

**HEAVY-DUTY ENGINE OIL CLASSIFICATION PANEL  
OF  
ASTM D02.B0.02  
August 15, 2001  
Holiday Inn – O’Hare International Hotel, Rosemont, IL**

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**ACTION ITEMS**

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|---|---------------------|
| <b>1. Get data to CAT regarding PC-9 / 1N.</b>                    | <b>All</b>          |
| <b>2. Used oil viscosity Task Force limits and procedure mtg.</b> | <b>D. Stehouwer</b> |
| <b>3. Exit ballots, round two.</b>                                | <b>J. McGeehan</b>  |
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**MINUTES**

- 1.0 Call to Order
  - 1.1 Chairman Jim McGeehan called the meeting to order at 8:06 a.m. on August 15, 2001, in Ball Room 5 of the Holiday Inn – O’Hare International of Rosemont, IL. There were 14 members present or represented and approximately 32 guests present. The attendance list is shown as Attachment 2.
- 2.0 Agenda
  - 2.1 The announced agenda (Attachment 1) was reviewed and agreed upon.
- 3.0 Previous Meeting Minutes
  - 3.1 The minutes of the July 11, 2001 meeting were reviewed and the last sentence of paragraph 11.6 should be corrected to read: “ASTM specification D3244...”. Also, the first line of the second bullet item on page 142 (Attachment 16, page 2) should have a “15” before the W-40. With these corrections / additions, the minutes of the previous meeting were approved as posted on the TMC website.
- 4.0 Membership

- 4.1 There were no changes in membership.
- 5.0 PC-9 Matrix Status
    - 5.1 John Zalar reported on the status of the PC-9 matrix (Attachment 3). The T-10 and M-11 EGR matrix tests are all completed. Seventeen of eighteen 1R matrix tests are also done and the eighteenth test is running. It should finish by the end of August.
    - 5.2 Steve Kennedy inquired about the status of approval for the revision to the MOA. Dick Clark responded that all approval signatures had not yet been received.
- 6.0 Mack T-10
    - 6.1 Jim Rutherford reported on the statistical analysis of the T-10 matrix data (Attachment 4). This analysis of the data shows significant technology, lab and stand effects on lead; base oil and base oil / technology interaction effects on liner wear; technology, lab and stand effects on IR.
    - 6.2 Joe Franklin reviewed the matrix IR data (Attachment 5). Method 5 was selected by the T-10 Task Force as the method of choice since it seemed to give better separation of the data.
    - 6.3 Greg Shank gave an update on the T-10 status and changes (Attachment 6). He proposed that the T-10 test be accepted for use in the PC-9 category. Ralph Cherrillo seconded the motion. There was concern raised about accepting the test with limited calibrated stand availability, so a teleconference was scheduled for August 16, 2001, to review matrix stand calibration status. The motion passed with 14 for, 0 against, 0 abstain.
- 7.0 Used Oil Low Temperature Viscometrics
    - 7.1 Jim Rutherford presented an addendum to the T-10 statistical analysis for the addition of MRV results from the 75 hour T-10 oil samples (Attachment 7). This analysis indicates technology, base oil and base oil / technology interaction all had significant effects on the low temperature viscosity of sooted oils. Dave Stehouwer proposed that the MRV TP-1 method (D4684) at 5°C above the fresh oil grade MRV temperature, be used to evaluate the 75 hour sample from the Mack T-10 test, for low temperature pumpability concerns. Greg Shank seconded the motion which passed with 14 for, 0 against, 0 abstain.
    - 7.2 Ted Selby presented data on T-10 matrix oils generated using a scanning rotary viscometry technique (Attachment 8). This approach gives much

more information about the low temperature viscosity behavior of soot containing oils and takes less time.

## 8.0 Mack T-10 Limits

8.1 Greg Shank presented the EMA agreed upon limits for the T-10 test (Attachment 9) and moved for their acceptance. Ralph Cherrillo seconded the motion. Pat Fetterman presented alternative limits suggested by Infineum (Attachment 10). There was considerable discussion on having both lead and IR oxidation as pass / fail parameters because of their correlation. Mack wants both to help ensure appropriate anti-oxidant levels. The motion passed with 11 for, 1 against, 2 abstentions and will proceed to an exit ballot.

## 9.0 Cummins M-11 EGR

9.1 Dennis Malandro presented the M-11 EGR matrix data statistical analysis (Attachment 11). For crosshead wear there were significant effects for labs and base oils. There were no significant effects for top ring weight loss or top ring gap increase and only lab effects for liner wear. Dennis noted that the units shown on the liner wear step slide are incorrect. The numbers are correct, but they reflect microns, not milligrams. Oil filter differential pressure showed a base oil / technology interaction effect. There were significant lab effects and base oil / technology interaction effects on average engine sludge. There were significant lab effects on injector adjusting screw weight loss. Lab and technology effects were both significant for rod bearing weight loss.

9.2 Dave Stehouwer presented an update on the M-11 EGR status (Attachment 12) and moved that the HDEOCP accept the test for use in the PC-9 category. Greg Shank seconded the motion which passed with 14 for, 0 against, 0 abstain.

9.3 Jim Newcombe announced that the ACC had accepted the T-10 and M-11 EGR into the "Code of Practice", contingent on acceptance by the HDEOCP, and that registration of tests may start on Monday, August 20, 2001.

