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Issued: September 21, 2016

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Technical Guidance Committee
Meeting Minutes
8-11-2019

Below are the unapproved minutes of the August 11, 2016 Technical Guidance Committee meeting held in Dearborn, Michigan.

This document is not an ASTM standard; it is under consideration within an ASTM technical committee but has not received all approvals required 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 having jurisdiction and the president of the society. Copyright ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

The meeting was called to order at 2:00pm Eastern by the Chairman, Mr. Patrick Lang.

The agenda is included as (Attachment 1).

Chairman Comments
Pat introduced himself to those present on the conference line and participating in person at the table followed by group introductions. Pat picked up after the introductions, thanking everyone for participating, then indicating the group has a long list of action items to address along with approval of a new scope and objectives for the Technical Guidance Committee (TGC). He indicated the group would not have ample time to address all the items listed on the agenda and therefore today's meeting would focus on the more critical issues the industry is currently facing.

Motion and Action Item Recorder and Secretary
Bill Buscher offered to be the Motion and Action Item recorder and Sid Clark offered to be the Secretary for the meeting.

Membership
The membership list was passed around the room and is included as (Attachment 2).

The group reviewed and approved the minutes from the May 16, 2016 TGC meeting.
Motion for approval;
Pat Lang / Frank Farber

Review of Action Items from the May 29, 2016 meeting
Pat Lang reviewed the Action Items from the May 29, 2016 TGC meeting (copy included in these minutes as Attachment 3) and circulated copy of an revised Scope and Objectives for review by the membership.

Discussion;

1) The TGC chair to distribute the revised TGC scope and objectives to the entire TGC membership distribution for review and eventual acceptance at a future TGC meeting.

Circulated for review, and moved to the end of the Agenda for Today's meeting.

2) The TMC to acquire the older non-electronic TGC documents, review the documents for importance, then scan the important documents and post the scanned files on the TMC website.

The TMC worked with Messrs. Andy Ritchie and Gordon Farnsworth to identify aforementioned older TGC documents and scan them into the TMC Document Library. These documents can be accessed at ftp://ftp.astmtmc.cmu.edu/docs/technicalguidancecommittee/minutes/

3) Andy Ritchie to assist the TMC in identifying the dates for the older non-electronic TGC documents.

Completed as part of Action Item #2

4) The TGC chair to recommend to the HDEO Surveillance Panel chairpersons that they consider adoption of the rater calibration protocols that the PCMO test types follow.

Open Action Item

5) The TGC chair to recommend to the HDEO Surveillance Panel chairpersons that the HDEO merit system be evaluated for whether or not the final resulting value should be reported to the same precision as the pass/fail limit.

Open Action Item

6) The TGC to develop standardized wording for the process for substituting materials, which can be applied to all test types.

Open Action Item

7) The Sequence VGA ASTM test procedure will include a fuel approval procedure. This fuel approval procedure can be considered for adaption into other test types, test procedures.

Open Action Item

8) The Sequence VGA test procedure will include a critical parts list. This critical parts list can be considered for adaption into other test types, test procedures.

Open Action Item

9) The TGC to review the parts lists in each test procedure, starting with the PCMO test types, to determine if they list all necessary parts and if they properly identify the critical test parts.

Open Action item

10) The TGC to reinitiate the test fuel task force to continue work that was started based off of the task force scope and objectives, updated on January 20, 2011.

Mr. Jim Matasic of Lubrizol volunteered to lead the task force and asked anyone interested in being part of this task force to contact him.

Jim Matasic
Engine Oils Testing Manager
Desk: 440-347-2487 Cell: 440-749-4650
Mail Drop: 123A
29400 Lakeland Blvd.
Wickliffe, Ohio 44092

11) The TGC to attempt to locate any documentation on declaring a test unavailable, review the documentation and update it with any missing content, or create new documentation if none could be found, and make a recommendation to the ASTM Test Monitoring System Executive Committee.

This topic will be discussed during Today's meeting

Current Agenda Item Discussion
After review of the Action Items from the last meeting, Pat moved to discussion on the current Agenda Items picking up with:

Agenda Item #8 ASTM Process for unavailable or out-of-control tests…..

Pat reviewed the reasoning behind the need for additional direction regarding how the industry handles times when an ASTM Monitored Test may become unavailable to the users and therefore unavailable for product certification and licensing. New concerns within the industry indicate a need for additional direction within API 1509 Section 6.7.9 Provisional Licensing, not just for out-of-control tests, but also for tests that may become unavailable due to circumstances outside the users or Test Monitors control.

The group reviewed a presentation provided by Sid Clark titled "TGC Conversation Starters – Non-Available Test Determinations Actions and Notifications" referencing sections of the presentation throughout the following discussions. The presentation is included as (Attachment 4).

Group discussion continued with Mark Cooper asking if this concerned the Heavy Duty Classification Panel, to which many agreed "Yes" as API 1509, section 6.7.9, addresses both Light and Heavy Duty type testing for both "S" and "C" Categories. Joan Evans commented, there is a need to update API 1509, section 6.7.9 Provisional Licensing, to include direction not only for out-of-control tests, but additional direction for times when a test may become unavailable. Joan indicated there is work being done currently for CJ-4 Licensing concerns and API is looking for direction from the TGC and other industry organizations concerning these issues.

Pat Lang reviewed a document from earlier TGC activities covering suggested methods of determining how a test might be considered out-of-control based on its reference testing performance and control chart action alarms. This documents origin is from an earlier TGC meeting and it is unknown what actions may have been initiated within ASTM or API based on its content. The document is included in these minutes as (Attachment 5).

Since most documents seem to focus on out-of-control tests, and the industry needs clear direction, Pat Lang along with Jim Matasic suggested the membership work on providing direction from the TGC for all possible scenarios, including out-of-control and unavailable tests. Pat Lang commented on the need to also include direction on availability determinations and laboratory calibration status / testing during times when not all labs are out of materials at the same time. Pat reviewed the recent situation in the Sequence VIII Test where the current batch of materials was considered unusable and one lab still had an earlier batch of qualified materials. The question was asked, when does the industry consider a test unavailable to all labs. There was much discussion on this subject with concerns both on; 1) Testing being halted at all labs when parts are no longer available at both Independent Labs, 2) Testing continuing at any lab that is calibrated and running qualified materials, and 3) What are the guidelines for industry to make these determinations going forward.

Frank Farber commented saying he was not aware of any written documentation within the Test Monitoring Center (TMC) that would indicate the industry could no longer use a test when the independent labs were out of parts. Additional comment from Joan Evans focused on the fact that the tests are used for an API Licensing Specification and must be available to all licensees. The group continued discussion with comments from many participants focused on

what is the definition of an "unavailable test", and how should it be viewed from ASTM's viewpoint which should not differentiate between dependent vs independent laboratories. The group also discussed hardware re-distributions in times of qualified parts shortages, understanding any such efforts are completely voluntary and could become somewhat commercial. Conversations focused on parts availability and when do we take action in times of shortages, who needs to be notified, who does the notification, and what guidelines need to be established within ASTM to handle these issues with clear cut guidelines for the Test Monitoring Agencies, i.e., Surveillance Panel Chairpersons and the ASTM Test Monitoring Center.

In general the group agreed that it wasn't justifiable for a test to be deemed unavailable based solely on the fact that the independent labs can no longer conduct testing. Additionally, it was also agreed that the TMC does not have justification to prevent a dependent lab from calibrating, regardless of the status of test hardware availability at the independent labs. However, it was noted that when a test is not available to everyone, it may have commercial implications on licensing product. It was further discussed and suggested that API would have to make the decision on allowing licensing registrations in situations where the independent labs may not be able to provide required testing services to all users. It was also suggested that API be notified as soon as any lab can no longer conduct testing as a result of a parts shortage or any other reason, excluding any decisions by a testing facility to exit testing due to internal justifications.

As a result of the aforementioned conversations, the group agreed to the following action items:

1. Action Item – Frank Farber to draft a separate document for consideration within ASTM addressing determinations used to identify "unavailable" tests.

2. Action Item – TGC to review the current document for "out of control" tests and determine if the content needs to be updated.

3. Action Item – Frank Farber to add a notification procedure to both the "out of control" test and "unavailable" test documents.

Agenda Item #9 ASTM Alternate Supplier Material Approval Protocol

Pat Lang provided an overview of an earlier PAPTG request for material substitutions within ASTM. In general there are concerns within industry for a defined process which allows ASTM Surveillance Panels to review and approve alternate supply of test specific materials for ASTM Tests. The group discussed the need for a process and reviewed a Flow Chart generated by Pat Lang for discussion during this meeting, (See Table 1.). Many discussions ensued with numerous questions and examples pertaining to the alternate supply of test materials. Examples focused on Fuels with input from Ron Romano, Jim Matasic, Chris Castanien and others discussing the fuel approval process e.g., VG Reference Fuel, and what criterion a potential supplier might need to provide for their materials to be acceptable as an alternate supply.

During discussion Jason Bowden expressed concerns that communications within the TGC addressing alternate supplier materials could be considered a commercial issue and felt that this subject was being brought up because of pricing concerns within the industry. He further expressed concerns that any discussions leading into commercial type conversations should not be discussed in an ASTM meeting. He suggested the group review an older document on Committee D-2 Guidelines for Equipment Supply, Listing and Replacement in ASTM D-2 Test Methods as reviewed by the Technical Guidance Committee with recommended changes to the document dated October 31, 1988 (See Attachment # 6). After the meeting, Jason also provided the secretary a copy of the revised Committee D-2 Guidelines for Equipment Supply, Listing and Replacement in ASTM D-2 Test Methods dated August 14, 1989 (See Attachment # 7). Jason also asked that future TGC meetings include advance distribution of presentation materials to the membership.

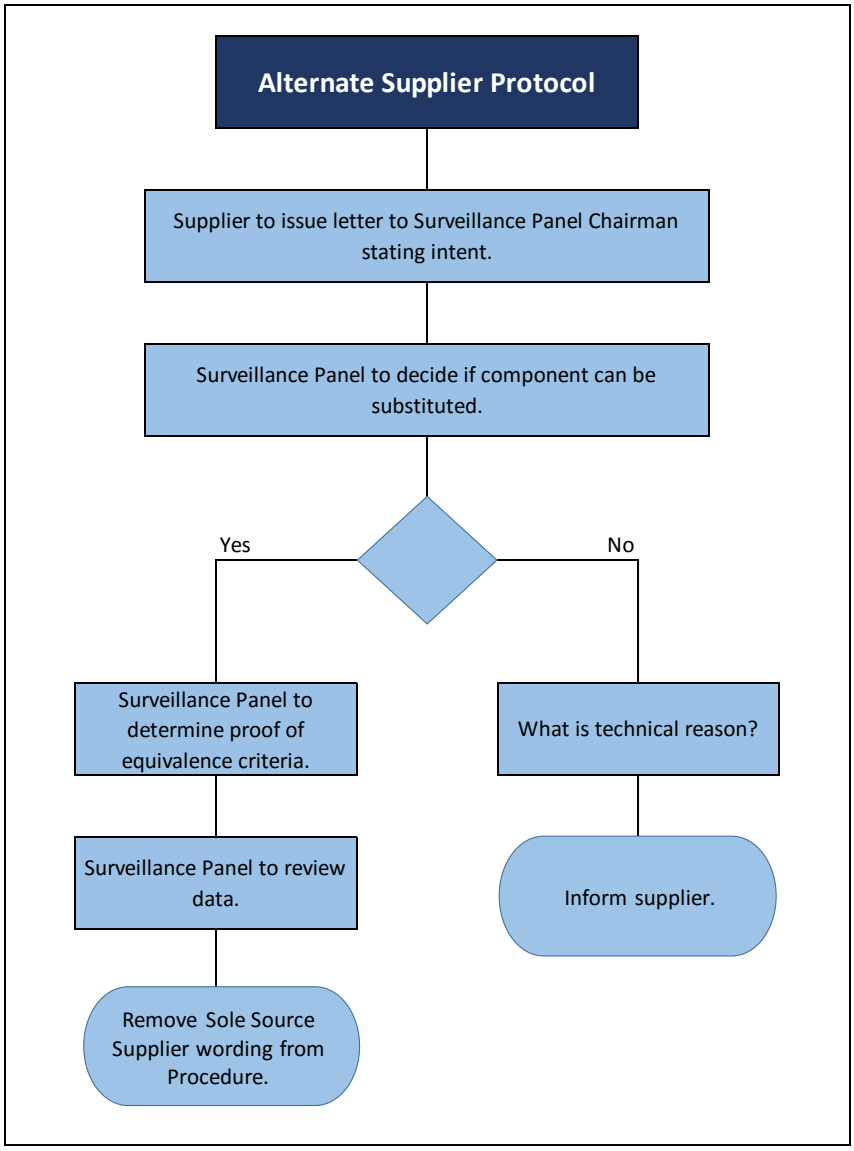
Pat Lang introduced Alyson Fick from ASTM (on conference line) asking her to comment whether there was any direction from ASTM addressing these issues. Alyson recommended the group review the most current version of "Facts for Members ASTM International Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants dated December 2014", more specifically, Attachment 4 – Committee Guidelines for Listing or Replacement of Test Equipment Suppliers in Standard Test Methods, approved as amended by COS September 2005. (See Attachment # 8). Alyson provided explanation of the scope of the document; section 1.1 of the Scope reads; "*These guidelines are for Subcommittees with*

