



Oronite

ASTM PCEOCP VID Matrix Design and Funding Subgroup

**September 4, 2008
Detroit, MI**

Membership – open to all PCEOCP members

Name	Affiliation	Name	Affiliation
Andy Ritchie	Infineum	Hannah Murray	Toyota
Ben Weber	SwRI	Jerry Wang	Oronite
Bill Buscher	SwRI	Jim Linden	GM
Bill Lam	Afton	Jo Martinez	Oronite
Brent Dohner	Lubrizol	John Zalar	TMC
Charlie Leverett	Intertek	Kevin Ferrick	API
Chris Castanien	Lubrizol	Patrick Lai	ExxonMobil
Dan Pridemore	Afton	Ron Romano	Ford
David Smith	API	Thom Smith	Valvoline
Doyle Boese	Infineum	Tim Miranda	BP
Glen Mazzamaro	Vanderbilt	Robert Stockwell	ConocoPhillips

additive suppliers, lube suppliers, OEMs, ind. Labs,
ILSAC, ACC, API, PCEOCP and TMC are all represented

Meeting and Balloting

- Follow ASTM rules for conducting the meeting
 - Industry liaisons
 - ▶ PCEOCP-Thom Smith and Glen Mazzamaro
 - ▶ ILSAC – Jim Linden
 - ▶ ACC – Jerry Wang
 - ▶ API – Kevin Ferrick and David Smith
 - ▶ TMC – John Zalar
 - Records posted on the TMC website
- Generally follow ASTM voting rules but limited to one vote per company
 - Attempt unanimous consensus
 - PCEOCP will have the final vote based on its rules

Timeline

GF-5 timeline

Industry	2005	2006	2007	2008	2009	2010
Test Development						
Precision Matrix						
Test Registration						
Technology Demonstration						
ILSAC/Oil GF-5 Approve						
API Waiting Period						
API First License						

Revised subgroup timeline

		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
initiation	3/19/2008										
Hypothetical matrix	5/16/2008										
Final matrix	8/15/2008										
PCEOCP/ILSAC/Oil	9/15/2008										
Matrix initiation	10/1/2008										
Monitor testing											

VID Consortium expects to release final report in August

Scope – Matrix Design

- 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 readacross guidelines
- The group will continue to monitor Precision Matrix Program until completed

Key Outputs – Matrix Design

- Matrix options
 - Precision matrix that addresses
 - ▶ Repeatability and reproducibility
 - ▶ Engine age effect
 - ▶ Calibration recommendation
 - + BOI
 - + VGRA
 - + BOI and VGRA

Combined Precision/BOI/VGRA Matrix – Step 1 (select 2~3 reference oils from ABCDX at the end)

Stand 1	Stand 2	Stand 3	Stand 4
A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
X	X	X	X
A	A	C	C
D	B	B	D

- Two independent labs/2 stands each
- Oils A-T & X are the 21 Oils from the BOI/VGRA Test Oil Matrix
- Oil X part of the BOI-VGRA matrix and is run on all 4 stands
- Oils A-D & X will be pre-selected to represent all 5 viscosity grades
- Run order to be established
- Provides Data for:
 - Establishing BOI/VGRA, within stand & stand to stand comparisons, Lab to Lab comparisons

Combined Precision/BOI /VGRA Matrix – Step 2 (establish reference oils)

Stand 1	Stand 2	Stand 3	Stand 4
R1	R2	R1	R2
R2	R1	R2	R1
R3	R3	R3	R3

R1, R2 and R3 are selected from Step 1 oils A – D & X.

- R1, R2 & R3 will represent 0W, 5W, & 10W-30

These runs are required to establish reference oil identity, reference oil means, & reference oil standard deviations. Run order to be established.

Additional reference oil data will come from non-matrix lab/stand calibration runs. (Supplemental data from additional labs & stands deemed ready by ASTM will be included in development of the precision statement unless identified and confirmed as a statistical outlier by the industry statistician team, assuming the last test of part of the data submission has started by the end of step 2)

Approved by all trade groups: ILSAC, API, ACC

Scope - Funding

- 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 Outputs – Funding

- Funding estimate for each matrix options
 - Precision only
 - + BOI
 - + VGRA
 - + BOI and VGRA

Matrix Funding

- total test: 44
- donated test: 10
- Precision matrix test: 28 (4x7)
- BOI/VGRA test: 16
- 2/3 of donated tests go to offset precision
- 1/3 of donated tests go to offset BOI/VGRA
- Precision splits 3-way
- BOI/VGRA splits 2-way
- per test cost to be reported to API (MOA)

Other decided items

- Final lab selection – SwRI and Intertek
- Final, official lab quote – pending SP decisions on lab qualification criteria
- Official lab qualification and referencing criteria from SP
 - Including coordinating reference oils to be run at the dependent labs
- Confirm the use of new engines (150 hr break-in) for matrix – yes with the following provision
 - First engine is less than 400 hrs, the second should have less than XX hrs per SP
- Confirm test donation – per SP recommendation, funding may need adjustment accordingly
- Oil data submission and technology selection – OEMs make recommendations to PCEOCP
 - Provide oil description and test pass/fail and actual fuel economy test results
 - Selected additive suppliers will be notified individually
 - Individual supplier will contact TMC to coordinate blending
- Base oil and blending target selection (BOI/VGRA) – API BOI/VGRA group make recommendations to PCEOCP
 - Two group IIs and two groups IIIs, directly supplied to selected additive supplier
- Determine if precision is required for each viscosity grade – yes

Recommendations to PCEOCP

- Approve subgroup recommendations
- BOI/VGRA maps technology/base oil to matrix to PCEOCP
- BOI/VGRA to finalize blending targets to PCEOCP
 - need selected supplier to do blend study
- initiate TMC activities
 - Assign TMC as matrix manager
 - Matrix oil distribution
 - Lab/stand inspection and qualification
 - Data reporting and analysis in coordination with SP
- Establish timeline for designed matrix