



Committee D-2 ON PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: N. DAVID SMITH, North Carolina Dept. of Agric., 2 West Edenton St., P.O. Box 27647, Raleigh, NC 27611 (919-733-3313)
FAX: 919-715-0524

First Vice-Chairman: SUSAN E. LITKA, UOP Research Center, 50 East Algonquin Rd., P.O. Box 5016, Des Plaines, IL 60017-5016
(708-391-3390)

Second Vice-Chairman: KURT H. STRAUSS, 69 Brookside Rd., Portland, ME 04103 (207-773-4380) FAX: 207-775-6214

Secretary: KENNETH O. HENDERSON, Castrol North America, Automotive Div., 240 Centennial Ave., Piscataway, NJ 08854
(908-980-3630) FAX: 908-980-9519

Assistant Secretary: W. JAMES BOVER, Exxon Biomedical Sciences, Inc., Mettlers Rd., CN2350, East Millstone, NJ 08875-2350 (908-873-6318)
FAX: 908-873-6009

Staff Manager: EARL R. SULLIVAN (215-299-5514)

August 12, 1999

Reply to: Mark Cooper
Chevron Chemical Co.
4502 Centerview Dr. Ste. 210
San Antonio, TX 78228
P 210 731-5606
F 210 731-5699
email mawc@chevron.com

Unconfirmed Minutes of the ASTM Mack T10 Task Force

**Held in St. Louis Missouri
on June 21, 1999**

This document is not an ASTM standard and is not under consideration within an ASTM technical committee to become an ASTM standard. It shall not be reproduced or circulated or quoted, in whole or in part, outside of ASTM committee activities, except with the approval of the Chairman of the Committee with jurisdiction and the President of the Society. *Copyright ASTM, 1916 Race Street, Philadelphia, PA 19103. All Rights Reserved.*

1. Call to Order

1.1 Brian Lawrence began the meeting by introducing himself as the chairman and reviewing the agenda which is shown as Attachment 1. Brian indicated that the group would probably be very active during the next several months because the time frame for completing the development of the Mack T10 test is relatively short.

1.2 Mark Cooper, the task force secretary, discussed several administrative matters. The meeting minutes will be located on the TMC's Web site along with the membership list. Attachments will not be located on the TMC's Web site if they are images due to file space limitations. Members and guests will be notified by email (or fax if no email address is available) that the meeting minutes have been posted on the TMC's Web site. Copies of the attachments will be mailed to each member and guest. Meeting notices will also be sent by email (or fax if no email address is available).

1.3 Phil Scinto suggested that the T10 Research Report be included on the TMC's Web site.

1.4 Jeff Clark will write the Mack T10 test procedure which will also be posted on the TMC's Web site.

2. T10 Test Development Status

2.1 A time line for the development of the T10 test was presented by Brent Shoffner and is shown as Attachment 2.

2.2 Greg Shank presented some information on the current status of the T10 test. Greg's slides are shown as Attachment 3.

2.3 Each engine will cost \$35K. This price includes the EGR system, ECM's and wiring harnesses. Delivery of engines was estimated to begin around July 1st; the initial six engines will be delivered at a rate of about one engine per week.

2.4 Don Marn asked when other engines (after the original six) would be delivered. Greg indicated Mack would provide additional engines as soon as they could. Ken Goshorn indicated that the camshaft and the EGR system are currently the limiting factors.

2.5 Greg Shank also presented Mack's goals for the T10 test:

- 1) T10 to be used to evaluate ring and liner wear, EOT TAN, Pb corrosion and oxidation/effects of EGR
- 2) 4 - 5% soot
- 3) operation at peak torque
- 4) possible shutdown
- 5) nominal 250 hour test length

2.6 Greg's last slide showed TBN depletion on 3 different runs using various speed, load and EGR rate combinations. Greg indicated that Mack still had some work to do on the test procedure and would provide more information on the test procedure as it becomes available.

3. T10 Piston Selection

3.1 Greg Shank noted that future production of ETECH engines prior to the implementation of EGR will require a piston change. The new hardware will be available in the fall of 1999. Two changes have been incorporated in the new design: 1) the bronze bushing in the pin bore has been eliminated. 2) a magnesium phosphate coating has been applied to the ring grooves, lands and undercrown. The magnesium phosphate coating may interfere with wear in the ring grooves and makes the piston dark gray.

3.2 Greg Shank recommended using the T9 style piston for the T10 test. The changes noted in the previous paragraph are related to cost reduction and not related to the implementation of EGR.

3.3 Dino Righi asked if using the T9 style piston would require a buyout. Ken Goshorn indicated that the T9 style piston could be produced later so a buyout would not be necessary.

3.4 Jim Collum made the following motion (2nd by John Graham)

Motion: *Use the T9 style cylinder kit hardware for the T10 test.*

Motion Passed: *Unanimously*

3.5 Brian Lawrence asked about long-term availability of the cylinder kit hardware. Greg Shank indicated this hardware would be available as long as the test was required.