jurisdiction over Standard Test Methods. They offer recommendations for listing the manufacturer of non-generic test equipment for the benefit of the user and for validating and listing equivalent equipment into the test method".

After lengthy discussions between all members about equivalent performance testing requirements, Alyson suggested reviewing section 7. **Procedure for Listing of Equivalent / Replacement Equipment**, contained in **Attachment 4 – Committee Guidelines for Listing or Replacement of Test Equipment Suppliers in Standard Test Methods.** Alyson provided example where a supplier comes before the responsible committee indicating they feel they meet the specific requirements and test acceptance criterion. The committee then needs to review the information and decide upon a method of proving equivalency and also review what effect the new supplier materials may have on the particular test method.

The group continued discussion with Pat Lang reminding the membership the intent of this discussion is to provide direction for suppliers when offering services or materials for an ASTM monitored test.

Table 1



As an additional action item from the aforementioned conversations;

4. Action Item – TGC to review the ASTM International Committee D02 on Petroleum Products, Liquid Fuels and Lubricants Facts for Members Document dated December 2014, for a follow-up discussion at the next TGC meeting.

Agenda Item # 10 Multiple Bid Process within ASTM

Pat Lang reviewed the purpose of this agenda item, asking whether there is a system for reviewing multiple bids regarding test component suppliers, or does there need to be an established protocol within ASTM for handling these situations. The group discussed how this might be handled with comments from both Alyson Fick and Frank Farber indicating there currently is no process within ASTM nor the TMC that addresses this issue. Frank Farber indicated the TMC would refer back to the appropriate Sub-Committee within ASTM, e.g., Surveillance Panel or Technical Guidance Committee for direction.

The group continued discussion with Jim Matasic asking whether there needed to be a group outside ASTM to review these issues. Ron Romano commented he felt the appropriate place for these discussions is at the Surveillance Panel and Laboratory level based on technicalities, equivalency, supply, etc. Mark Cooper reminded the group that the Heavy Duty group did exercise a bidding process that was used for approval and acquisition of a Diesel Test Fuel.

The group continued with Joan Evans commenting that there needs to be a decision whether test material supply, such as fuels, resides at the Surveillance Panel or TGC level. She expressed concern about having two equivalent materials and therefore both could / should be considered acceptable. The question becomes, how do we decide and what jurisdiction accepts responsibility for the decision. Jason Bowden commented that the Test Sponsor generally selects the supplier and since any bid process is not technical, it should not be discussed within the TGC.

What's Next:

> The general membership agreed there needs to be some process within ASTM for alternate supplier material approvals. The group agreed to continue discussion at the next meeting after review of the Facts for Members as indicated in Action Item #4.

Agenda Item # 11 Engineering Judgement/ACC Conformance Page

Mr. Jim Moritz provided a presentation titled Procedural Requirements and Engineering Review (See Attachment # 9)

Jim presented his materials and fielded questions throughout his presentation. Below are excerpts from the presentation along with some comments recorded during discussion.

- Each engine lube test procedure has steps and requirements to follow or meet.
- Most procedural requirements directly affect how the test operates, or exist for clearly stated validity criteria or performance measures (pass/fail parameters).
- Some of the steps to perform are for information, but don't change how the test would be conducted or evaluated.
- Different users place different levels of importance on the information.
- Information is good, but if it was missing, what are the consequences?
- Is a test invalid or unusable if it is not 100% complete?
- Could the practice of an Engineering Review which is used for negative Quality Index (QI) Values be incorporated into some of the procedural requirements?
- This is a fine line that needs careful and thoughtful consideration to maintain the gains made and further improve test quality while managing test costs, i.e. not "throwing away" good, usable tests.

After providing an overview of the aforementioned bullet points, Jim provided examples of situations where engineering judgement could be used to address validity issues arriving from situations other than Quality Index deviations. The group discussed the use of engineering judgement on reference tests and whether this process could be carried over to candidate tests. Additional concerns were expressed about the need for a process to clear undesirable check boxes from conformance sheets after an engineering review addresses the situation and decides the resultant decision is a valid test.

The group agreed there are multiple layers to every scenario and it would be advantageous if there was a process to handle engineering judgement reviews outside negative Q.I.'s.

The following action items resulted from these discussions;

5 Action Item – Jim Moritz to draft a modified Conformance Statement with suggested changes for TGC review and inclusion in the TGC Chair request to Doug Anderson.

6 Action Item – TGC chair to send a request to Doug Anderson asking for an ACC review of the Conformance Statement. Include information on why and a suggestion for changes.

Adjournment 17:11
The next meeting will be at the call of the chairman.

Copy of the Action Items resulting from this meeting are listed throughout the text of the minutes and included as (Attachment # 10)

This is a compilation from notes recorded during the meeting, with comments from member participants during the Draft Review. Certain subjects may not necessarily be in exact order; however, they are believed to represent an accurate account of the meeting. If anyone feels changes or additional content may be necessary, please contact;

Sid Clark @ 586-873-1255 or Sidney.Clark@swri.org

Thanks,

Sid Clark
Southwest Research Institute
50481 Peggy Ln.
Chesterfield MI. 48047

Attachment #1

Technical Guidance Committee (TGC) Meeting

Thursday August 11, 2016

2:00 AM – 5:00 PM

Henry Hotel, 300 Town Center

Dearborn, Michigan

Conference call information (audio only)

Dial-in number: 1-877-746-4263

Participant Code: 2954887#

Meeting Agenda

1. Welcome/Chairman's Comments

2. Introductions

3. Call for secretary/motion and action item recorder

4. Membership List
    a. Membership changes or additions

5. Approval of the minutes from the April 29, 2016 meeting held at ExxonMobil in Paulsboro, NJ.
    a. No corrections were submitted

6. Review of Action Items from the April 29, 2016 meeting

7. Review of Scope and Objectives
    a. Approval of the proposed scope and objectives

8. ASTM Process for Unavailable or Out of Control tests
    a. Document review summary presentation (Sid Clark)
    b. Determine a recommended practice for deeming a test is unavailable

9. ASTM Alternate Supplier Approval Protocol
    a. Review flow chart of process

10. Multiple Bid Process within ASTM
    a. Establish a protocol for handling multiple bids for a test component.

11. Engineering Judgement/ACC conformance page (Jim Moritz)

Other on-going topics to be discussed as time permits:

1. Fuel Task Force
    a. Jim Matasic of Lubrizol has volunteered to be the new chairman
2. Rating Committee seeking a chairman
    a. Rater workshop format
    b. Rating manual updates
    c. Fluorescent light replacement
3. Category reference oils

4. Cleaning solvents
    a. Environmental and safety restrictions
5. Data collection and recording protocols
    a. Does the DACA II document need to be updated
6. Test hardware
    a. Identification and tracking of critical parts
    b. Required parts turnover practice
    c. Best practices for parts procurement
7. PCM programming and supply.
    a. How do we secure correct programming and availability of PCM's for test life
8. What did we learn from PC-11 and GF-6 test developments

12. New Business

13. Next Meeting at call of chairman

14. Adjournment

Technical Guidance Committee (TGC)

Scope and Objectives

The Technical Guidance Committee is a standing committee under the ASTM Test Monitoring System Executive Committee. The TGC shall consist of the chairmen of the surveillance panels of monitored tests, a representative of each of the test developers/sponsor who are responsible for the test procedures and the Director. The Technical Guidance Committee will advise the Director in technical matters concerning test procedures.

This will involve working with the surveillance panels, test developers, critical parts suppliers, fuel suppliers and testing laboratories across all testing types to improve the repeatability and reproducibility of the test procedures. The TGC will provide guidance for future test developments. Additionally, the TGC chairman will liaise with the ACC PAPTG Chair.

Objectives:

1) Develop guidelines for issues that are potentially common to all HD/PC engine, gear and bench testing.
2) Work with the Rating Committee to provide guidance for issues related to visual deposit ratings.
3) Provide guidance on best practices for critical component identification within test procedures.
4) Continue to refine the “Guide for Test Development” document as new categories are developed.

Attachment #2

Technical Guidance Committee Membership List

NAME	COMPANY AND ADDRESS	PHONE NUMBER E-MAIL ADDRESS FAX NUMBER
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Jim Matasic	The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, OH 44092-2298	Phone: (440) 347-2487 e-mail: james.matasic@lubrizol.com FAX: (440)
Mesfin Belay Test Developer	Detroit Diesel Corporation 13400 West Outer Drive, K15 Detroit, MI 48239-4001	Phone: (313) 592-5970 e-mail: mesfin.belay@detroitdiesel.com FAX: (313) 592-5952
Don Bell OSCT	Afton Chemical Corporation 500 Spring Street PO Box 2158 Richmond, VA 23218-2158	Phone: (804) 788-6332 e-mail: don.bell@aftonchemical.com FAX: (804) 788-6243
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Dan Lanctot Central Parts Distributor	Test Engineering Inc (TEI)	
Chris Taylor Fuel Supplier	VP Racing Fuels	
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		PHONE NUMBER

Attachment # 3

Technical Guidance Committee (TGC)
April 29, 2016
10:00AM – 2:00PM
ExxonMobil
Paulsboro, New Jersey

Motions and Action Items
As Recorded at the Meeting by Bill Buscher

1. Action Item – The TGC chair to distribute the revised TGC scope and objectives to the entire TGC membership distribution for review and eventual acceptance at a future TGC meeting.

2. Action Item – The TMC to acquire the older non-electronic TGC documents, review the documents for importance, then scan the important documents and post the scanned files on the TMC website.

3. Action Item – Andy Ritchie to assist the TMC in identifying the dates for the older non-electronic TGC documents.

4. Action Item – The TGC chair to recommend to the HDEO Surveillance Panel chairs that they consider adoption of the rater calibration protocols that the PCMO test types follow.

5. Action Item – The TGC chair to recommend to the HDEO Surveillance Panel chairs that the HDEO merit system be evaluated for whether or not the final result value should be reported to the same precision as the pass/fail limit.

6. Action Item – The TGC to develop standardized wording for the process for substituting materials, which can be applied to all test types.

