

HEAVY-DUTY ENGINE OIL CLASSIFICATION PANEL OF

ASTM D02.B0.02

December 8 & 9, 2003

Hyatt Regency Hotel – Phoenix, Arizona

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ACTION ITEMS

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|-----------|--|---------------------------|
| 1. | After treatment / lubricant effects data submitted by 1 April 2004. | All who have data. |
| 2. | If / How to include CSR in PC-10 elastomer tests. | EMA / Elastomer TF |
| 3. | Monitor CI-4 Elastomer tests. | TMC |
| 4. | Add CI-4 Supplement to D4485. | Sub-comm. B |
| 5. | Issue exit ballot on PC-10 Chemical Limits. | Jim McGeehan |
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MINUTES

- 1.0 Call to Order
- 1.1 A supplementary session of the HDEOCP for its task forces was opened at 8:10 a.m. by chairman Jim McGeehan in the Phoenix Ballroom West of the Hyatt Regency Hotel of Phoenix, Arizona on December 8, 2003. No attendance was taken for these sessions, but there were approximately 40 people present at one time or another.
- 2.0 Agenda
- 2.1 An agenda for the Task Force sessions was reviewed and the Seals portion was moved to the top due to conflict with another meeting later in the morning. The published agenda is shown as Attachment 1.
- 3.0 Seals
- 3.1 Becky Grinfield reported on the progress of elevating the current elastomer tests to standards. A Vamac G specification has been established and OHG will be supplying the test parts. One reference fluid (SF 105) has been selected and is being used.
- 3.2 Rob French made a presentation (See Attachment 2) on a method to measure seal force retention called CSR (Compression Stress Relaxation). There is an ASTM standard (D6142) on CSR. During discussion following Rob's presentation, there was concern expressed about how this test could be used to evaluate oils, since it appears to be aimed at very long term seal force retention. It seems EMA, an OEM or the Elastomer Task Force will need to make a recommendation on whether to include CSR as a part of PC-10 elastomer tests and if so, how.
- 4.0 PC-10 Accomplishments to Date
- 4.1 Jim McGeehan listed what progress has been made toward PC-10 thus far. See Attachment 3.

5.0 PC-10 Category

- 5.1 Dave Stehouwer made a presentation for Greg Shank on EMA considerations for the PC-10 category. See Attachment 4.

6.0 Diesel Fuel Sulfur

- 6.1 Chris Laroo reported that the EPA now predicts 96% of refinery output for on highway diesel fuel will be ULSD by June of 2006. There apparently is some consideration being given to dyeing this less than 15 ppm S fuel yellow. See Attachment 5.

7.0 Chemical Limits

- 7.1 Pat Fetterman gave a report for Rick Finn on the Chemical Limits Task Force status. See Attachment 6. There has not been much information submitted thus far and much of what has, is not in the form requested. Thus, the EMA staff, which does not have expertise in the after treatment area, does not know how to appropriately handle the information that has been submitted. So, the Task Force is contemplating seeking permission from the data submitters to have the information reviewed by a small group of knowledgeable people, for the purpose of organizing and using the data while still protecting the anonymity of the sources. The Task Force also believes the timeframe for submitting data should be extended.

8.0 Backward Compatibility

- 8.1 Jim McGeehan raised the subject of backward compatibility for PC-10 oils and the OEM's agree that it is very desirable. But, potential limits on P, S, and ash may make it uneconomical to achieve. See Attachment 7.

9.0 Engine Tests

- 9.1 Dave Stehouwer reported on the ISM test status (See Attachment 8). Comments from the floor include a desire to use existing reference oils and concerns over the test's ability to discriminate on crosshead (valve bridge) wear. Cummins expects the CI-4 substitution matrix to be completed in the 2nd quarter of 2004.
- 9.2 Dave Stehouwer also reviewed the ISB test status (See Attachment 9). The primary wear measurement parameters being looked at are tappets, cam lobes and cam journals. They expect to have the procedure solidified and discrimination data available by June 2004.
- 9.3 Abdul Cassim reported on the C13 test program (See Attachment 10). CAT intends to have CI-4 Supplement test development work done by end of the 1st quarter in 2004 and the PC-10 test development work done by end of the 3rd quarter in 2004. First tests should start in mid-December, 2003. CAT also raised the possibility that the PC-10 test could have closed crankcase ventilation (CCV) and possibly some exhaust after treatment evaluation. Abdul indicated however, that evaluation of these two possibilities would be carried out in parallel to the deposit test development. The announcement of the possibility of these features (CCV & after treatment) being part of the PC-10 C13 test created quite a stir in the panel since for over nine months the direction has been toward chemical limits and no CCV.

10.0 PC-10 Timeline

- 10.1 Bill Runkle presented a PC-10 timeline which was then extensively remodeled during the meeting. See Attachment 11. Jim McGeehan also displayed a timeline he had compiled (See Attachment 12) and in the end, the two were in fair agreement. Main near term points are that chemical limit data need to be in by April 1, 2004 and chemical limits selected by the June 2004 meeting.

