

ASTM Section D02.B0.10

Minutes of Meeting on June 23, 2014

Call to Order

ASTM Section D02.B0.10 on Standards Acceleration met on Monday, June 23, 2014 at 8:00 am at the JW Marriott Hotel in Indianapolis, IN. There were eight members and two guests in attendance. Both guests requested to be members and have been added to the membership list. The list of membership and attendance is shown in Attachment 1.

Chairman's Comments

As always, each member is encouraged to review the scope and objectives of the committee to understand what we do. Each member needs to recognize that D02.B0.10 maintains a staff of facilitators to expedite the establishment of standards relating to automotive lubricants. The committee does not develop, approve or oversee test method processes. The facilitators' activities include upgrading previously developed and approved test procedures to ASTM test methods, and revising standards as needed once they are adopted. The committee ensures that the *Form and Style for ASTM Standards* is followed.

Minutes from December 9, 2013 Meeting

The December 9, 2013 meeting minutes were approved with one correction that is posted.

Membership

Ryan Jilka requested voting membership and Sarah Nuss-Warren requested non-voting membership through the attendance list.

Facilitator Reports

Reports from three facilitators were received. Written reports submitted are shown in Attachment 2.

December-June 2014	
Facilitator	Hours
Lyle Bowman	28
Terry Bates	55
Hap Thompson	17

Facilitator Assignments

Current facilitator assignments were reviewed and are summarized in Attachment 3. Some of the new test procedures are starting to be developed and it is expected that drafts of test procedures will be available the 2nd quarter of 2014.

Old Business

The sections of test methods that discuss the role of the TMC were reviewed and revised by the facilitators over the past period. The current revision was presented by the chairman. After review a few additional changes were discussed and approved as shown in Attachment 4. These sections will be incorporated into new test methods as they are developed. In addition, existing test methods will be updated as information letters are released. The revised sections are posted on the TMC website at:

<ftp://ftp.astmtmc.cmu.edu/docs/B10/minutes/>

New Business

No New Business

Scope & Objectives Review

No changes to the existing Scope and Objectives were made (Attachment 5)

Next Meeting

The meeting will be Monday December 8, 2014 in San Diego, CA

Adjournment



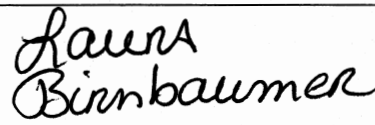



The meeting was adjourned at approximately 8:45 am.

Frank M. Farber
Chairman, ASTM D02.B0.10

Attachments

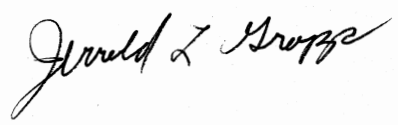

B10 Attendance List
June 23, 2014
Indianapolis, IN

Attachment 1
Page 1 of 3

Contact Information	Membership Status	Present
Mark Adams Tribology Testing Labs 7030 East Street Saginaw, MI 48601 989-777-0839 mark@tribologytesting.com	Voting Member	
Terry Bates 50 Tower Rd. North Heswall, Wirral CH60, 6RS UNITED KINGDOM +44-151-342-1193 batesterryw@aol.com	Voting Member	
Laura Birnbaumer Chevron Oronite 100 Chevron Way 60-1146 Richmond, CA 94802 LABI@Chevron.com	Non-Voting Member	
Lyle O. Bowman 728 Montecillo Road San Rafael, CA 94903 415-479-3004 FAX 415-472-1570 jbfoodie3@att.net	Voting Member	
George E. Callis Spectrum Corporation 2019 SE Oxtan Drive Port St. Lucie, FL 34952-6066 561-337-5060 FAX 561-337-5061 ecallis@spectrumcorporation.com	Non-Voting Member	
Frank Farber ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206 412-365-1030 FAX 412-365-1047 fmf@astmtmc.cmu.edu	Chairman/Secretary	
Joe Franklin Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238 210-523-4671 FAX 210-684-6074 joe.franklin@intertek.com	Voting Member	