7. Action Item – The Sequence VGA ASTM test procedure will include a fuel approval procedure. This fuel approval procedure can be considered for adaption into other test type test procedures.

8. Action Item – The Sequence VGA test procedure will include a critical parts list. This critical parts list can be considered for adaption into other test type test procedures.

9. Action Item – The TGC to review the parts lists in each test procedure, starting with the PCMO test types, to determine if they list all necessary parts and if they properly identify the critical test parts.

10. Action Item – The TGC to reinitiate the test fuel task force to continue the work that was started based off of the task force scope and objectives, updated on January 20, 2011.

11. Action Item – The TGC to attempt to locate the documentation on declaring a test unavailable, review the documentation and update it with any missing content, or create new documentation if none could be found, and make a recommendation to the ASTM Test Monitoring System Executive Committee.

Attachment # 4

TGC Conversation Starters

Non-Available Test Determinations
Actions and Notifications

Attachment # 4

TGC Non-Available Test Discussion Outline

- API 1509 Document Review
  - Provisional Licensing
- Industry Notification Requirements
  - Monitoring Agency
  - Licensing Agency
  - Subcommittee's / Guidance Panels
  - OEM's / EMA's
- Task Force Formation
- Timing

Attachment # 4

API 1509
Provisional Licensing

6.7.1

- Section refers to guidelines for provisional licensing due to occasions where a Certification Test is deemed “Out of Control”.

  API may grant a provisional license to a license applicant if the candidate engine oil meets all API licensing requirements except for the one test that has been declared “out of control.”

  API cannot invoke provisional licensing unless it has received appropriate notification from ASTM.

Attachment # 4

API 1509
Provisional Licensing

6.7.3

- All applications for a provisional API license shall include data that support the performance of the candidate engine oil in the test not conducted. These data shall conform to Level 2 Support, as described in the ACC Code
  - *Annex J in 1509 directs the reader to the ACC Petroleum Additives Panel Approval Code of Practice website.*
  - *The ACC Code of Practice addresses Level 2 Support throughout the entire document but descriptively in;*
    - *Appendix H*
    - *Tab 1.*
  - *However, it seems Level 2 Support addresses additive component changes / treat rate; not non-available tests.*

- *Excerpt from ACC Code of Practice Appendix H*
  - *4. With Level 2 support, one new component not present in the original formulation may be added. The new component may not exceed 10% of the total performance additive package (original package plus added component).*

Attachment # 4

API 1509
Provisional Licensing

- *Excerpt from ACC Code of Practice Tab 1*

***Level 2 Support** - Level 1 plus full-length, ASTM operationally valid engine tests on oils containing performance additive package(s) representative of the chemistry in the final formulation. It is the intent that ASTM calibrated stands be used in all cases. These tests are limited to the following:*

a) Statistically designed engine test matrices or

b) Complete engine test programs or

c) Partial set of tests from same technology family where no harm is demonstrated for specific test types.

In the absence of Level 2 support for a particular test type, this test must be passed on a final formulation or formulations supporting the final formulation.

Attachment # 4

API 1509
Provisional Licensing

6.7.7

- Engine oils granted an API provisional license will be listed in API's Directory of Licensees on API's website in the same manner as API-licensed oils, without any special designation. The licensee is still responsible for the satisfactory performance of all engine oils granted an API provisional license.

6.7.8

- *An API provisional license will not be granted for any candidate oil if two or more required tests have not been conducted on the candidate engine oil.* This criterion also applies to candidate oils for which the licensee is seeking multiple Service Category approval (for example, API CI-4/SL).

Attachment # 4

API 1509
Provisional Licensing

6.7.9

- In the event that two or more tests used to support the API licensing process are declared “out of control” by ASTM Subcommittee D02.B0 and API has received appropriate notification by ASTM or **if any EOLCS test becomes unavailable (because of a shortage of test materials, equipment, or similar industry-wide test-related emergency), a joint task force will immediately be formed** and will be composed of (a) API and automotive representatives from API’s Administrative Guidance Panel (AGP) (for the API Certification Mark or an API Service Category S test); (b) API and EMA (for an API Service Category C test); or (c) API, AGP automotive representatives, and EMA (for multiple Service Category tests). **The joint task force will recommend the appropriate action to maintain the stability of the API EOLCS. ENGINE OIL LICENSING AND CERTIFICATION SYSTEM**

Attachment # 4

Defining Out-of-Control and Unavailable

- In the past the TGC created a document (file named “Out of Control Tests”) addressing;
  - Authority to suspend industry wide laboratory calibration status when a test is judged to be giving uninterpretable performance
  - This document clearly defines the protocol for determining and handling this issue.
  - This document does not address the definition of a test becoming unavailable due to parts, fuel or other critical items.

  Questions;
- When a test becomes unavailable, due to hardware issues
  - How is the determination made
  - What action is taken and when is industry notified
  - When is it applicable across industry
    - When one or both independent labs are unable to run
    - What if dependent labs have the necessary components to conduct testing

Discussion

Unavailable tests due to hardware support may not affect all labs at the same time

How does a Surveillance Panel determine if a test is unavailable and what actions are required for industry notifications

How soon does a panel inform industry of the potential problem

We need to establish an industry wide protocol for determining a “Stop Testing Date” or effective “Provisional Licensing Date” across industry

Attachment # 4

Recommendations

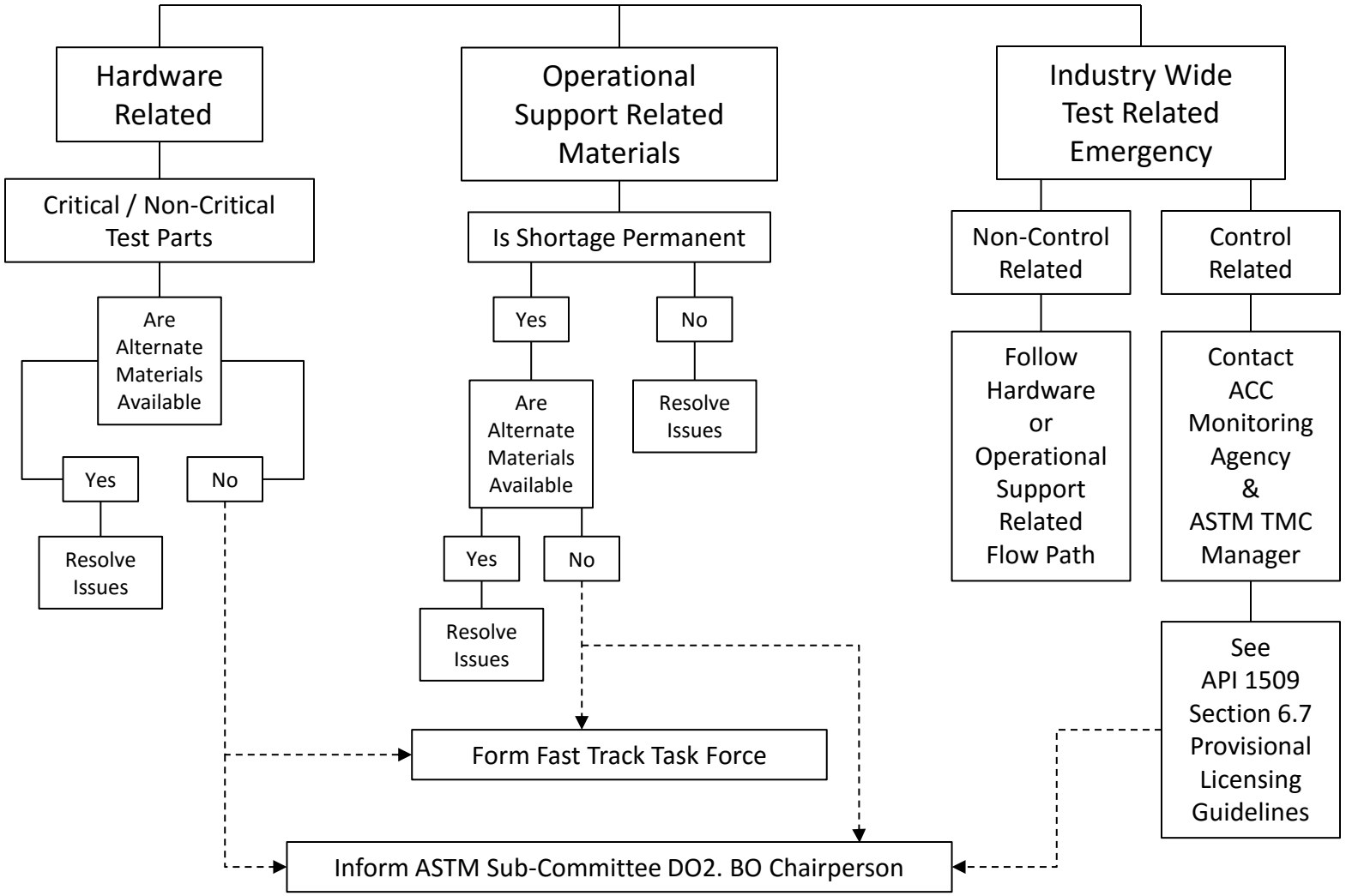
- Affected Test Surveillance Panel Chair;
  - Discusses issues with panel members
  - Decides on industry notification timing
    - Notification should be conveyed to appropriate agency's ASAP, at least 90 days, or sooner if possible.
  - Forms "Fast Track" Task Force
    - Follows 1509 section 6.7.9 guidelines for task force participation

Excerpt from 1509 section 6.7.9

"…..API and automotive representatives from API's Administrative Guidance Panel (AGP) (for the API Certification Mark or an API Service Category S test); (b) API and EMA (for an API Service Category C test); or (c) API, AGP automotive representatives, and EMA (for multiple Service Category tests)."

Attachment # 4

Surveillance Panel Unavailable Test Determination Flow Path



Attachment # 4

Notification Recommendations

- ACC Monitoring Agency Manager (Don Lind)
- ASTM Test Monitoring System Executive Committee Chairman (Steve Kennedy)
- ASTM Test Monitoring Center Director (Frank Farber)
- ASTM D02.B0 Chairman (Joe Franklin)
- ASTM D02.B0.01 Chairman (Bill Buscher)
- ASTM D02.B0.02 Chairman (Heather Debaun)
- API – (Kevin Ferrick / Scott Rajala)
- API EOLCS Manager (Secretary of Interindustry Advisory Group (IAG)) (Kevin Ferrick)
- ACC – (Doug Anderson / Mike Hoey)
- Auto Alliance – (Ron Romano)
- JAMA – (Takumaru Sagawa)
- EMA – (Greg Shank)
-
- PCEOCP Chairman (Thom Smith)
- HDEOCP Chairman (Shawn Whitacre)
- AOAP (Scott Lindholm)
- DEOAP (Steve Kennedy)

Notification order needs to be clearly identified

AUTHORITY TO SUSPEND INDUSTRY WIDE LABORATORY CALIBRATION STATUS WHEN A TEST IS JUDGED TO BE GIVING UNINTERPRETABLE PERFORMANCE

BACKGROUND

The Classification Panels request the authority to suspend industry wide laboratory calibration status when a test is judged to be out of control. This is needed to get immediate industry expertise solely focused on solving the test problem and prevent the continued approval of oils based on suspect data. To assure that any decision to temporarily suspend testing is justified, the following analysis process will be used and documented. This process also includes a method for determining when the test is back in control and calibrated testing can resume. This process was developed to address the concerns expressed during the earlier balloting of this subject.

