

To: API Lubricants Group
 Cc: Lubricants Group Mailing List
 API

BOI/VGRA Task Force Proposal 3 Sequence IVB VGRA

On May 8, 2019 the Lubricants Standards Group (LSG) reviewed “Table F-aa – Groups I, II, III, and IV Viscosity Grade Read-Across: Sequence IVB Test Non-Dispersant Viscosity Modifier”. This table is given below and in the Electronic Ballot Attachment.

Table F-aa – Groups I, II, III, and IV Viscosity Grade Read-Across: Sequence IVB Test Non-Dispersant Viscosity Modifier

	Can be "Read-Across" to:								
Test Run On	0W-16	0W-20	0W-30	5W-20	5W-30	10W-30	10W-40	15W-40	20W-50
0W-16	NA	X	X	X	X	X	X	X	X
0W-20	X	NA	X	X	X	X	X	X	X
0W-30	X	X	NA	X	X	X	X	X	X
5W-20	---	---	---	NA	X	X	X	X	X
5W-30	---	---	---	X	NA	X	X	X	X
10W-30	---	---	---	---	---	NA	X	X	X
10W-40	---	---	---	---	---	X	NA	X	X
15W-40	---	---	---	---	---	---	---	NA	X
20W-50	---	---	---	---	---	---	---	---	NA

Notes:

1. X = read-across is permitted for the viscosity grades identified based on data and some applications of the technical principles approved by the API BOI/VGRA Task Force and API Lubricants Group
2. A dash (---) means that read-across is not permitted; NA = not applicable
3. Relative viscosity modifier treat level was not found to be a statistically significant factor impacting Seq. IVB performance. The range of relative VM treat levels evaluated in the BOI/VGRA matrix was 1.0x to 1.7x.
4. New viscosity grades and associated read-across are allowed if the requirements described in F.1.3 are met
5. Tested formulations containing Group V base stocks must contain an equal amount of the same Group V base stock (e.g., ester) in the candidate oil blend for application of viscosity grade read-across

- In support of this read across the BOI/VGRA Task Force provided “Additional Information” (Ballot Attachment 1, pages 4-7). The LSG discussed the BOI/VGRA Task Force Proposal 3. Subsequently a Ballot Motion was made to Ballot Sequence IVB VGRA.

The Ballot Motion is given below and on Attachment 1, page 3.

Motion

Motion to Ballot Sequence IVB VGRA Table as noted in Slide 2.

- Motion by: Robert Stockwell
- Second by: Brent Calcut

- Approve = 17
- Negative = 0
- Abstain = 0

Motion Passes

Lubricants Group Members should use the API Ballot System to cast their vote and make comments. The Ballot Link is: <http://Ballots.api.org>. The Lubricants Group Member votes will be counted, and all received comments reviewed and considered before the ballot results are final.

Non-Lubricants Group Members should comment on the Ballot Motion using the Ballot system. The Ballot Link is: <http://Ballots.api.org> . All comments on the Ballot Motion will be reviewed before the ballot results are final.

This Ballot will close on June 10, 2019. All Votes and/or Comments must be received by that date. If approved the balloted change will be effective as of May 8, 2019.

Attachment 1

BOI/VGRA Task Force Proposal 3

Sequence IVB VGRA

Detroit

R. C. Dougherty

May 7, 2019

Sequence IVB VGRA Read Table Proposal

Table F-aa – Groups I, II, III, and IV Viscosity Grade Read-Across: Sequence IVB Test Non-Dispersant Viscosity Modifier

Test Run On	Can be "Read-Across" to:								
	0W-16	0W-20	0W-30	5W-20	5W-30	10W-30	10W-40	15W-40	20W-50
0W-16	NA	X	X	X	X	X	X	X	X
0W-20	X	NA	X	X	X	X	X	X	X
0W-30	X	X	NA	X	X	X	X	X	X
5W-20	---	---	---	NA	X	X	X	X	X
5W-30	---	---	---	X	NA	X	X	X	X
10W-30	---	---	---	---	---	NA	X	X	X
10W-40	---	---	---	---	---	X	NA	X	X
15W-40	---	---	---	---	---	---	---	NA	X
20W-50	---	---	---	---	---	---	---	---	NA

Notes:

1. X = read-across is permitted for the viscosity grades identified based on data and some applications of the technical principles approved by the API BOI/VGRA Task Force and API Lubricants Group
2. A dash (---) means that read-across is not permitted; NA = not applicable
3. Relative viscosity modifier treat level was not found to be a statistically significant factor impacting Seq. IVB performance. The range of relative VM treat levels evaluated in the BOI/VGRA matrix was 1.0x to 1.7x.
4. New viscosity grades and associated read-across are allowed if the requirements described in F.1.3 are met
5. Tested formulations containing Group V base stocks must contain an equal amount of the same Group V base stock (e.g., ester) in the candidate oil blend for application of viscosity grade read-across

Motion

- Motion to Ballot Sequence IVB VGRA Table as noted in Slide 2.
- Motion by: Robert Stockwell
- Second by: Brent Calcut
- For 17
- Against 0
- Abstain 1

