

Draft Minutes

PCEOCP Matrix Design and Funding (MDF) Sub-Group

March 19, 2008

Intertek, San Antonio, TX

A PowerPoint package was used to facilitate the meeting process. It is attached or posted separately from the minutes.

The agenda was set as follows:

- Introduction and membership
- Project organization and meeting rules
- Project timeline
- Scope of work
 - Matrix design
 - Funding
- Key questions (inputs and outputs)
- Actions and assignments
- Next meeting

The chair's idea of calling this the MADFUN group did not gain traction. This subgroup will from now on be referred to simply as "the group".

Introduction and membership

19 people volunteered to join the subgroup. 13 of them attended and one called in. They are: Andy Ritchie of Infineum, Bill Buscher of SwRI, Bill Lam of Afton, Charlie Leverett of Intertek, Chris Castanien of Lubrizol, David Smith of API, Doyle Boese of Infineum, Glen Mazzamaro of Vanderbilt, Jerry Wang of Oronite, Jim Linden of GM, Jo Martinez of Oronite, John Zalar of TMC, Kevin Ferrick of API, Patrick Lai of ExxonMobil, Ron Romano of Ford, Thom Smith of Valvoline. Four guests attended the meeting as well. They are: Ben Weber of SwRI, Wayne Peterson of Haltermann, Brent Dohner of Lubrizol and Matthew Ansari of Chevron.

The group agreed that the current membership has the proper representation across the industry interests (5 additive suppliers, 3 lube marketers, 2 OEMs and 2 independent labs) and industry organizations (API, ACC, ILSAC, TMC and ASTM/PCEOCP).

The group agreed that meeting records will be sent to TMC for posting at the TMC website. The group also agreed that communications to each industry organizations will be done through their participating members. Specifically, API via Ferrick and Smith, PCEOCP via Thom Smith and Glenn Mazzamaro, ACC via Jerry Wang, ILSAC via Jim Linden and TMC via John Zalar. Communications to the Surveillance Panel (SP) will be done via PCEOCP.

Meeting Rules

The group agreed to follow ASTM meeting rules. The solicitation from the chair to have a secretary was met with laughter. It will be done by the chair.

The group agreed to post the meeting records on the TMC website. The records will be forwarded to John Zalar by the chair for posting.

The group also agreed that some voting, especially on the final recommendation, is likely. The voting rule was set that each company has one vote (not each person) with the intention to work out a group consensus. The group recognized that any final decision will be made at the PCEOCP. PCEOCP may instruct the group to revise its recommendation based on PCEOCP ballot results.

The chair then reviewed the process required to incorporate VD into GF-5. The group defined the boundary of the subgroup to provide recommendations to PCEOCP but only monitor but not conduct the actual matrix testing which is usually managed by TMC. It showed that the VID consortium needs to provide a final test procedure with data demonstrating discrimination (this was further elaborated in the scope discussion) to ILSAC/Oil then to ASTM/PCEOCP. It also showed that API needs to prepare an MOU before PCEOCP can initiate the matrix testing. The MOU will require all stake holders to sign. They include API, ACC, ILSAC (JAMA and AAMA separately), ASTM and each participating labs (dependent and independent). This also means the MDF subgroup is operating in parallel to the process in terms of timeline and therefore will require information and activities that have not happened yet.

Action: The group will request API to start drafting MOU

Action: The group will request VID consortium to release final test procedure (including test duration, control and setup) and data demonstrating discrimination based on reference oils that represent current or prototype GF-5 technology

Timeline

The chair showed the GF-5 timeline and proposed a timeline for the group. While Jim Linden indicated the desire to start matrix testing by May 1, he and the group also recognized that the consortium is not likely to complete its prove-out matrix before that. Considering that the VID final recommendation impacts the timing of all subsequent activities, the group decided to request VID to update its timeline.