B10 Attendance List
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Attachment 1
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Jerry Gropp The Lubrizol Corporation 29400 Lakeland Blvd. Wickliffe, OH 44092 440-347-1223 FAX 440-347-1555 jlg@lubrizol.com	Voting Member	
Ted Selby Savant, Inc. 4800 James Savage Road Midland, MI 48642 989-496-2301 FAX 989-496-3438 tselby@savantgroup.com	Non-Voting Member	
William Sullivan W. T. Sullivan, Inc. 5 Scheiber Drive Brick, NJ 08723 908-930-3512 FAX 267-220-7750 wtsullivan@comcast.net	Non-Voting Member	
E. A. Hap Thompson PPL Standards Development 404 Twin Oaks Lane St. Johns, FL 32259 904-287-9596 FAX 904-287-9596 hapjthom@aol.com	Voting Member	
Ben Weber Southwest Research Institute 6220 Culebra Road San Antonio, TX 78228-0510 210-522-5911 FAX 210-684-7523 bweber@swri.edu	Non-Voting Member	

Attachment 1
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[illegible]

E. A. Hap Thompson
404 Twin Oaks Lane
St. Johns, FL 32259
904-287-9596
June 23, 2014

Sequence VI E

The Draft Standard is 99% complete at this time and the only lacking is the precision statement. Once the precision matrix is completed the SP will have to approve the test and forward our approval to the Pass Car Panel. I expect to have all the information for standard revision by late fall.

Sequence IV B

The Sequence IVB test procedure draft will be completed by end of July, 2014. The Sequence IVB engine build procedure has been established, and drafting of the engine build manual is in process. Test conditions are currently undergoing optimization using a transient engine operating cycle. Procedures to measure the various aspects of camshaft and lifter wear have been documented. OHT has been contracted as the CPD (central parts distributor) for all consumable test hardware and some test stand components, and OHT has placed orders with Toyota for all critical and non-critical components. TEI has been contracted as the supplier of the Golden Test Stand and is in the process of stocking spare Golden Test Stand components. Haltermann Products HF-0008 KA24E Green Fuel has been selected as the Sequence IVB test fuel. The bill of materials for fabrication of the Golden Test Stand has been delivered to the Golden Test Stand supplier and six (6) Golden Test Stands have been fabricated and delivered to three (3) test labs. An industry Sequence IVB Ad Hoc meeting was conducted on 4/24/14. Sequence IVB test development and preparation for the ASTM precision matrix is anticipated to be completed by August, 2014.

Respectfully submitted,

E. A. Hap Thompson

E. A. Hap Thompson
Facilitator

Lyle Bowman's Facilitator Report to B-10
June 23, 2014

About 28 hours were spent on various assignments since the December 2013 Meeting.

These efforts have mostly involved preparation of 17 D02 ballot items from approved Information Letters, reviewing editor's proofs, and reviewing proposed new Information Letters.

All 17 D02 ballot items were approved with minor comments.

Old business: Regarding the D4485 item that was balloted in the Spring 2013 D02 Ballot to replace g/MJ with g/kWh as the primary oil consumption unit, the D02 Manager recently informed me that there apparently had been an inter-ASTM communication problem, and the COS review of the results of this ballot item will now probably take place at its September 2014 meeting.

Re my new facilitator assignments, Ron Romano was contacted (7/15/13) and I requested to be 'put in the loop' for development of the VH, Chain Wear, and Low Speed Preignition test methods; no response received from him as yet. Also contacted Dale Smith re the L-33-1 replacement test (2/4/14) and have had several useful correspondence exchanges. He estimated my involvement wouldn't be useful until possibly July 2014.

Respectfully submitted,
Lyle Bowman

Facilitator Report to ASTM Section D02.B0.10 Standards Acceleration

Facilitator: Terry Bates

Report period: Jan 2014 to June 2014

Total time spent Jan 1, 2014 to May 30, 2014 was 55 hours.

Role of the TMC

To ensure consistency across all methods of the text involving TMC activities, generic text has been agreed by B0-10 for the Introduction, the Report section, and 4 annexes covering the TMC organization, calibration procedures, maintenance activities and related information. A revised version has been produced which includes a recent suggestion from Jerry Gropp pointing out the advantages of using TMC monitoring and some editorial comments from Lyle.

L-37-1 Test: Load-Carrying Capacity of Lubricants Used for Final Hypoid Drive Axles

The test is under the jurisdiction of the L-37 Surveillance Panel, chaired by Chris Prengaman.

Draft 2 was revised to incorporate the new text agreed with TMC for the Introduction, the Report Section and the Annexes describing the role of the TMC, etc.