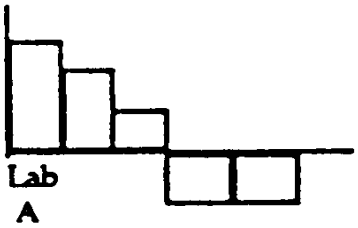
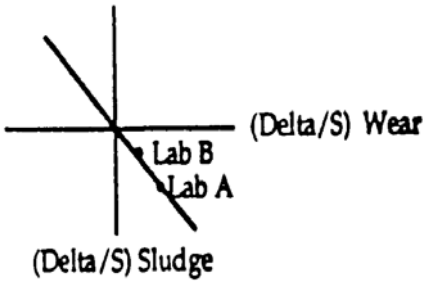
FLOW PLAN

Step 1: An action alarm at the industry level must trigger on the Exponentially Weighted Moving Average (EWMA) plots, for either precision or severity, using the ASTM Reference Monitoring System.

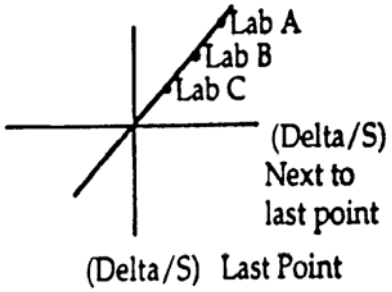
Step 2a: The test surveillance panel must consider the scope and size of the problem:

- Is the problem due to an identifiable cause?
- Is it affecting precision and/or severity?
- If the problem only affects severity, can a temporary correction be applied?
- Is the problem reference oil specific?
- Is it test lab or stand specific?
- When did the problem start?
- Are critical, non-critical, or both types of parameters involved?
- Does the problem transcend test type?
- What tools (statistical) were used to assess the problem?
- Was the problem a gradual one or an abrupt one?
- Does existing candidate oil experience support any reference oil trends?
- Has the problem been defined clearly?
- Has the available data been analyzed in a logical and methodical manner?

Step 2b: The following tools will be used, as a minimum, in the analysis of the problem:

DATA ANALYSIS	POTENTIAL INSIGHTS
1. All charts (lab, stand) should be made available for the Test Parameter which has gone out.	1. Time trends and changes, start of problem.
2. Mark on charts when Industry changed parts, fuel batches, etc.	2. Special Cause.
3. Plot each lab's last EWMA for the affected parameter: 	3. Scope of Problem, Special Cause.
4. Provide a list of coded labs (or stands) which have had out of control signals on the Test Parameter within the last three months.	4. Scope of Problem, Special Cause.
5. Plots of known problem parameters (e.g. sludge/wear). 	5. Problem discrimination.

6. EWMA charts with $\lambda = 0.1$ (detects small shifts)	6. Gradual vs. Step change.
7. Youden plot of labs' last two points:	7. Precision vs. Severity, Scope, Special cause.



8. Dot plot of all data in last three months.	8. Special Cause.

Step 3a: The Surveillance Panel decision to recommend to the appropriate Classification Panel that a test to be declared out of control will require a ¾ approval vote of voting members (or their alternates) present at a special Surveillance Panel meeting held to review all data developed. All negative votes must be resolved (declared non-persuasive, persuasive, or non-germane). For purposes of determining persuasiveness of a negative, a 2/3 majority vote of members present (or their alternates) will be used. The final vote plus all persuasive arguments and an action plan with timetable will be forwarded to the appropriate Classification Panel.

Step 3b: Within two weeks of such a Surveillance Panel decision, the appropriate Classification Panel will meet to determine if the test is out of control.

Step 3c: If the Classification Panel decides the test is out of control it may temporarily suspend calibrated testing. A technical memorandum will be issued immediately by the TMC (advising that calibration status for the appropriate test type cannot be technically supported in all previously calibrated laboratories effective for each stand prior to the start of the next test). This memorandum will be issued to all members of the Surveillance Panel involved, all calibrated test labs, the appropriate classification panel, and all members of Subcommittee B. This memorandum will provide the background on the Surveillance Panel's decision, as well as a proposed action plan with timetable and milestones. A comment period will be extended for 30 days after the memorandum. Comments will go to the Subcommittee B Chairman who will determine if they are of sufficient quality to call a special session of B within 30 more days. TMC calibration status will continue to be suspended during this period unless the test has been declared back in control (see step 4a).

Step 3d: Any external communication (outside of ASTM Subcommittee B) will be sent through the Chairman of Subcommittee B.

API will be sent a letter by Chairman of Subcommittee B notifying them of this action and stating that the performance category XX as stated in ASTM D4485 can no longer be measured until further notice. The reason that this performance can no longer be measured is that the calibration status of the uninterpretable test cannot be technically supported.

Step 4: Determination that the test is back in control will be made by the Surveillance Panel or when the industry EWMA charts for precision and severity are back within the defined control limits whichever occurs first. At that point, an information memorandum will be immediately issued by TMC to the same distribution outlined in Step 3c. Any requirements, if necessary, to resume calibrated testing will be defined in this memorandum.

Attachment # 6

1916 Race Street, Philadelphia, PA 19103-1187 USA ■ Telephone: (215) 299-5400 ■ TWX: 710-670-1037 ■ FAX: 215-977-9679

Committee D-2 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: E. W. WHITE, U.S. Navy Annapolis, David Taylor Naval Ship R & D Center, Code 2832, Annapolis, MD 21402
First Vice-Chairman: C. P. HENRY, JR., Du Pont Co., 19330, Petroleum Lab., Wilmington, DE 19898 (609-540-2891)
Second Vice-Chairman: E. N. DAVIS, 1507 Fisher St., Munster, IN 46321
Secretary: E. A. HAP THOMPSON, American Petroleum Institute, Marketing Dept., 1220 L St., NW, Washington, DC 20005 (202-682-8230)
Staff Manager: EARL R. SULLIVAN (215-299-5514)

Reply to: T.C. Boschert
Ethyl Petroleum Add. Div.
125 Lafayette
St. Louis, MO 63104
(314) 241-6119

October 31, 1988

Mr. Dean Bardy
LUBRIZOL CORPORATION
29400 Lakeland Blvd.
Wickliffe, OH 44092

Dear Dean:

As requested by the Technical Guidance Committee of the Test Monitoring Board, a small group composed of G. Farnsworth, D. Heath, and myself have reviewed the enclosed document and have some suggested changes for the consideration of your committee. We have strived to maintain the spirit of what was requested by the various surveillance panels in our changes. Our approach was not to rewrite the document but simply to correct some needed statements and to insert one passage to indicate the role that the TMC plays and its effect on these guidelines in running the tests.

As requested, I am forwarding the changes to the Test Monitoring Center to mail out on their information letter mailing list. This will allow surveillance panels to be better prepared to deal with them at our December, 1988, meetings in Anaheim. I would be remiss without thanking both Gordon and Dan for their conscientious efforts in the revision of this document. In particular, I would like to thank Dan Heath for much of the wording in our revision.

Sincerely,

T.C. Boschert
Member, Technical Guidance Committee
ASTM Test Monitoring Board

Attachment # 6

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The Technical Guidance Committee Task Force to Revise the ASTM D-2 Equipment Supply Guidelines Document Recommends the Following Changes:

1. Revision of 2.2: Critical equipment - the components, apparatus, reagents, and reference and test materials which by virtue of particular specification or function have a significant effect on the quality of results obtained by a standard method of practice.

   Reason: This definition should be specific enough that most of the ordinary items can be exempted from critical status. The way the original definition reads we would find only a few items that do not "have a significant effect on the results". For example, relatively few items could be omitted from a method without affecting results. We believe the intention was to identify the items which are actually critical to the success of the method. But that is not what the definition says.

2. Revision of 2.3: Non-critical equipment - the components, apparatus, reagents, and reference and test materials, which, assuming routine, commonly accepted functionality, do not have a significant effect on the quality of results obtained by a standard method or practice.

   Reason: Same as No. 1 above.

3. Revision of 3.1.3: The procurement of test equipment to the original equipment standards or specifications is the responsibility of the testing laboratories in cooperation with the equipment manufacturers as represented in the committee and sub-committee groups. The Equipment Manufacturer shall advise the testing laboratories and/or pertinent committee of any necessary changes or deviations from these standards. Such changed equipment shall then be considered replacement equipment and its acceptability assessed in accordance with paragraph 3.3

Reason: It is very presumptuous to claim that the manufacturer of test equipment is totally responsible for the manner in which some purchaser uses the equipment. An exception might be the small percentage of cases in which the method represents the only application for the equipment, or the case where the item was designed specifically for the method.

4. Revision of first sentence of 3.2.1: The prospective equipment is established as equivalent by qualified laboratory testing of the proposed equipment to show compliance with the original equipment specifications.

   Reason: Same as No. 3 above.

5. Revision of 3.2.3: The maintenance of equivalent equipment specifications is the responsibility of the testing laboratories in cooperation with the Equipment Manufacturers as represented in the Committee and Sub-committee groups. Where equivalent equipment becomes a portion of the original equipment, the original equipment supplier shall not be responsible for the performance of the equivalent equipment.

   Reason: Same as No. 3 above.

6. Review of first sentence only of 3.3.1: The acceptability of replacement equipment may be established at the judgment of the committee by a statistically valid program preferably conducted by an independent laboratory.

   Reason: Not all replacement equipment will require a paired testing program. This is best left to the committee to decide what is proper for acceptance of the replacement equipment.

7. Revision of first sentence only of 5.2.2: Original equipment for which the required data is not or will not be available prior to the discontinuance of the equipment shall be dropped from consideration.

   Reason: Same as No. 3 above.

8. Additional text: 5.4 - Methods Serviced by the ASTM Test Monitoring Center.

   A committee may, by simple majority vote, waive the

requirements outlined in paragraphs 5.2 through 5.3, in full or in part, for those test methods which are served by the Test Monitoring Center (TMC). The methods assigned to TMC engineering staff are complex, are often dependent on representative mass produced hardware and are, therefore, carefully monitored and calibrated according to the provisions of the ASTM TMC charter and by-laws. The monitoring system requires flexibility so that statistically charted trends may be dealt with appropriately and expeditiously.

We believe the proposed text of 5.4 would enable our surveillance panels to honor the spirit of this document without bringing our system to its knees! We hope that the D-2 Committee membership realizes that an age of quality consciousness has dawned. Very simply, the systems of standardization must satisfy the needs of the systems' customers or market forces will replace the old systems with attractive alternatives.

Respectfully,

T.C. Boschert
G.R. Farnsworth
D. Heath

Attachment # 6

GUIDELINES FOR

EQUIPMENT SUPPLY, LISTING AND REPLACEMENT IN ASTM D-2 METHODS AND PRACTICES

1. Introduction

As a general policy ASTM prefers that the test equipment used in ASTM methods and practices be described in generic terms and not by listing a single piece of equipment made by a specific manufacturer. However a number of methods and their precision statements have been developed around such equipment which is then - listed as being available from a specific manufacturer.

In some cases all or part of such equipment can become unavailable, requiring replacement, or it may be desirable to replace part of the original equipment with equivalent or improved equipment.

Under these circumstances Committee D-2 has found it desirable to formalize a set of guide lines which describe the actions required when such specific listings, substitutions or replacements take place. Committee D-2 does not endorse listings of test equipment available from only one manufacturer but offers these Guide Lines for such cases when it is agreed that such listings cannot be avoided.

2. Definitions

2.1. The following definitions apply only to these Guide-Lines.

2.2. Critical equipment - the components, apparatus, reagents, and reference and test materials which, in the judgement of the Committee, have a significant effect on the results obtained by a standard method or practice.

2.3. Non-critical equipment - the components, apparatus, reagents, and reference and test materials, which in the judgment of the Committee, do not have a significant effect on the results obtained by a standard method or practice.

2.4. Original equipment - the critical equipment (components, apparatus, reagents or reference materials) used in the development of the original published precision program of a method or the development of a go-no-go method.