11.0 Base Stocks

- 11.1 Dave Stehouwer raised a concern about the sulfur level in engine oil base stocks...with its exhaust after treatment implications. API and the PCMO folks have just concluded a study on Group II base stock availability and there may be a possibility that study could be expanded to include needs for heavy duty.

12.0 Funding

- 12.1 Steve Kennedy reported that all the funding stakeholders have met, but not much has happened yet. The ACC is asking that new test development funding come from EMA and API.

13.0 Adjournment

- 13.1 The Supplementary session adjourned at 11:55 a.m. on December 8, 2003, after Dave Stehouwer had brought up what was agreed to be a DEOAP issue regarding the CI-4 Supplement.

14.0 Call to Order

- 14.1 Chairman Jim McGeehan called the HDEOCP meeting to order at 1:39 p.m. on December 9, 2003, in the Regency D Ballroom of the Hyatt Regency Hotel in Phoenix, Arizona. There were 17 members present or represented and approximately 55 guests present. The attendance list is shown as Attachment 13.

15.0 Agenda

- 15.1 The published agenda (Attachment 14) was reviewed and Becky Grinfield / Seals moved to the top because of meeting conflicts.

16.0 Previous Meeting Minutes

- 16.1 Dave Stehouwer moved and Lew Williams seconded a motion to accept the October 8, 2002 meeting minutes as distributed and posted on the TMC web site. The motion passed via unanimous voice vote. Subsequently, typos in paragraphs 8.1 and 8.2 have been brought to my attention. The third line of 8.1 should read..."an SAE seal" and the first line of 8.2 should read..."Becky Grinfield".

17.0 Membership

- 17.1 The membership list (Attachment 15) was reviewed and there were no changes.

18.0 Chairman's Comments

- 18.1 Chairman McGeehan again emphasized the need to deliver PC-10 on time.

19.0 Seals Status

- 19.1 Becky Grinfield did not repeat yesterday's report, but she and Terry Bates brought up the issue of TMC monitoring for the elastomer tests. Terry Bates moved that the TMC monitor the current test on four elastomers in CI-4. Greg Shank seconded the motion. During discussion an opinion was noted that if a new material were to be added for future categories, it would be easier to add if the current test was already being monitored. John Zalar responded when questioned, that in the past the TMC has levied something like a \$5000.00 annual fee per lab for tests of this nature that the TMC monitors. Concern was voiced about the batch to batch variation of the elastomers, but since the candidate fluid results are compared to reference fluid results on coupons from the same

elastomer batch, there shouldn't be a problem. Also, TMC monitoring will help keep track of the variations. The motion passed with 11 votes for, 0 against and 6 abstains.

20.0 PC-10 Timeline

20.1 Bill Runkle displayed the revised timeline (Attachment 11) again and discussion focussed on when to freeze the chemical limits. The OEM's seemed to feel they could have their data in by April 1st. So, Charlie Passut moved and Abdul Cassim seconded a motion that the chemical limits be frozen at the June 22, 2004 HDEOCP meeting, with an exit ballot to be issued in mid-April. The motion passed with 16 for, 0 against and 0 abstain.

21.0 PC-10 Tests and Fuel Sulfur Levels

21.1 Jim McGeehan displayed his chart of proposed tests and fuel sulfur levels (See Attachment 16).

21.2 Greg Shank presented material from Mack indicating they intend to pursue a T-12 test, using a new engine, which will be available in the 2nd quarter of 2004, to replace the T-10 test. See Attachment 17. The new engine will have different cylinder kit components and materials and will run with up to 30% EGR.

21.3 The EMA has requested that the Sequence IIIG test be included as a PC-10 requirement, for oxidation protection. This raised concern by the panel over whether there would be sufficient Group II base stock available for both PCMO and HD lubricant needs. As a result of the previous day's discussions on this subject, it seems that API is already exploring the possibility of extending the Kline study on Group II availability.

21.4 Jim McGeehan was asked to add the "1N" and "CCV" to his slide of PC-10 tests. (Done)

22.0 DEOAP Report

22.1 Steve Kennedy presented a report from the DEOAP (Attachment 18) on the CI-4 Supplement status. This raised the question of whether the "Supplement" should be included in D4485. After considerable discussion, Steve Kennedy recommended that the CI-4 Supplement information be included in D4485. Pat Fetterman seconded the motion, which passed with 17 for, 0 against and 0 abstains.

22.2 Dave Stehouwer asked that the Cummins request for a minimum 10 TBN limit for the CI-4 Supplement be recorded as a point of information.

23.0 Next Meeting

23.1 The next meeting is provisionally set for February 19, 2004 in Phoenix and the one following that for April 15, 2004 in Chicago.

24.0 Adjournment

24.1 The meeting was adjourned at 3:45 p.m. on December 9, 2003.

Submitted by:

Jim Wells
Secretary to the HDEOCP