BOI/VGRA Task Force Proposal #3

Sequence IVB VGRA



Additional Information

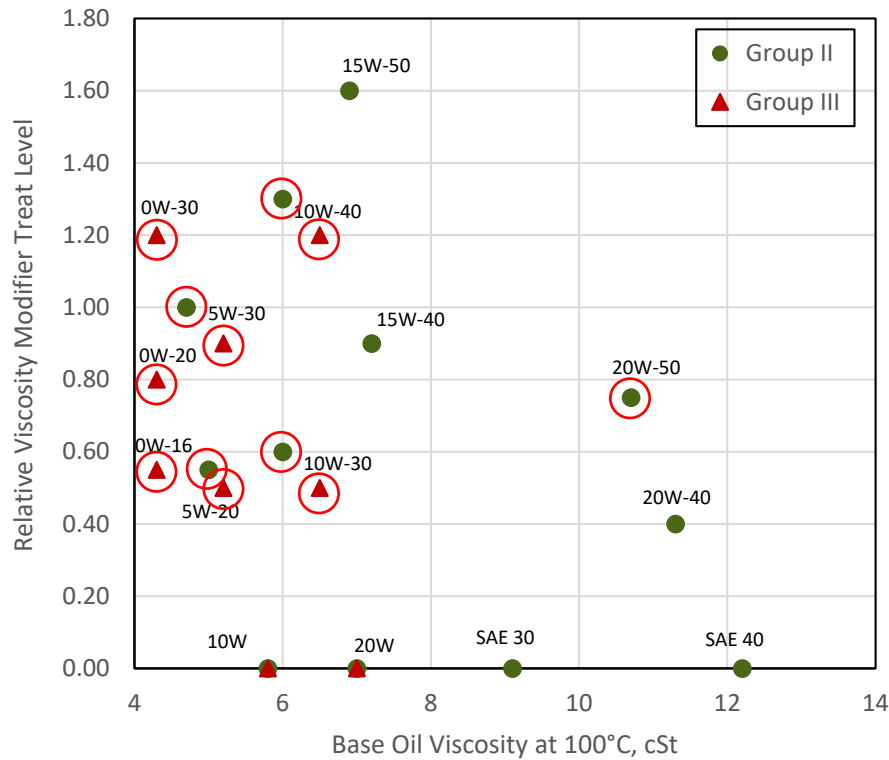
Statisticians Report

Reviewed by BOI/VGRA Task Force – May 8, 2019

Executive Summary

- The following showed statistically significant effect on AVLI and Fe
 - BO Viscosity
 - *Higher BOV lowers AVLI and Fe*
 - Lab and Stand within Lab
- Run 1 is significantly higher than other Run Number for Fe but not for AVLI
- The following showed no statistically significant effect on AVLI and Fe
 - Technology (300 vs Tech1 vs Tech2)
 - BO Group (II vs III)
 - Base Stock Slate within BO Group (II K vs II B, III I vs III D)
 - BO Viscosity Index
 - Relative VM

Sequence IVB Test Matrix



Grades tested in BOI/VGRA matrix

Test Matrix

				BO	BS	Viscosity
Oil	Lab	Stand	Tech ⁽¹⁾	API Grp	Slate	Grade
2	B	2	300	II	K	5W-30
2	A	1	300	II	K	5W-30
2	A	2	300	II	K	5W-30
2	B	1	300	II	K	5W-30
2	B	2	300	II	K	5W-30
2	B	3	300	II	K	5W-30
2	F	1	300	II	K	5W-30
2	A	1	300	II	K	5W-30
2	G	1	300	II	K	5W-30
2	B	2	300	II	K	5W-30
2	B	1	300	II	K	5W-30
2	A	1	300	II	K	5W-30
2	A	2	300	II	K	5W-30
TMC 1012	A	2	1012			5W-20
3-1	B	1	Tech 2	III	D	0W-20
4-1	A	2	Tech 2	III	D	5W-20
5-1	A	1	Tech 2	III	I	0W-30
6-1	B	1	Tech 2	II	K	5W-30
7-1	A	2	Tech 2	III	I	5W-30
8-1	A	1	Tech 2	II	B	10W-30
9	B	2	300	III	I	0W-16
10	B	2	300	III	D	0W-20
11	A	1	300	III	D	5W-20
12	B	2	300	II	B	5W-30
13	B	1	300	III	I	10W-30
14	A	1	300	II	K	10W-40
15	B	1	300	II	B	5W-20
16-1	A	1	Tech 1	II	B	5W-20
17-1	A	2	Tech 1	III	I	5W-30
18-2	B	2	Tech 1	II	K	10W-30
19-1	B	1	Tech 1	III	D	10W-40
20-1	B	2	Tech 1	II	K	20W-50

Past Practice for Developing GF-6 Test VGRA Read Tables

Replacement Tests

- Seq. IIIH, Seq. VH, Seq. VIE
- VGRA Read Table contains similar viscosity grades relative to the Read Table of the prior test with the addition of some 0W-x grades

New Tests

- Seq. IX, Seq. X
- VGRA Read Table restricted to grades tested

Test	0W-16	0W-20	0W-30	0W-40	5W-20	5W-30	5W-40	10W	10W-30	10W-40	15W-40	15W-50	20W	20W-40	20W-50	SAE 30, 40, 50
Seq. IIIH	X	X	X		X	X		X	X	X	X	X	X	X	X	X
Seq. VH	X	X	X		X	X		X	X	X	X	X	X	X	X	X
Seq. VIE		X	X	X	X	X	X		X	X						
Seq. IX	X	X	X		X	X			X							
Seq. X	X	X			X	X	X		X	X						