2.5. Equivalent equipment - the critical equipment (components, apparatus, reagents or reference materials) considered equivalent to the original equipment by meeting the specifications for the original equipment.

2.6. Replacement equipment - the critical equipment (components, apparatus, reagents or reference materials) needed to replace original equipment for which no specification exists.

2.7. Committee - the main committee having jurisdiction over the standard method, or its designated subsidiary such as a subcommittee, section etc.

2.8. Independent laboratory - a neutral laboratory capable of conducting the test in question.

Attachment # 6

3.1. Original Equipment

3.1.1. Upon approval of a standard test method or practice the Committee should designate the critical and non-critical portions of the original equipment in the method or practice. Wherever possible, original equipment should be defined by adequate composition, design and/or performance specifications to permit securing equivalent equipment. The specifications should contain allowable tolerances for each specified parameter, with the tolerances based on the manufacturing tolerances of the original equipment. Wherever possible the method should contain applicable calibration procedures to insure that the test results will bear a direct relation to test data developed elsewhere.

3.1.2. The identification of critical and non-critical components as well as the specifications for critical components shall be incorporated into the Apparatus or Reagents and Materials sections or into an annex to the method, practice etc. If the specifications are too bulky to be included into an annex they shall be incorporated into a research report filed at ASTM Headquarters with proper reference in the method. (An example of an equipment specification published in the Apparatus Section will be found in D2622, "Sulfur in Petroleum Products, X-Ray Spectroscopic Method". An example of equipment specifications in an annex to the method will be found in D93, "Flash Point by Pensky-Martens Closed Cup Tester". An example of a specification in a research report will be found in Research Report D-2 RR 1012 and its associated method, D2276, "Particulate Contaminants in Aviation Fuel".)

3.1.3. The manufacture of test equipment to the original equipment standards or specifications is the responsibility of the equipment manufacturer who shall advise the pertinent Committee of any necessary changes or deviations from these standards. Such changed equipment shall then be considered replacement equipment and its acceptability assessed in accordance with paragraph 3.3.

3.1.3.1. It is recognized that certain complex test apparatus may not be defined by specifications which will allow the selection of equivalent equipment. Changes in such apparatus shall be handled as replacement equipment.

3.2. Equivalent Equipment

3.2.1. The prospective equipment vendor establishes equivalence by having an independent laboratory test the proposed equipment to show compliance with the original equipment specifications. Where tolerances are not available, side-by-side testing with the original equipment can be evidence of equivalence. The number of equipment pieces or samples required for equivalence testing depends primarily on the desired reliability of the results. However parts should be tested at least in triplicate and test samples should be selected at random and from more than one productions batch.

3.2.2. The program and results of equivalence testing shall be reviewed and considered acceptable by the Committee prior to listing of the equivalent supplier. Equivalence in precision and level of results must be shown.

3.2.3. The maintenance of equivalent equipment to the original equipment specifications is the responsibility of the equivalent equipment manufacturer. Where equivalent equipment becomes a portion of the original equipment, the

Attachment #6

original equipment manufacturer shall not be responsible for the performance of the equivalent equipment.

3.3. Replacement Equipment

3.3.1. The acceptability of replacement equipment is best established by a statistically valid program of pair testing of original and replacement equipment, preferably by an independent laboratory. The program should address both manufacturer's and customer's risks (Type I and Type II errors*).

3.3.1.1. If the testing results show no statistically significant difference between the original and the replacement equipment the replacement equipment shall be considered acceptable and the precision statement based on the original equipment can be used.

3.3.1.2. If the testing shows statistically significant differences between the original and the replacement equipment, a new precision program per Research Report D-2 RR 1007, using the replacement equipment, is required to develop a new precision statement for the replacement equipment.

3.3.2. Any replacement program shall not be undertaken without the knowledge of the Committee.

3.3.3. Final agreement over the acceptability of replacement testing results rests completely with the Committee.

4. SUPPLIER LISTING

4.1. Listing of original, equivalent or replacement equipment available from only one supplier shall be in accordance with ¶F4.2.2 of the Form and Style Manual for ASTM Standards. Where more than one supplier is available the list of suppliers shall be maintained in an appendix to the method or at ASTM Headquarters with appropriate references in the method. As many suppliers as possible should be listed to assist the user. Supplier listing should be by firm name, city and state or country only.

4.1.1. Suppliers should only be listed if the equipment is not readily available through normal commercial sources.

4.1.2. The Committee shall make reasonable efforts early in the development of a method or practice to involve as many equipment suppliers as practical to avoid single supply sources. However a supplier's proprietary rights should be considered.

4.2. It is the responsibility of the Committee to assure itself that equipment is available to the public so that a specific method can be preformed. Each time an existing standard is reviewed or revised the Committee shall make such determination.

4.3. Changes in supplier listing shall only be made with the approval of the Committee.

4.4. If an equipment manufacturer sells or transfers a line of original, equivalent or replacement equipment to another manufacturer, the new manufacturer shall only be listed after the Committee has assured itself that the new equipoent

*See Introduction to Statistical Analysis, Dixon and Massey, McGraw Hill, New York, 1957

meets the same specifications as the equipment made by the first manufacturer. In cases of doubt the equipment made by the second manufacturer should be considered as replacement equipment and should be tested as such.

Attachment # 6

5. COMMITTEE RESPONSIBILITIES

5.1. Applicable Regulations

5.1.1. Regulations Governing ASTM Technical Committees shall be in effect with full appeal process.

5.2. New Methods or Practices

5.2.1. The Committee should obtain specifications, dimensional drawings and other necessary descriptions of test equipment and components for new methods and practices prior to the adoption of the new method or practice but no later than 180 days after approval. The Committee should determine which items are Critical Equipment within another 60 days. The resultant listings and annex data should be submitted for the next regular Committee ballot if not approved earlier. Only that equipment shall be listed which was involved in the original round robin to establish method precision. All other submissions shall be validated in accordance with paragraphs 3.2 or 3.3.

5.2.1.1. All methods and practices shall contain the identification of critical and non-critical equipment.

5.2.1.2. Where an equipment supplier has developed equipment at his own expense and considers the equipment design to be proprietary, the Committee by a simple majority vote may waive the specification requirements of 5.2.1 for such equipment. Such waivers should be agreed to before any ASTM evaluation or testing of the equipment.

5.2.1.3. Where proprietary equipment in standard methods or practices has been supplied prior to December 1985, such arrangements shall be exempt from the requirements of 5.2.1.

5.2.2. A manufacturer or supplier of original equipment who does not supply the required data or will not guarantee to supply them prior to discontinuance of the equipment shall be dropped from consideration. Alternate sources of equipment should be developed. Such equipment shall be considered as new equipment requiring the development of a new precision statement. If alternate equipment sources cannot be developed the method shall be dropped from consideration.

5.2.2.1. These requirements should be discussed with equipment suppliers early in method development to avoid misunderstandings and lost time and effort.

5.3. Existing Methods and Practices

5.3.1. The requirements outlined in paragraphs 5.2 through 5.2.2 should be introduced into existing methods and practices as soon as feasible but not later than during method or practice reapproval.

6. REVIEW OF GUIDE LINES

6.1. A complete review of these Guide-lines shall be carried out two years after their adoption and the resultant Guide-lines shall be reballotted. This review and reballot is based on the concern that the total impact of the Guide-lines on a voluntary system is unforeseeable and a formal second look is in order to assure that the Guide-lines have the desired effect of improving Committee operations.

Attachment # 7

COMMITTEE D-2 GUIDELINES FOR

EQUIPMENT SUPPLY, LISTING AND REPLACEMENT IN ASTM D-2 TEST METHODS AND PRACTICES

(Revised 8/14/89)

1. Introduction

As a general policy ASTM prefers that the test equipment used in ASTM test methods and practices be described in generic terms and not by listing a single piece of equipment made by a specific manufacturer. However a number of methods and their precision statements have been developed around such equipment which is then listed as being available from a specific manufacturer.

In some cases all or part of such equipment can become unavailable, requiring replacement, or it may be desirable to replace part of the original equipment with equivalent or improved equipment.

Under these circumstances Committee D-2 has found it desirable to formalize a set of guidelines which describe the actions required when such specific listings, substitutions or replacements take place. Committee D-2 does not endorse listings of test equipment available from only one manufacturer but offers these Guidelines for such cases when it is agreed that such listings cannot be avoided.

2. Description of Terms Specific to these Guidelines

2.1. Critical equipment - the components, apparatus, reagents, and reference and test materials which, in the judgement of the Committee, have a significant effect on the results obtained by a standard method or practice.

2.2. Non-critical equipment - the components, apparatus, reagents, and reference and test materials, which in the judgment of the Committee, do not have a significant effect on the results obtained by a standard method or practice.

2.3. Original equipment - the critical equipment (components, apparatus, reagents or reference materials) used in the development of the original published precision program of a method or the development of a go-no-go method.

2.4. Equivalent equipment - the critical equipment (components, apparatus, reagents or reference materials) considered equivalent to the original equipment by meeting the specifications for the original equipment.

2.5. Replacement equipment - the critical equipment (components, apparatus, reagents or reference materials) needed to replace original equipment for which no specification exists.

2.6. Committee - the main committee having jurisdiction over the standard method, or its designated subsidiary such as a subcommittee, section etc.

2.7. Independent laboratory - a neutral laboratory capable of conducting the test in question.

3. PROCEDURES

3.1. Original Equipment

3.1.1. Upon approval of a standard test method or practice the Committee should designate the critical and non-critical portions of the original equipment in the test method or practice. Wherever possible, original equipment should be defined by adequate composition, design, or performance specifications to permit securing equivalent equipment. The equipment specifications should contain allowable tolerances for each specified parameter, with the tolerances based on the manufacturing tolerances of the original equipment. Wherever possible the standard should contain applicable calibration procedures to insure that the test results will bear a direct relation to test data developed elsewhere.

3.1.2. The identification of critical and non-critical components as well as the specifications for critical components shall be incorporated into the Apparatus or Reagents and Materials sections or into an Annex Section of the standard. If the specifications are too bulky to be included into an annex, they shall be incorporated into an ASTM Research Report filed at ASTM Headquarters with proper reference in the method. An example of an equipment specification published in the Apparatus Section will be found in D2622, "Sulfur in Petroleum Products, X-Ray Spectroscopic Method". An example of equipment specifications in an annex to the method will be found in D93, "Flash Point by Pensky-Martens Closed Cup Tester". An example of an equipment specification in a research report will be found in Research Report D-2 RR 1012 and its associated method, D2276, "Particulate Contaminants in Aviation Fuel".

3.1.3. The manufacture of test equipment to the original equipment standards or specifications is the responsibility of the equipment manufacturer who shall advise the pertinent Committee of any necessary changes or deviations from these standards. Such changed equipment shall then be considered replacement equipment and its acceptability assessed in accordance with paragraph 3.3.

3.1.3.1. It is recognized that certain complex test apparatus may not be defined by specifications that will allow the selection of equivalent equipment. Changes in such apparatus shall be handled as replacement equipment.

3.2. Equivalent Equipment

3.2.1. The prospective equipment vendor establishes equivalence by having an independent laboratory test the proposed equipment to show compliance with the original equipment specifications. Where tolerances are not available, side-by-side testing with the original equipment can be evidence of equivalence. The number of equipment pieces or samples required for equivalence testing depends primarily on the desired reliability of the results. However, parts should be tested at least in triplicate and test samples should be selected at random and from more than one production batch.

3.2.2. The program and results of equivalence testing shall be reviewed and considered acceptable by the Committee prior to listing of the equivalent supplier. Equivalence in precision and level of results must be shown.