The Task Force developing the test has been forced to change direction because the new hardware (a fully-assembled axle purchased from American Axle) was not capable of producing the desired level of severity. An alternative procedure has been under development since Jan 2014 using pinions and rings manufactured by Gleason. Each lab will build their own axles by installing these pinions and rings in the same (Dana) housing used in the L-37 test.

A new procedure has been developed and has been sent to the labs for review. I will carry out further editorial work on receipt of the reviewed copy. It is planned to have a final copy agreed by late summer to allow the labs to begin auditing their stands and processes to this version.

Caterpillar C13 Engine Oil Aeration Test

Surveillance Panel chair is Martin Thompson (SWRI).

A 2nd draft of the procedure incorporating SP recommendations has been written and the test labs are running 'prove out' runs prior to matrix testing. At least 3 runs involving reference oil 1005 and a CJ-4 development oil supplied by Lubrizol will be carried out at each test lab. This work is scheduled for completion end May 2014.

Editorial work has been started on draft 2.

Sequence IIIH (Chrysler Oxidation and Deposit Test)

Surveillance Panel chair is David Glaenzer (Afton).

The test can demonstrate severity and can discriminate between oils with different formulations. 0W-16 capability has been demonstrated. Three stands are set up at SWRI and stand-to-stand repeatability has been demonstrated. A long-term engine supply plan is in place. The next steps are to demonstrate reproducibility by Intertek and other labs, and to verify hardware before matrix. Precision and VGRA matrix could start in Sept.

It is anticipated that a draft procedure will be available around August for facilitating to an ASTM standard.

DDC D13 Scuffing Test

It was agreed at a meeting on June 12, 2014 that the DD13 Scuffing test will not be part of the PC-11 category. There will, therefore, be no requirement for facilitator support.

Current Facilitator Assignments

PC-11 Test Assignments

Test Type	Contact Person	Facilitator
C-13 Aeration Test	Martin Thompson – martin.thompson@swri.edu	Terry Bates
DDC/Daimler Scuffing Test	Jon Cruz – John.Cruz@Daimler.com	Terry Bates
Mack T-13	Sean Moyer - sam@astmtmc.cmu.edu	Hap Thompson

GF-6 Test Assignments

Test Type	Contact Person	Facilitator
Sequence VH	Ron Romano – ron.romano@ford.com	Lyle Bowman
Sequence IVB	Teri Kowalski - teri.kowalski@tema.toyota.com	Hap Thompson
Sequence VIE	Charlie Leverett – charlie.leverett@intertek.com	Hap Thompson
Chain Wear Test	Ron Romano – ron.romano@ford.com	Lyle Bowman
Low Speed Pre-Ignition Test (LSPI)	Ron Romano – ron.romano@ford.com	Lyle Bowman
Chrysler IIH	Haiying Tang - HT146@Chrysler.com	Terry Bates

Gear Test Assignments

Test Type	Contact Person	Facilitator
L-37-1	Chris Prengaman– Christopher.Prengaman@lubrizol.com	Terry Bates
L-33-1 (Replacement still in development)	Dale Smith – angela.trader@intertek.com	Lyle Bowman

INTRODUCTION

This test method is written for use by laboratories that utilize the portions of the test method that refer to ASTM Test Monitoring Center (TMC) services (see Annex A1). Laboratories that choose not to use the TMC services may simply disregard these portions.

Comment [TB1]: Insert footnote 'a' here

Comment [TB2]: Insert footnote 'b' here

The TMC provides reference oils, and engineering and statistical services to laboratories that desire to produce test results that are statistically similar to those produced by laboratories previously calibrated by the TMC.

In general, the Test Purchaser decides if a calibrated test stand is to be used. Organizations such as the American Chemistry Council require that a laboratory utilize the TMC services as part of their test registration process. In addition, the American Petroleum Institute and the Gear Lubricant Review Committee of the Lubricant Review Institute (SAE International) require that a laboratory utilize the TMC services in seeking qualification of oils against their specifications.

Footnote a:

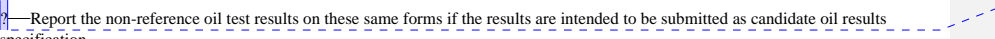
ASTM Test Monitoring Center, 6555 Penn Avenue, Pittsburgh, PA 15206-4489. www.astmtmc.cmu.edu.