4. Oil Temperature Control

4.1 Jim Collum presented simplified drawings of two possible oil temperature control systems. A drawing of both systems is shown as Attachment 4. One system uses a bypass on the coolant side of the oil cooler, and the other system uses a bypass on the oil side of the oil cooler.

4.2 Brian Lawrence noted that the intention was to reduce effects of variation in oil temperature on delta Pb and to allow higher bulk oil temperature to enhance oxidation.

4.3 Ken Goshorn asked if oil temperature feedback control would be used with the revised system. Jim Collum indicated that was the intention.

4.4 Brian Lawrence suggested that the details of the oil temperature control system should be deferred to the Operations and Hardware subgroup. Greg Shank indicated the design should be finalized early in the test development process. Brian Lawrence noted that the Operations and Hardware subgroup would be meeting "soon".

5. CPD Overview of Kit Availability

5.1 Gary Tietze noted that TEI will work with Mack and the task force and provide T10 hardware for the industry. Gary indicated that he will continue to be the representative from TEI.

6. Discrimination Matrix

6.1 Some details about the plans for the Discrimination Matrix are shown as Attachment 5. Greg Shank noted that three oils would be used in the discrimination matrix: 1) 1005 2) Oil X 3) Oil Z. Brian Lawrence asked Greg to comment on the selection criteria for Oils X and Z. Greg indicated that these two oils would be "better than 1005". Brian Lawrence asked in what respect would Oils X and Z be better than 1005. Greg indicated that these oils would provide better T9 corrosion performance.

7. Formation of Subgroups

7.1 Brian Lawrence indicated that two subgroups would be formed to oversee some specific activities. Both subgroups will report directly to the T10 Task Force.

7.2 Jim Collum volunteered to be the chairman of the Operations and Hardware subgroup.

7.3 A Chem Lab Methodology subgroup will oversee the development of improved TAN/TBN methodology and IR assessment of used oil degradation. A suggestion was made that the ASTM surveillance panels currently in charge of these test types should oversee this work. Brian Lawrence indicated that the plan was to eventually dovetail this work into the ASTM surveillance panels which oversee these test types. Brian also commented that the T10 Task Force probably had a better understanding of the improvements desired and a better understanding of the T9/T10 tests. Joe Franklin volunteered to head up the Chem Lab Methodology subgroup. A listing of volunteers for both subgroups is shown as Attachment 6.

8. LTMS Proposal for New Labs

8.1 Phil Scinto presented the LTMS Proposal for New Labs as shown in Attachment 8.

8.2 Various comments were made about the cost of extra reference tests, the cost versus the benefit and the cost to smaller labs. Phil noted that the more stands a lab has the greater the chance of triggering alarms which would require more tests. Therefore large labs do not necessarily get a cost benefit.

8.3 The Cummins M11 Surveillance Panel was planning to discuss and vote on this same issue for the M11 EGR test at their meeting which was going to be held in the same room immediately following the T10 Task Force meeting. In addition all of the persons who would be attending the Cummins M11 Surveillance Panel meeting were present at the T10 Task Force meeting. To save time Brian Lawrence asked if anyone objected to taking separate votes on this issue for each panel/task force taken in the T10 Task Force meeting. No one objected to Brian's suggestion.

8.4 Dino Riggi made the following motion (2nd by Mark Cooper):

Motion: *The first new stand in each test lab must complete 4 reference tests (or equivalent number of industry matrix tests) without triggering any Shewhart or EWMA alarms (after the completion of the 4th test only) before the lab (and any additional stands from the lab) can be considered for calibration. Subsequent stands from the lab will be considered calibrated after the completion of 2 acceptable reference tests.*

Motion Failed (T10): 3 for, 4 opposed, 8 abstain [15 T10 voting members present]

Motion Failed (M11 EGR): 3 for, 5 against, 7 abstain [16 M11 voting members present]

8.5 Greg Shank made the following motion (2nd by John Graham):

Motion: *The first new stand in each test lab must complete 3 reference tests (or equivalent number of industry matrix tests) without triggering any Shewhart or EWMA alarms (after the completion of the 3rd test only) before the lab (and any additional stands from the lab) can be considered for calibration. Subsequent stands from the lab will be considered calibrated after the*

completion of 2 acceptable reference tests.

Motion Passed (T10): 6 for, 3 against, 6 abstain

Motion Passed (M11 EGR): 8 for, 3 against, 5 abstain

8.6 Greg Shank asked if the task forces have the final decision on this issue or do these motions have to be approved at other levels within Subcommittee B. Don Marn indicated that the task forces have the final decision on this issue.

9. Next Meeting

9.1 The next meeting is scheduled for September 9th in Richmond, Virginia in conjunction with meetings for the Mack Test Surveillance Panel and the M11 Surveillance Panel.

10. Adjournment