3.2.3. The maintenance of equivalent equipment to the original equipment specifications is the responsibility of the equivalent equipment manufacturer. Where equivalent equipment becomes a portion of the original equipment, the original equipment manufacturer shall not be responsible for the performance of the equivalent equipment.

3.3. Replacement Equipment

3.3.1. The acceptability of replacement equipment is best established by a statistically valid program of pair testing of original and replacement equipment, preferably by an independent laboratory. The program should address both manufacturer's and customer's risks (Type I and Type II errors*).

3.3.1.1. If the testing results show no statistically significant difference between the original and the replacement equipment the replacement equipment shall be considered acceptable and the precision statement based on the original equipment can be used.

3.3.1.2. If the testing shows statistically significant differences between the original and the replacement equipment, a new precision program per Research Report D02: RR-1007, using the replacement equipment, is required to develop a new precision statement for the replacement equipment.

3.3.2. Any replacement program shall not be undertaken without the knowledge of the Committee.

3.3.3. Final agreement over the acceptability of replacement testing results rests completely with the Committee.

4. SUPPLIER LISTING

4.1. Listing of original, equivalent or replacement equipment available from only one supplier shall be in accordance with F4.2.2 of the Form and Style Manual for ASTM Standards (Blue Book). Where more than one supplier is available the list of suppliers shall be maintained in a footnote, an appendix to the method or at ASTM Headquarters with appropriate references in the method. As many suppliers as possible should be listed to assist the user. Supplier listing should be by firm name, city and state or country only.

4.1.1. Suppliers should only be listed if the equipment is not readily available through normal commercial sources.

4.1.2. The Committee shall make reasonable efforts early in the development of a method or practice to involve as many equipment suppliers as practical to avoid single supply sources. However a supplier's proprietary rights should be considered.

4.2. It is the responsibility of the Committee to assure itself that equipment is available to the public so that a specific method can be preformed. Each time an existing standard is reviewed or revised the Committee shall make such determination.

4.3. Changes in supplier listing shall only be made with the approval of the Committee.

*See Introduction to Statistical Analysis, Dixon and Massey, McGraw Hill, New York, 1957

4.4. If an equipment manufacturer sells or transfers a line of original, equivalent or replacement equipment to another manufacturer, the new manufacturer shall only be listed after the Committee has assured itself that the new equipment meets the same specifications as the equipment made by the first manufacturer. In cases of doubt, the equipment made by the second manufacturer should be considered as replacement equipment and should be tested as such.

5. COMMITTEE RESPONSIBILITIES

5.1. Applicable Regulations

5.1.1. All recommendations for changes in listing shall through the full ASTM letter ballot approval process.

5.1.2. The ASTM Regulations Governing ASTM Technical Committees shall be in effect with full appeal process.

5.2. New Methods or Practices

5.2.1. The Committee should obtain specifications, dimensional drawings and other necessary descriptions of test equipment and components for new methods and practices prior to the adoption of the new method or practice but no later than 180 days after final approval. The Committee should determine which items are Critical Equipment within another 60 days. The resultant listings and annex data should be submitted for the next regular ballot if not approved earlier. Only that equipment shall be listed which was involved in the original round robin to establish method precision. All other submissions shall be validated in accordance with paragraphs 3.2 or 3.3.

5.2.1.1. All test methods, practices and test methods contained in specifications should contain the identification of critical and non-critical equipment. If the Committee decides not to identify critical and non-critical components in a test method or practice, all components shall be considered critical until formally identified otherwise.

5.2.1.2. Where an equipment supplier has developed equipment at his own expense and considers the equipment design to be proprietary, the Committee by a simple majority vote may waive the specification requirements of 5.2.1 for such equipment. Such waivers should be agreed to before any ASTM evaluation or testing of the equipment.

5.2.1.3. Where proprietary equipment in standard methods or practices has been supplied prior to December 1985, such arrangements shall be exempt from the requirements of 5.2.1.

5.2.2. A manufacturer or supplier of original equipment who does not supply the required data or will not guarantee to supply them prior to discontinuance of the equipment shall be dropped from consideration. Alternative sources of equipment should be developed. Such equipment shall be considered as new equipment requiring the development of a new precision statement. If alternative equipment sources cannot be developed, the test method or procedure shall be dropped from consideration.

5.2.2.1. These requirements should be discussed with equipment suppliers early in standard development to avoid misunderstandings and lost time and effort.

5.3 Existing Test Methods and Practices

5.3.1 Where feasible, the requirements outlined in paragraphs 5.2 through 5.2.2 should be introduced into existing test methods and practices. If the Committee decides not to identify critical and non-critical components in an existing test method or practice, all components shall be considered critical until formally identified otherwise.

6. REVIEW OF GUIDELINES

6.1 A complete review of these Guidelines shall be carried out two years after their adoption and the resultant Guidelines shall be reballoted. This review and reballot is based on the concern that the total impact of the Guidelines on a voluntary system is unforeseeable and a formal second look is in order to assure that the Guidelines have the desired effect of improving Committee operations.

Attachment 4 – Committee Guidelines for Listing or Replacement of Test Equipment Suppliers in Standard Test Methods

Approved as amended by COS September 2005

Introduction

ASTM International policy is to encourage the development of test methods based on generic equipment (Section 15, Regulations Governing ASTM International Technical Committees, March 2010, and Sections F3 andF4, Form and Style for ASTM International Standards, March 2010). However, in the absence of generic equipment, test methods based on non-generic or proprietary equipment can be developed through the voluntary, full consensus process of technical Subcommittees of Committee D02.

Widespread use of ASTM International methods requires that users know the source of non-generic equipment utilized in test methods. Likewise, there should be a clear process for later incorporation of additional equipment into a test method after its initial issue if such equipment becomes available and is shown to be equivalent.

1. **Scope**

1.1 These guidelines are for Subcommittees with jurisdiction over Standard Test Methods. They offer recommendations for listing the manufacturer of non-generic test equipment for the benefit of the user and for validating and listing equivalent equipment into the test method.

1.2 These guidelines are non-mandatory. However, once a Subcommittee has adopted their use for a test method, further actions described in the Guidelines become mandatory for that standard.

2. **Referenced Documents**

2.1 ASTM International Documents

2.1.1 Regulations Governing ASTM International Technical Committees

2.1.2 Form and Style for ASTM International Standards

2.1.3 ASTM D 6300 Standard Practice for Determination of Precision and Bias for Use in Test Methods for Petroleum Products and Lubricants

2.1.4 ASTM D 6708 Standard Practice for Statistical Assessment and Improvement of the Expected Agreement Between Two Test Methods that Purport to Measure the Same Property of a Material

3. **Terminology**

3.1 Definitions specific to the guidelines:

3.1.1 *Equipment* as used in these guidelines, the term is intended to include any apparatus, solvents or other material utilized to conduct a test method.

Discussion - while in most cases equipment denotes the apparatus required for a test method, the Guidelines are equally applicable to non-generic solvents or other materials utilized to obtain the necessary precision and bias.

3.1.2 *Generic equipment* - apparatus which belongs to a general class of devices, any of which is expected to be equivalent to the other when used to run the test method.

Discussion - The equipment description is sufficiently detailed so that any apparatus meeting the description is expected to result in the same precision of results. Examples of generic equipment are glassware, thermometers, gas chromatographs, etc.

3.1.3 *Non-generic equipment* - apparatus used to develop a method which is patented, trademarked, or proprietary.

Discussion - The equipment description is protected or too limited to allow a direct substitution with untested apparatus. Examples of non-generic equipment are the Mini-Rotary Viscometer, the Pin and Vee Block Test Machine and the Jet Fuel Thermal Oxidation Tester.

3.1.4 *Equivalent / Replacement equipment* - apparatus giving essentially the same precision and bias as the apparatus used in the interlaboratory study on which the precision statement is based.

Discussion - Equivalence to generic equipment is based on meeting the description in the Apparatus section. Equivalence to non-generic equipment is determined by a testing mechanism described in Section 7 of these guidelines.

3.1.5 *RR D02 XXXX* - the Research Report describing the development of the precision program of the test method.

3.1.6 *RR D02 YYYY* - the Research Report describing the development and evaluation of a test method not containing a quantitative precision program.

4. **Significance and Use**

4.1 The guidelines provide examples of notes to be included as part of the Precision and Bias or Apparatus sections of a standard test method, giving the use the source of the non-generic test equipment used to develop the method.

4.1.1 The guidelines distinguish between generic equipment described in technical detail in the Apparatus section and equipment that is identified as non-generic, by the apparatus supplier.

4.1.2 The guidelines also include the mechanism to be used by an equipment supplier to assure that proposed non-generic equipment will produce equivalent results of the same precision as the original equipment.

4.2 Any change in equipment which affects the test results and therefore the precision of the method requires a new precision statement and new equipment listing. The old precision statement and its accompanying listing apply only to equipment not incorporated in the change.

5. **Listing of Equipment Used to Develop the Precision Statement**

Note 1 - the following section discusses Equipment in terms of Apparatus because that is the most common occurrence. If a test method requires the use of a special solvent or other material, the pertinent note should be modified to refer to the solvent etc.

5.1 When non-generic equipment is used to develop the original precision statement in a test method, a note listing the equipment should be made part of the precision statement in the test method. An example of such a note follows:

5.1.1 Note x - The following equipment, as listed in RR D02 XXXX, was used to develop this precision statement: (here insert the name and model of equipment and the name and address

of manufacturer). This listing is not an endorsement or certification by ASTM International.

5.2 When a precision statement based on non-generic equipment is revised, the following note should be added:

5.2.1 Note y - The following equipment, as listed in RR D02 XXXX, was used to develop the revised precision statement: (here insert the name and model of equipment and the name and address of manufacturer). This listing is not an endorsement or certification by ASTM International.

5.3 When a precision statement is based on non-generic equipment made by more than one manufacturer, the following note should be added:

5.3.1 Note z - The following equipment, as listed in RR D02 XXXX, was used to develop the precision statement and no statistically significant differences were found between these pieces of equipment: (here insert 1. name and model of first equipment and then a name and address of its manufacturer, 2. the name and model of the second equipment and the name and address of its manufacturer, 3. etc.). This listing is not an endorsement or certification by ASTM International.

6. Listing of Non-generic Equipment Used to Develop a Method with No Quantitative Precision Statement

6.1 In a few cases non-generic equipment is used to develop a standard test method for which precision cannot be calculated by presently available methods. However, a Research Report describing the development program, together with a description of the equipment, shall be prepared. In such cases the following note should be added to the Apparatus section.

6.1.1 Note yy - The following equipment, as described in RR D02 YYYY, was used to develop this test method (here insert the name and model of the equipment and the name and address of manufacturer). This is not an endorsement or certification by ASTM International.

7. Procedure for Listing of Equivalent / Replacement Equipment

7.1 To list non-generic equivalent / replacement equipment, after approval and publication of the test method, one of the following alternatives must be followed:

7.1.1 For methods with precision that can be established by D6300 or equivalent, use D6300 or equivalent to establish precision, and use D6708 or equivalent to establish bias. Prior Subcommittee approval of the program including equipment acceptance criteria for precision and bias is required.

7.1.2 For methods that do not have precision that can be established by D6300 or equivalent, consult a qualified statistician for the appropriate assessment protocol. Prior Subcommittee approval of this protocol is required.

7.2 The Subcommittee will evaluate the results of the interlaboratory program, and if the results are accepted, the addition of the new equipment to the listing note shall be Approved by the full balloting process. If the precision is significantly different (either better or worse) from the original equipment but still acceptable for use with the test method, the Subcommittee may include a separate precision statement and add the equipment in a separate note by the full balloting process.

8. **Keywords**

Committee guidelines, generic equipment, non-generic equipment, equivalent equipment

Attachment # 9

Procedural Requirements and Engineering Review

How does the ACC Conformance Page fit in?