Action: The group will request VID to provide the latest estimate of timing to release final recommendation

The group then estimated that ILSAC/Oil and PCEOCP will require at least weeks to review the VID recommendation for acceptance and for labs to decide if they want to join the matrix testing. The group's timeline was set to deliver final recommendations to PCEOCP by end of May to allow final decision during June ASTM. This is contingent upon the availability of all sources of information needed by the group. The group will continue to review/revise it as it goes. While it appeared that the timing was tight and probably already behind schedule, the group also felt that the actual matrix testing would

not require the full 6 months currently allocated in the GF-5 timeline therefore the proposed timeline was considered acceptable.

Scope of work

The group finalized the wording for the matrix design scope of work as follows:

- The primary goal is to establish VID test precision
 - Repeatability and reproducibility based on fully formulated reference oils representative of current technology such as GF-4 capable or GF-5 prototype
- The secondary goal is to establish base oil interchange and viscosity grade read-across guidelines
- The group will continue to monitor Precision Matrix Program until completed

The group debated the definition of reference oils. It was, sort of, concluded that at least some of the current VID reference oils could meet the definition therefore can be used to demonstrate discrimination. It was recognized that VID discrimination oils do not necessarily become matrix test oils.

Action: the group will request VID consortium to provide/clarify reference oil information as part of the information release (see action above)

The group finalized the wording for the funding scope of work as follows:

- The primary purpose is to recommend minimum funding needs for proposed matrix options to ILSAC/Oil
- The funding recommendation will include sources and breakdown of funding

Key Inputs and Outputs

The group moved on to define the inputs needed for matrix design and funding estimates.

The following six items were listed:

- Final VID test procedure and demonstration of discrimination
- Number of reference oils
- Number of participating labs and stands (minimum 2 labs and 3 stands)
- Incorporate engine age effect
- BOI range
- VGRA range

The group debated the number and type of matrix oils needed. The group recognized that not all matrix oils will become test reference oils. The group agreed that the matrix oils must include a GF-5 demonstration oil, hopefully near the pass/fail limit, and a GF-4 oil used by OEMs for engine certification. Additional oils may be needed if the above two oils can't serve to demonstrate discrimination. These additional oils may come from the VID consortium or other sources but all must meet the definition of "current or prototype GF-5 technology". The group also agreed that the precision matrix will only need one viscosity grade.

The statisticians present (Jo Martinez and Doyle Boese) decreed that the matrix will require the minimum of 2 labs and 3 stands. Boese also mentioned that the matrix needs

to consider engine aging effect though there is no need for additional input to design this factor in.

As to the information needed to design BOI and VGRA options, the group deferred that to the API BOI/VGRA group to provide a wish list for consideration.

Action: the group will request PCEOCP to solicit labs interested in participating and the number of stands available in those labs.

Action: the group will request PCEOCP to solicit a GF-5 demonstration oil

Action: The group will request ILSAC to identify/provide a GF-4 oil used in engine fuel economy certification.

Action: the group will request API BOI/VGRA to compile the desired range of BOI and VGRA, and the number and types of reference oils to support that range

The following five items were listed as the key inputs:

- Minimum number of tests to meet primary goals
- Number of tests desired to address other goals
 - list goals and number of tests needed for each individual goal
- Cost per test from labs including the decision on how many reference runs for stand calibration
- Number of participating labs and stands
- Reference oil supplies

The first two items will come from the Matrix Design part of the group. The group then needs the cost estimate from participating labs including consideration of the number of reference runs needed for stand calibration. Charlie Leverett commented that VID consortium had decided on the stand calibration. However, Thom Smith of Valvoline believed this needs to be handled by the SP because there may be participating labs outside of the consortium, indicating Valvoline might be interested.

The group believed the supply of reference oils are usually secured and managed by the program manager of the actual matrix testing. However, it was kept until it is properly handed off.

Action: The group will request the SP to solicit cost estimates from potentially participating labs

The key outputs of the group are the four possible designs address:

- Precision only
- + BOI
- + VGRA
- + BOI and VGRA

The next meeting will be a teleconference on April 3 at 2 pm, Eastern. A bridge line will be set up by the chair.