Footnote b:

The advantage of utilizing the TMC services to calibrate test stands is that the test laboratory (and hence the Test Purchaser) has an assurance that the test stand was operating at the proper level of test severity. It should also be borne in mind that results obtained in a non-calibrated test stand may not be the same as those obtained in a test stand participating in the ASTM TMC services process.

XY. Report

XY.1 For reference oil results, use the standardized report form set available from the ASTM TMC and data dictionary for reporting test results and for summarizing operational data.

NOTE —Report the non-reference oil test results on these same forms if the results are intended to be submitted as candidate oil results against a specification.

Comment [TB3]: Insert appropriate Note number.

XY.1.1 Fill out the report forms according to the formats shown in the data dictionary.

XY.1.2 Transmit results to the TMC within 5 working days of test completion.

XY.1.3 Transmit the results electronically as described in the ASTM Data Communications Committee Test Report Transmission Model (Section 2 — Flat File Transmission Format) available from the ASTM TMC. Upload files via the TMC's website.

XY.2 Report all reference oil test results, whether aborted, invalidated, or successfully completed, to the TMC.

XY.3 *Deviations from Test Operational Limits*—Report all deviations from specified test operational limits.

XY.4 *Precision of Reported Units*—Use the Practice E29 rounding-off method for critical pass/fail test result data. Report the data to the same precision as indicated in data dictionary.

XY.5 In the space provided, note the time, date, test hour, and duration of any shutdown or off-test condition. Document the outcome of all prior reference oil tests from the current calibration sequence that were operationally or statistically invalid.

XY.6 If a calibration period is extended beyond the normal calibration period length, make a note in the comment section and attach a written confirmation of the granted extension from the TMC to the test report. List the outcomes of previous runs that may need to be considered as part of the extension in the comment section.

ANNEXES
(Mandatory Information)

A1. ASTM TEST MONITORING CENTER ORGANIZATION

A1.1 *Nature and Functions of the ASTM Test Monitoring Center (TMC)*—The TMC is a non-profit organization located in Pittsburgh, Pennsylvania and is staffed to: administer engineering studies; conduct laboratory inspections; perform statistical analyses of reference oil test data; blend, store, and ship reference oils; and provide the associated administrative functions to maintain the referencing calibration program for various lubricant tests as directed by ASTM Subcommittee D02.B0 and the ASTM Executive Committee. The TMC coordinates its activities with the test sponsors, the test developers, the surveillance panels, and the testing laboratories. Contact TMC through the TMC Director at:

ASTM Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206-4489
www.astmtmc.cmu.edu

A1.2 *Rules of Operation of the ASTM TMC*—The TMC operates in accordance with the ASTM Charter, the ASTM Bylaws, the Regulations Governing ASTM Technical Committees, the Bylaws Governing ASTM Committee D02, and the Rules and Regulations Governing the ASTM Test Monitoring System.

A1.3 *Management of the ASTM TMC*—The management of the Test Monitoring System is vested in the Executive Committee elected by Subcommittee D02.B0. The Executive Committee selects the TMC Director who is responsible for directing the activities of the TMC.

A1.4 *Operating Income of the ASTM TMC*—The TMC operating income is obtained from fees levied on the reference oils supplied and on the calibration tests conducted. Fee schedules are established by the Executive Committee and reviewed by Subcommittee D02.B0.

A2. ASTM TEST MONITORING CENTER: CALIBRATION PROCEDURES

A2.1 *Reference Oils*—These oils are formulated or selected to represent specific chemical, or performance levels, or both. They are usually supplied directly to a testing laboratory under code numbers to ensure that the laboratory is not influenced by prior knowledge of acceptable results in assessing test results. The TMC determines the specific reference oil the laboratory shall test.

A2.1.1 *Reference Oil Data Reporting* – Test laboratories that receive reference oils for stand calibration shall submit data to the TMC on every sample of reference oil they receive. If a shipment contains any missing or damaged samples, the laboratory shall notify the TMC immediately.

A2.2 Calibration Testing:

A2.2.1 Full-scale calibration testing shall be conducted at regular intervals. These full-scale tests are conducted using coded reference oils supplied by the TMC. It is a laboratory's responsibility to keep the on-site reference oil inventory at or above the minimum level specified by the TMC test engineers.

Comment [TB4]: : In the Introduction, reference Annex A1 at the end of the first sentence (i.e. 'This test method is written for use by laboratories that utilize the portions of the test method that refer to ASTM Test Monitoring (TMC)¹ services (see Annex A1).'