Jim Moritz

Intertek Automotive

August 11, 2016

Procedural Requirements and Engineering Review

- Each engine lube test procedure has steps and requirements to follow or meet.
- Most procedural requirements directly affect how the test operates, or exist for clearly stated validity criteria or performance measures (pass/fail parameters).
- Some of the steps to perform are for information, but don't change how the test would be conducted or evaluated.
- Different users place different levels of importance on the information.
- Information is good, but if it was missing, what are the consequences?
- Is a test invalid or unusable if it is not 100% complete?
- Could the practice of an Engineering Review which is used for negative Quality Index (QI) Values be incorporated into some of the procedural requirements?
- This is a fine line that needs careful and thoughtful consideration to maintain the gains made and further improve test quality while managing test costs, i.e. not "throwing away" good, usable tests.

Standard Test Report Cover Page Declarations

Intertek

V/I/N	V = Valid
	I = Invalid
	N = Results cannot be interpreted as representative of oil performance (Non-reference oil) and shall not be used for multiple test acceptance

In my opinion this test Has/Has Not been conducted in a valid manner in accordance with the Test Method, D XXXX, and appropriate amendments. The remarks included in the report describe the anomalies associated with this test.

Attachment # 9

ACC Code of Practice- Engine Test Operational Validity Criteria

Intertek

Operational Validity Criteria - General

The test laboratory is responsible for determining and documenting the operational validity of every engine test and the conformance of every test with those aspects of the Code that are controllable by the test laboratory. The test laboratory shall determine and document the operational validity of engine tests in accordance with the latest version of the appropriate test procedure, including all updates issued by the organization responsible for the test.

The test laboratory shall document the decision regarding the operational validity and conformance of every test to the Code of Practice using the Test Laboratory Conformance Statement given on Page G4 of this Appendix. This form is to be forwarded to the ACC Monitoring Agency along with test results and must be inserted in the front of the final test report for the engine test.

In responding to the Declarations in the ACC Code of Practice Test Laboratory Conformance Statement, the test engineer shall, as a minimum, consider each of the checklist questions shown below:

Attachment # 9

ACC Conformance Statement – Question #2, Operational Validity

Intertek

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test, were met.
Yes_____ No _____*

Checklist Criteria

Checklist Criteria	Yes	No
Was the test run for the full duration specified in the test procedure?		
Was the appropriate combination of test power selection and/or test stands calibrated in accordance with the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test?		
Were test engine build records in accordance with the test procedure?		
Was stand instrumentation calibrated in accordance with the test procedure requirements?		
Do test operational performance data conform with the test procedure requirements?		
Were all after-test engine part ratings and measurements reviewed and all calculations and/or transcription errors corrected?		
Were all new and used test oil analytical data reviewed and all transcriptional errors corrected?		

Examples

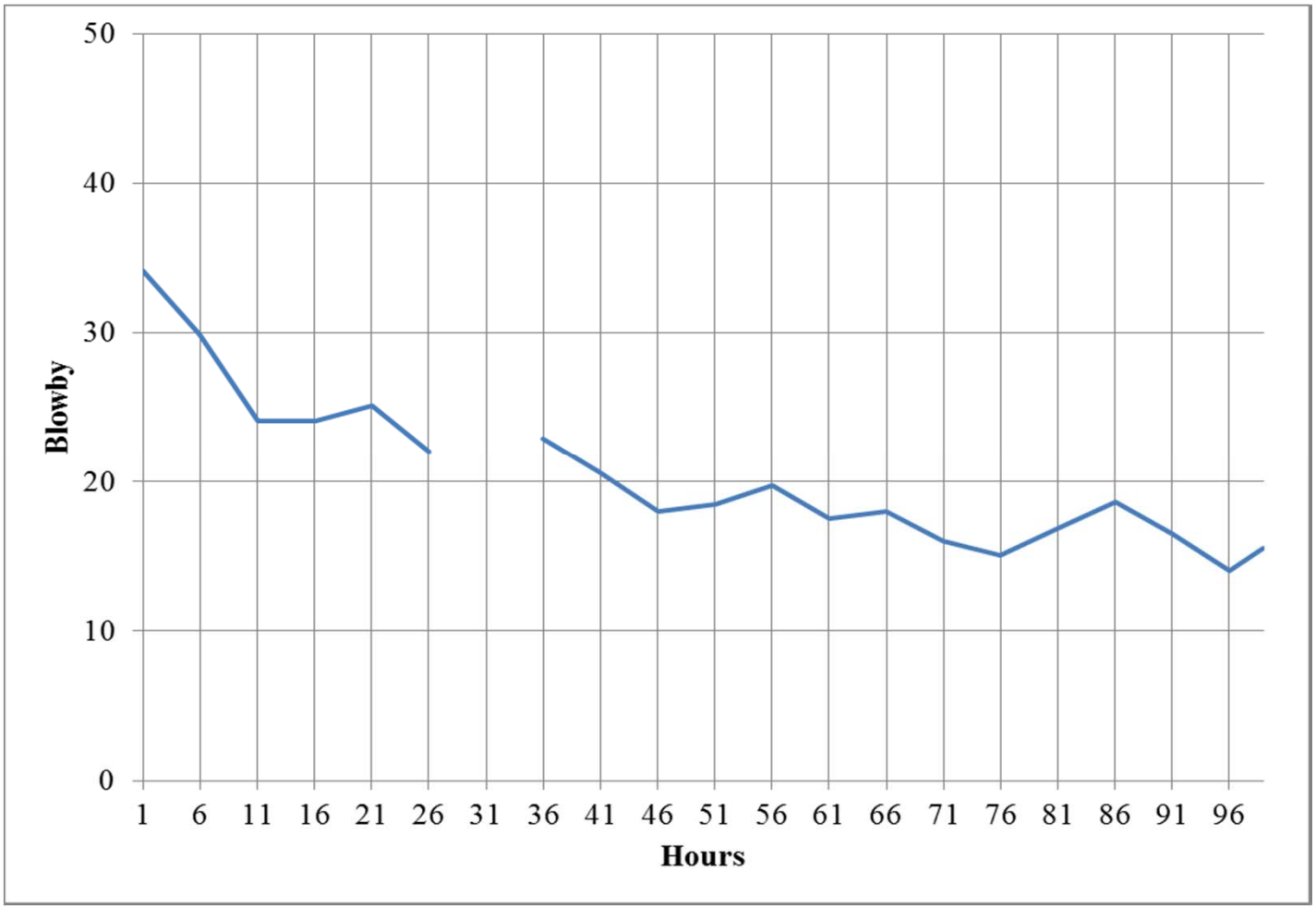
Sequence IIIG Blowby Requirements

11.11 *Blowby Flow Rate Measurement*—Measure the engine blowby flow rate according to the following instructions, and within 15 min of the end of test, at hours: 1, 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56, 61, 66, 71, 76, 81, 86, 91, 96 and 99.

Hours	001	006	011	016	021	026	031	036	041	046	051	056
Blowby, L/min	34.2	29.9	24.1	24.1	25.1	22.0	[redacted]	22.9	20.6	18.0	18.5	19.7
Hours	061	066	071	076	081	086	091	096	099			Average
Blowby, L/min	17.5	18.0	16.0	15.1	16.9	18.6	16.5	14.0	15.5			20.4

Sequence IIIG Blowby is a record only; no action is taken based on values and the lab doesn't have control over them.
What if one is missed or the equipment isn't available?

Sequence IIIG Blowby Report Plot with Missing Value



Sequence IIIG Operational Validity Determination

Intertek

12.13 *Determination of Operational Validity*—Determine and document the operational validity of every Sequence IIIG test conducted, according to the following:

12.13.1 Complete the report forms to substantiate that the test stand, engine build-up, installation of the engine on the test stand, and the test operation conformed to the procedures specified in this test method.

12.13.3 If the end of test quality-index value is below 0.000, conduct an engineering review of the test operations. The test laboratory shall conduct the engineering review of reference oil tests and report its findings to the Test Monitoring Center.[29] If needed, additional industry experts may be consulted. Document the results of the engineering review.

How Should ACC Conformance Statement be Filled Out?

Intertek

DECLARATIONS

No. 1 All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test. Yes_____ No _____*

No. 2 The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test, were met. Yes_____ No __X__*

If the response to this Declaration is "No", does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory? Yes _____* No_____

No. 3 A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case. Yes _____* No_____ *(This currently applies only to specific deviations identified in the ASTM Information Letter System.)*

CHECK THE APPROPRIATE CONCLUSION

(X) Operational review of this test indicates that the results should be included in Multiple Test Acceptance Criteria calculations.

( ) *Operational review of this test indicates that the results should not be included in Multiple Test Acceptance Criteria calculations.

NOTE: *Supporting comments are required for all responses identified with an asterisk.*

Comments:

The 31 hour blowby is not available due to ...

December 2010 *American Chemistry Council Code of Practice Page G-4*

The Code of Practice Section G-4 does not provide guidance for the conclusion.

Sequence IVA Oil Sump Temp Measurement Requirements

Intertek

6.3.1.1 *Frequency of Logged Steady-State Data*—Log the Stage I steady-state (last 45 min of stage) operational conditions every 2 min or more frequently. Log the Stage II steady-state (last 5 min of stage) operational conditions every 30 s or more frequently.

6.3.11.6 *Engine Oil Sump Temperature*—Sense the engine oil sump temperature by modifying the drain plug location of the oil pan for a thermocouple fitting, as shown in Fig. 6. Insert the sensor tip (50 ± 5) mm inside the interior surface of the oil pan. Only monitor this temperature. It is not used for oil temperature control.

Sequence IVA Example

Intertek

Oil Quantity in the engine is critical:

11.2.3.2 Measure by volume, 3.00 L of new test oil.

11.2.3.3 Weigh and record the mass of the 3.00 L oil sample before charging the engine.

11.3.4 *Oil Additions and Used Oil Sampling*—During the 100 h test, do not add oil. New oil makeup is not allowed if oil leaks occur. Take a 10 mL oil sample of the new oil, used oil at 25 h, used oil at 50 h, and used oil at 75 h. Remove used oil

Do you replace a broken oil sump thermocouple to report oil sump values and lose some oil to report a record only parameter?

Attachment # 9

Sequence IVA Report Page with Missing Value

Intertek

	Parameter	Units	Typical Values		Average	
Non-controlled Parameters	Oil Sump Temperature	°C	53.5 ± 3	63.5 ± 3	[redacted]	[redacted]
	Oil Gallery Temperature	°C	50 ± 3	60 ± 3	48.08	58.70
	Coolant In Temperature	°C	45.5 ± 3	49 ± 3	45.76	48.83
	Exhaust Gas Temperature	°C	340 ± 50	450 ± 50	327.06	442.01
	Fuel Rail Temperature	°C	22.5 ± 10	22.5 ± 10	29.35	29.33
	Oil Gallery Pressure	kPa	130 ± 40	260 ± 80	173.75	339.16
	Oil Cylinder Head Pressure	kPa	40 ± 20	65 ± 30	40.87	65.48
	Fuel Pressure	kPa	238 ± 10	234 ± 10	272.20	269.80
	Manifold Vacuum	kPa	60 ± 5	65 ± 5	62.50	66.18
	Air-to-Fuel Ratio	-	14.1 – 14.7	14.1 – 14.7	14.65	14.62
	Crankcase Pressure	kPa	-0.3 ± 0.1	-0.3 ± 0.1	-0.10	-0.11
	Fuel Flow	kg/h	1.3 ± 0.3	2.15 ± 0.3	1.13	1.98
	Ignition Timing	°BTDC	9 – 11	22 – 26	10.00	25.00
	Ambient Temperature	°C	20 – 45	20 – 45	36.18	37.11
	Rocker Cover Gas Temperature	°C	47 – 49	52 – 55	47.82	52.41
	Rocker Cover Coolant Flow	L/min	3.0 – 4.5	3.0 – 4.5	4.28	4.27
	Coolant Pressure	kPa	70±5	70±5	70.2	70.2
	Rocker Cover Coolant In Temp.	°C	Record	Record	45.5	48.5
	Rocker Cover Coolant Out Temp.	°C	Record	Record	45.6	48.8
	Front Cover Fresh Air Flow	SL/min	Record	Record	6.59	7.41

Sequence IVA Negative QI Engineering Review

Intertek

If the QI calculation of a controlled parameter is less than zero, investigate the reason, assess its impact on test operational validity, and document such finding in the final test report. For calibration tests, review the operational validity assessment with the TMC.