9.4 Dave Stehouwer presented the proposed M-11 EGR pass / fail limits (see Attachment 12) and moved for their adoption. Greg Shank seconded the motion. Pat Fetterman suggested dropping TRWL as a parameter and an alternate limit for average engine sludge (Attachment 13). The original motion passed with 11 for, 1 against, 2 abstentions, and will proceed to an exit ballot.

## 10.0 Caterpillar 1R

- 10.1 Dwayne Tharp reported on the 1R matrix status (Attachment 14) and indicated 17 of 18 tests had completed, with the final test expected to finish by the end of August.
- 10.2 Phil Scinto presented a 'preliminary draft' of the 1R matrix data statistical analysis based on the 12 test results available at the time (Attachment 15).
- 11.0 Category Demonstration Oil
  - 11.1 Greg Shank wanted the record to show that the EMA can not provide a demonstration oil, but they will work with the oil / additive suppliers to come up with one. The NCDT agreed to help provide a demonstration oil.
- 12.0 "Exit" Ballots from the July 11, 2001 Meeting
  - 12.1 1N
    - 12.11 There were several concerns expressed about potentially higher ash PC-9 oils being able to pass the 1N CG-4 limits.
    - 12.12 Oronite proposed using CH-4 (1K) limits.
    - 12.13 Infineum proposed relaxed limits (Attachment 16).
    - 12.14 ExxonMobil would agree to tighter oil consumption limits (0.27 g/hr) if the deposit limits were relaxed.
    - 12.15 Caterpillar is concerned about stuck rings and backward compatibility.
    - 12.16 Ethyl proposes TGF relief to the 25-30% region (Attachment 17).
  - 12.2 Used Oil Viscometrics
    - 12.21 Imperial Oil expressed concerns about the proposed limits for 10W-30 oils because of the reduced blend window imposed by the HTHS limit.
    - 12.22 Oronite has concerns about having to re-run a T-10 to generate a 75 hour sample for the viscosity analysis.
    - 12.23 ExxonMobil wants to know if "stay-in-grade" still applies.
    - 12.24 Ethyl suggests that sample generation be de-coupled from the T-10 with perhaps a "flush and run" setup.
    - 12.25 Chevron would like more background on how 25,000 cP was picked as the limit. Dave Stehouwer provided Attachment 18 to help answer that question.
    - 12.26 After more discussion, it was suggested that a Task Force be formed to review the limits and procedure before the next meeting. Dave Stehouwer will head the Task Force and Bill Kleiser, Lew

Williams, Pat Fetterman, Tom Cousineau, Ralph Cherrillo and Steve Herzog agreed to participate.

### 12.3 Mack T-8E

- 12.31 Infineum made the point that the MRV test on the T-10 oil sample now replaces the need for the T-8E. However, they would support a 1.9 RV using 100% DIN shear (Attachment 19).
- 12.32 ExxonMobil would support 1.8 or 1.9 RV. They feel using 100% DIN shear can result in more than a 0.1 shift in RV.
- 12.33 Chevron doesn't feel 100% DIN shear is necessary, would support 50%.
- 12.34 Mack feels there is not enough data to permit dropping the T-8E or the MRV. They would move to 1.8 RV if 100% DIN shear accepted (Attachment 20).
- 12.35 Greg Shank moved that the T-8E Relative Viscosity limit for PC-9 be set at 1.8 for 4.8% soot, using 100% of the D6278 sheardown value. Steve Kennedy seconded the motion which passed with 14 for, 0 against, 0 abstain. This will be re-exit balloted.

### 12.4 High Temperature, High Shear

- 12.41 Lubrizol would change to affirmative for a limit of 3.3 or 3.4 cP.
- 12.42 ExxonMobil concerned that a critical limit of 3.3 might be more restrictive than a non-critical 3.5.
- 12.43 Infineum maintains that to get higher HTHS would require more polymer and would not necessarily result in higher film thickness (Attachment 21).
- 12.44 Pennzoil-Quaker State feels the HTHS should be a category requirement, not just for XW-30 oils.
- 12.45 EMA sticks by their proposal that the minimum fresh oil HTHS they want to see for their engines is 3.5 cP, as a non-critical parameter.

### 12.5 Volatility

- 12.51 Lubrizol feels that 15% is ok for 15W-40 oils but they would like to see 17% for XW-30 oils because they have customers whose base stocks would be effected. They could withdraw the negative.

### 12.6 Elastomers

- 12.61 Lubrizol is concerned that the review / adjudication process is not well enough defined. They would withdraw if a process were defined.
- 12.62 Ethyl presented a process (Attachment 22).

## 12.7 Next Round of "Exit" Ballots

12.71 Ballot 1.8% RV with 100% D6278 sheardown for T-8E.

12.72 Ballot both 3.5 cP, non-critical and 3.3 cP, critical, as HTHS limits, with 6V-92 base oil read across guidelines for the 3.3 option.

## 13.0 New Business

13.1 Lew Williams moved that passing PC-9 oils could be licensed as CH-4 oils prior to official CI-4 licensing. Bill Kleiser seconded the motion. Discussion included proposals that a passing T-10 could be used to satisfy a T-9 requirement, a passing M-11 EGR for an M-11 HST and a passing 1R for a 1P. By agreement, the motion was tabled until the next meeting.

## 14.0 Next Meeting

14.1 The next meeting was moved to September 12, 2001, same venue, starting at 8:00 a.m.

## 15.0 Adjournment

15.1 The meeting was adjourned at 2:56 p.m. on August 15, 2001.

Submitted by:

Jim Wells  
Secretary to the HDEOCP