Comment [TB5]: In the relevant section of the test method, reference Annex A2 as follows: "Annex A2 describes calibration procedures using the TMC reference oils, including their storage and conditions of use, the conducting of tests, and the reporting of results."

A2.2.2 Test Stands Used for Non-Standard Tests—If a non-standard test is conducted on a previously calibrated test stand, the laboratory shall conduct a reference oil test on that stand to demonstrate that it continues to be calibrated, prior to running standard tests.

A2.3 Reference Oil Storage—Store reference oils under cover in locations where the ambient temperature is between -10 °C and +50 °C.

A2.4 Analysis of Reference Oil—Unless specifically authorized by the TMC, do not analyze TMC reference oils, either physically or chemically. Do not resell ASTM reference oils or supply them to other laboratories without the approval of the TMC. The reference oils are supplied only for the intended purpose of obtaining calibration under the ASTM Test Monitoring System. Any unauthorized use is strictly forbidden. The testing laboratory tacitly agrees to use the TMC reference oils exclusively in accordance with the TMC's published Policies for Use and Analysis of ASTM Reference Oils, and to run and report the reference oil test results according to TMC guidelines. Additional policies for the use and analysis of ASTM Reference Oils are available from the TMC.

A2.5 Conducting a Reference Oil Test—When laboratory personnel are ready to run a reference calibration test, they shall request an oil code via the TMC website.

A2.6 Reporting Reference Oil Test Results—Upon completion of the reference oil test, the test laboratory transmits the data electronically to the TMC, as described in Section 2. The TMC reviews the data and contacts the laboratory engineer to report the laboratory's calibration status. All reference oil test results, whether aborted, invalidated, or successfully completed, shall be reported to the TMC.

A2.6.1 All deviations from the specified test method shall be reported.

Comment [TB6]: This is a reference to the 'Report Section'. Insert appropriate section number.

A3. ASTM TEST MONITORING CENTER: MAINTENANCE ACTIVITIES

A3.1 Special Reference Oil Tests—To ensure continuous severity and precision monitoring, calibration tests are conducted periodically throughout the year. Occasionally, the majority or even all of the industry's test stands will conduct calibration tests at roughly the same time. This could result in an unacceptably large time frame when very few calibration tests are conducted. The TMC can shorten or extend calibration periods as needed to provide a consistent flow of reference oil test data. Adjustments to calibration periods are made such that laboratories incur no net loss or gain in calibration status.

A3.2 Special Use of the Reference Oil Calibration System—The surveillance panel has the option to use the reference oil system to evaluate changes that have potential impact on test severity and precision. This option is only taken when a program of donated tests is not feasible. The surveillance panel and the TMC shall develop a detailed plan for the test program. This plan requires all reference oil tests in the program to be completed as close to the same time as possible, so that no laboratory/stand calibration status is left pending for an excessive length of time. In order to maintain the integrity of the reference oil monitoring system, each reference oil test is conducted so as to be interpretable for stand calibration. To facilitate the required test scheduling, the surveillance panel may direct the TMC to lengthen and shorten reference oil calibration periods within laboratories such that the laboratories incur no net loss or gain in calibration status. To ensure accurate stand, or laboratory, or both severity assessments, conduct non-reference oil tests the same as reference oil tests.

A3.3 Donated Reference Oil Test Programs—The surveillance panel is charged with maintaining effective reference oil test severity and precision monitoring. During times of new parts introductions, new or re-blended reference oil additions, and procedural revisions, it may be

Comment [TB7]: In the relevant section of the test method, reference Annex A3 as follows: "Annex A3 describes maintenance activities involving TMC reference oils, including special reference oil tests, special use of the reference oil calibration system, donated reference oil test programs, introducing new reference oils, and TMC information letters and memoranda."

necessary to evaluate the possible effects on severity and precision levels. The surveillance panel may choose to conduct a program of donated reference oil tests in those laboratories participating in the monitoring system, in order to quantify the effect of a particular change on severity and precision. Typically, the surveillance panel requests its panel members to volunteer enough reference oil test results to create a robust data set. Broad laboratory participation is needed to provide a representative sampling of the industry. To ensure the quality of the data obtained, donated tests are conducted on calibrated test stands. The surveillance panel shall arrange an appropriate number of donated tests and ensure completion of the test program in a timely manner.

