screens outliers while Y doesn't, the consequence is the following:

recorded tension values:

-25.8 -29.5 8.7 -28.4 -27.4 -37.5

reported test result:

Lab X = -29.7

Lab Y = -23.3

another example -

recorded tension values:

-7.4 0.9 6.4 8.1 8.3 6.3

reported test result:

Lab X = 6

Lab Y = 3.8

These recorded data values are values from actual recent EOEC reference tests; they have not been contrived to produce an exaggerated result to provoke discussion of a hypothetical scenario.

Whether or not outlier screening is appropriate is not the point these examples is intended to raise. Rather, the intent here is to illustrate the disparity in reported test result that results from allowing outlier screening to be discretionary and to provoke discussion as to whether or not this disparity is acceptable.

Depending on how that issue is resolved, there is one further item for discussion. For TMC monitored lubricant testing, outliers are typically screened at the upper 0.5% significance level. For an n-size of 6, the data value labeled as an outlier in the first example (8.7) unquestionably is one according to E178; the value in the second example (-7.4) is not. The outlier screening criteria used by lab X flagged this value as an outlier and removed it from the reported test result. E178 covers a broad range of significance levels, n-sizes, and so on allowing for various interpretations to be made. Leaving the particulars unspecified allows for different labs to make different interpretations of E178 again leading to different reported test results. Here, too, the panel needs to discuss whether or not such reporting differences are acceptable.

One final point. When lab X removes a value from computation of the reported test result, their practice has been to replace the outlying recorded value with the word "outlier"; the actual numeric value is not included anywhere in the test report. The test consumer has no way to determine even the direction of the outlying value. Again, depending on the above two points, the panel may need to discuss the level of transparency necessary in outlier screening.

This flowchart summarizes the topics the panel needs to discuss.