C13 Oil Sample Requirements

Intertek

10.8.6 *Oil Purge Sample and Addition*—Perform a purge and take an oil sample at 4 h. Do not add fresh oil at the 4 h point. Perform a purge, take an oil sample and make an oil addition at the end of each 50 h period. Add new oil and purge sample to the external oil system reservoir.

10.8.6.1 *Do not shut down the engine for oil sampling and oil addition.*

10.8.6.2 *Full Mass*—Record the oil mass indicated by the external oil system at the completion of the fourth test hour and before removal of the 150 mL purge and the 120 mL oil sample. This mass is the *full mass*.

A10.1 Perform at test hours 0, 4, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500 the following tests on the engine oil: *(1)* Viscosity @ 100 °C by Test Method D445, *(2)* Base No. by Test Method D4739, *(3)* Acid No. by Test Method D664, *(4)* Oxidation by Test Method D6987/D6987M (T-10) Integrated IR, *(5)* Wear Metals, Al, Cr, Cu, Fe, Pb, Si by Test Method D5185.

C13 Report Page with Missing 4 Hour Values

Intertek

Hours	Soot Wt.% TGA	Viscosity @ 100°C cSt,D445	TBN D 4739	TAN D 664	Integrated IR Oxidation	Fuel Dilution Wt. %, D 3524
000		13.99	7.9	1.7		
004						
050	0.4	14.62	6.1	2.4	-196.4	0.0
100		14.48	5.1	2.4	-184.0	
150		14.46	4.6	2.7	-246.9	
200		14.49	3.9	3.2	-348.8	
250	1.4	14.63	3.4	3.4	-226.4	0.0

Hours	Metal Elements (ppm)							
	Fe	Pb	Cu	Cr	Al	Si	Sn	Na
000	2	0	0	0	0	4	0	0
004								
050	26	2	5	0	1	60	0	4
100	40	2	5	1	1	71	1	5
150	48	2	6	2	1	70	1	2
200	59	3	7	2	1	73	2	2
250	64	4	7	3	1	71	2	3

C13 Operational Validity and Engineering Review

Intertek

A11.3 *Determination of Operational Validity*:

A11.3.1 Both *(1)* QI threshold values for operational validity and *(2)* specifications for non-QI control parameters and ranged parameters are shown in Table A11.1.

A11.3.1.1 A test with all control parameter QI values greater than or equal to the threshold value and with averages for all non-QI control parameters and all ranged parameters within specifications is operationally valid provided that no other operational deviations exist that may cause the test to be declared invalid.

A11.3.1.2 Perform an engineering review to determine operational validity for a test with any control parameter QI value less than the threshold value shown in Table A11.1.

CAT 1P Fuel Position Requirements

11.5 *Periodic Measurements*—Record all engine conditions listed in Step 5 of Annex A12 as a snapshot at least once every 6 min. Record humidity readings using the laboratory's primary humidity measurement system. Correct the recorded humidity values to standard pressure conditions of 101.12 kPa. Record the fuel position as indicated by the electronic technician at test hours 24, 240, and 360.

Electronic Technician is the CAT ECM Diagnostic Software.

"Fuel Position" is also represented in stand control systems as Fuel Rack Position which is also a good diagnostic.

CAT 1P Report Page with One Missing Fuel Position Value

Oil Analysis	New	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360
Viscosity @ 100°C	15.58	13.85			13.42						13.52		13.77			13.92
Viscosity @ 40°C	110.50	101.50			98.22						100.70		103.40			104.90
TBN D4739	8.20	7.70			7.20						6.50		6.50			6.40
TAN D664	3.11	3.09			3.09						3.36		3.42			3.60
Wear Metals Fe (ppm)	1	22			73						150		170			163
Al (ppm)	0	0			0						0		0			0
Si (ppm)	5	2			3						4		4			4
Cu (ppm)	0	0			2						3		4			4
Cr (ppm)	0	0			2						4		5			5
Pb (ppm)	0	0			1						1		0			1
Fuel Dilution %		0.7									0.0					0.0
Blowby (L/min)		56.4	49.6	47.8	51.5	45.5	53.1	48.5	54.3	47.7	48.8	47.6	45.0	52.3	47.1	42.1
Oil Consumption g/h for hrs ending		10.4	6.8	7.2	11.9	9.1	6.7	8.0	8.2	8.7	4.9	12.2	6.6	8.5	10.5	5.8
Oil Consumption r2		0.53	0.95	0.95	0.88	0.99	0.98	0.75	0.96	0.98	0.36	0.83	0.77	0.97	0.87	0.75
Fuel Position (mm)		85.0									82.7					[redacted]

CAT 1P Operational Validity Determination

Intertek

12.1 *Test Validity Descriptions*—If a test was run for 360 h according to this test method, declare the test valid.

12.1.1 If a test was not run as specified by this test method, the test is operationally invalid. Some examples of an invalid test are: use of non-specified hardware, non-specified assembly methods, a test run whose downtime is greater than 125 h, and so forth. If a test without data acquisition on any controlled parameter has a gap greater than 4 h, the test is operationally invalid.

12.1.1.1 Conduct an engineering review when a control parameter QI value is below the threshold value of zero. A

Attachment # 9

T-12 Determination of Operational Validity

A3. DETERMINATION OF OPERATIONAL VALIDITY

A3.1 Quality Index Calculation

A3.1.1 Calculate Quality Index (QI) for all control parameters in accordance with the DACA II Report. Be sure to account for missing or bad quality data in accordance with the DACA II Report as well.

A3.1.2 Use the U, L, Over Range, and Under Range values shown in Table A3.1 for the QI calculations.

A3.1.3 Do not use the data from the first six min of Phase II. This is considered transition time.

A3.1.4 Round the calculated QI values to the nearest 0.001.

A3.1.5 Report the QI values on the appropriate form.

A3.2 Averages

A3.2.1 Calculate averages for all control, ranged, and non-control parameters and report the values on the appropriate form.

A3.2.2 The averages for control and non-control parameters are not directly used to determine operational validity but they may be helpful when an engineering review is required (refer to A3.4).

A3.3 Determining Operational Validity

A3.3.1 QI threshold values for operational validity are shown in Table A3.1. Specifications for all ranged parameters are shown in Table A3.1.

A3.3.1.1 A test with EOT QI values for all control parameters equal to or above the threshold values and with averages for all ranged parameters within specifications is operationally valid, provided that no other operational deviations exist that may cause the test to be declared invalid.

A3.3.1.2 Conduct an engineering review (see A3.4) to determine the operational validity of a test with any control parameter QI value less than the threshold value.

A3.3.1.3 With the exception of crankcase pressure, a test with a ranged parameter average value outside the specification is invalid. Conduct an engineering review to determine operational validity for a test with crankcase pressure outside the specification.

A3.4 Engineering Review

A3.4.1 Conduct an engineering review when a control parameter QI value is below the threshold value. A typical engineering review involves investigation of the test data to determine the cause of the below threshold QI. Other affected parameters may also be included in the engineering review. This can be helpful in determining if a real control problem existed and the possible extent to which it may have impacted the test. For example, a test runs with a low QI for fuel flow. An examination of the fuel flow data may show that the fuel flow data contains several over range values. At this point, an examination of exhaust temperatures may help determine whether the instrumentation problem affected real fuel flow versus affecting only the data acquisition.

A3.4.2 For reference oil tests, conduct the engineering review jointly with the TMC. For non-reference oil tests, optional input is available from the TMC for the engineering review.

A3.4.3 Determine operational validity based upon the engineering review and summarize the decision in the comment section on the appropriate form. It may be helpful to include any supporting documentation at the end of the test report. The final decision regarding operational validity rests with the laboratory.

T-12 Determination of Operational Validity, excerpts

Intertek

A3.3.1.1 A test with EOT QI values for all control parameters equal to or above the threshold values and with averages for all ranged parameters within specifications is operationally valid, provided that no other operational deviations exist that may cause the test to be declared invalid.

A3.3.1.3 With the exception of crankcase pressure, a test with a ranged parameter average value outside the specification is invalid. Conduct an engineering review to determine operational validity for a test with crankcase pressure outside the specification.

A3.4.3 Determine operational validity based upon the engineering review and summarize the decision in the comment section on the appropriate form. It may be helpful to include any supporting documentation at the end of the test report. The final decision regarding operational validity rests with the laboratory.

Discussion

- Clearly, there are cases of missed oil samples or missed blowbys that would result in an invalid test: Sequence VG Blowby through 120 hours, Mack T-12 oil samples at 100, 250 and 300 hours are two examples.
- Many other breakdowns or omissions would still result in a test being invalid.
- Are there stated procedural requirements that if weren't performed or data not available, would have no impact on a test? Can that test be valid?
- There is a cost associated with requiring perfection.
- Can the right language be crafted to incorporate "Engineering Review" into other requirements of test procedures beyond Negative QI Values?
- Is there a forum for asking for an ACC review of the Conformance Statement?

Suggestions for Wording to add to Test Procedures????

1. If a test exhibits any other procedural excursion which does not directly impact test results, an engineering review is allowed to help determine the validity.
2. For any procedural deviations with an expressly stated validity requirement or needed for determination of validity or calculating a performance measure, declare the test invalid. For any other procedural deviations, conduct an engineering review.
3. For any procedural deviations without an expressly stated validity requirement or not needed for determination of validity or calculating a performance measure, conduct an engineering review.
4. For any procedural requirements for information only which are not conformed with, conduct an engineering review.
5. Procedural requirements included for information only not conformed with, conduct an engineering review.
6. Conduct an engineering review when a procedural deviation exists that prevents results for information only from being obtained.
7. Conduct an engineering review for procedural deviations from requirements which provide information only.
8. For procedural deviations from requirements which provide information only, conduct an engineering review.

Summary

- We all want perfect tests.
- Most procedural requirements affect a test.
- Some procedural requirements are to provide additional information.
- Do those requirements affect test quality?
- Discarding tests for these reasons will affect test costs.
- Can we find a balance to manage test costs?

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Attachment # 10

Technical Guidance Committee (TGC)
August 11, 2016
2:00PM – 5:00PM
Dearborn, MI

Motions and Action Items
As Recorded at the Meeting by Bill Buscher

1. Action Item – Frank Farber to draft a separate document for "unavailable" tests.

2. Action Item – TGC to review the current document for "out of control" tests.

3. Action Item – Frank Farber to add a notification procedure to both the "out of control" test and "unavailable" test documents.

4. Action Item – TGC to review the ASTM International Committee D02 on Petroleum Products, Liquid Fuels and Lubricants document dated December 2014, for a follow-up discussion at the next TGC meeting.

5. Action Item – TGC chair to send a request to Doug Anderson asking for an ACC review of the Conformance Statement. Include information on why and a suggestion for changes.

6. Action Item – Jim Moritiz to draft up a modified Conformance Statement with the suggested changes for TGC review and to include with the request to Doug Anderson.