A3.4 Intervals Between Reference Oil Tests—Under special circumstances, such as extended downtime caused by industry-wide parts or fuel shortages, the TMC may extend the intervals between reference oil tests.

A3.5 Introducing New Reference Oils—Reference oils produce various results. When new reference oils are selected, participating laboratories will be requested to conduct their share of tests to enable the TMC to recommend industry test targets. ASTM surveillance panels require a minimum number of tests to establish the industry test targets for new reference oils.

A3.6 TMC Information Letters—Occasionally it is necessary to revise the test method, and notify the test laboratories of the change, prior to consideration of the revision by Subcommittee D02.B0. In such a case, the TMC issues an Information Letter. Information Letters are balloted semi-annually by Subcommittee D02.B0, and subsequently by D02. By this means, the Society due process procedures are applied to these Information Letters.

A3.6.1 Issuing Authority—The authority to issue an Information Letter differs according to its nature. In the case of an Information Letter concerning a part number change which does not affect test results, the TMC is authorized to issue such a letter. Long-term studies by the surveillance panel to improve the test procedure through improved operation and hardware control may result in the issuance of an Information Letter. If obvious procedural items affecting test results need immediate attention, the test sponsor and the TMC issue an Information Letter and present the background and data supporting that action to the surveillance panel for approval prior to the semiannual Subcommittee D02.B0 meeting.

A3.7 TMC Memoranda—In addition to the Information Letters, supplementary memoranda are issued. These are developed by the TMC and distributed to the appropriate surveillance panel and participating laboratories. They convey such information as batch approvals for test parts or materials, clarification of the test procedure, notes and suggestions of the collection and analysis of special data that the TMC may request, or for any other pertinent matters having no direct effect on the test performance, results, or precision and bias.

A4. ASTM TEST MONITORING CENTER: RELATED INFORMATION

A4.1 New Laboratories—Laboratories wishing to become part of the ASTM Test Monitoring System will be requested to conduct reference oil tests to ensure that the laboratory is using the proper testing techniques. Information concerning fees, laboratory inspection, reagents, testing practices, appropriate committee membership, and rater training can be obtained by contacting the TMC Director.

A4.2 Information Letters: COTCO Approval—Authority for the issuance of Information Letters was given by the committee on Technical Committee Operations in 1984, as follows: “COTCO recognizes that D02 has a unique and complex situation. The use of Information Letters is approved providing each letter contains a disclaimer to the affect that such has not

Comment [TB8]: In the relevant section of the test method, reference Annex A4 as follows: “Annex A4 provides information regarding new laboratories, the role of the TMC regarding precision data, and the calibration of test stands used for non-standard tests.”

obtained ASTM consensus. These Information Letters should be moved to such consensus as rapidly as possible.”

A4.3 *Precision Data*—The TMC determines the precision of test methods by analyzing results of calibration tests conducted on reference oils. Precision data are updated regularly. Current precision data can be obtained from the TMC.

ASTM Section D02.B0.10 Standards Acceleration

Scope and Objectives

Scope

The section on Standards Acceleration maintains a staff of facilitators to expedite the establishment of standards relating to automotive lubricants. Facilitators' activities include upgrading test procedures to ASTM test methods, and revising standards as needed once they are adopted; the *Form and Style for ASTM Standards* to be followed in all cases.

Section 10 activities will include but are not limited to the following:

1. Determine priority among documents to be advanced to standards with the help of facilitators, based upon input from the appropriate subcommittee.
2. Evaluate and approve new facilitator candidates, as justified by the need for new facilitators.
3. Assign specific documents to selected facilitators.
4. Hear and evaluate the facilitators' reports presented at semiannual meetings of Committee D02. (Each facilitator's report shall be brief and shall include progress, problems, and costs related to his or her standards development activity.)
5. Assist the Test Monitoring Center in establishing funding for the Standards Acceleration Program.
6. Process revisions to D 4485, *Standard Specification for Performance of Engine Oils*.
7. Carry out any other activities relative to the Standards Acceleration Program as needed, or as directed by Subcommittee D02.B0.

Objectives

1. Report a summary to Subcommittee D02.B0 and to appropriate sections of the Standards Acceleration Program status, including actions for approval, at each semi-annual meeting of Subcommittee D02.B0.

Date of last review: 6/14