

VH Rater Workshop | MINUTES

Revision Date 12/8/2016 8:32:00 AM

Relevant Test:	Sequence VG and VH
Note Taker:	Chris Mileti
Meeting Date:	November 30 th and December 1 st (2016)
Lubrizol Attendees:	Chris Mileti, Jerry Brys and Lubrizol Raters
Comments:	This impromptu Rater Workshop was hosted by Lubrizol at its Wickliffe, OH facility. The goal of this workshop was to finalize the 50% Average Piston Varnish rating technique for the new Sequence VH Test.

1. DATA COMPILED BY TMC (11-30-2016):

a) Background:

Workshop Attendees:	
Name:	Organization:
Rich Grundza	TMC
Brian Foecking	Lubrizol
Vanessa DeCapite	Lubrizol
Jon Bolaney	Lubrizol
Tony Barrera	Intertek
Jack Kobrinetz	Afton
Frank Lopez	Southwest
Jonathon Cales	Valvoline/Ashland

b) General Information:

- i) Lubrizol provided the lamps and (butcher paper covered) inspection tables.
- ii) Grundza compiled the statistical data in the same way that it would be compiled at a typical workshop.
 - (1) He issued this data in a PDF file (**Rating 50%.pdf**) via email on 11/30/2016 at 7:03PM EST.

iii) Hardware:

- (1) There were several sets of VG and VH pistons available at the workshop.
- (2) However, the workshop focused on the following piston sets:
 - (a) "Severe" VH pistons from Lubrizol prove-out test.
 - (b) "Mild" VH pistons from Afton prove-out test.

c) Data from Original Rating Round-Robin:

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- i) In the 3rd quarter of 2016, Lubrizol submitted a set of “severe” VH pistons to the other labs in the Industry for a rating round-robin.
- ii) This round-robin identified significant lab-to-lab and rater-to-rater differences with the 50% APV ratings.
 - (1) In general, Intertek’s raters delivered the mildest results and the Lubrizol raters delivered the most severe results.
 - (2) The Afton and SWRI ratings were in the middle of the two previously mentioned labs.

iii) Summary of Results from Original Round-Robin:

VH 50 % Rating Round Robin with LZ Pistons			
LZ	IAR	SWRI	Afton
5.57	6.52	6.2	6.19
	6.06	6.34	
	6.45	6.13	
	6.343333	6.223333	

d) Data from Rater Workshop:

- i) After some deliberation, the raters were able to calibrate their 50% rating technique.
- ii) NOTE: Jon Bolaney (JB) is a new Lubrizol rater that is not calibrated.
- iii) The data for the “severe” pistons is summarized below:

Rating activity	LZ Pistons							
	1	2	3	4	5	6	7	8
JK	6.13	6.82	6.36	6.22	7.12	6.52	6.42	6.44
JC	6.2	6.85	6.27	6.49	7.47	6.79	6.14	6.3
VDC	6.47	7.25	6.57	6.15	7.59	7.45	7.43	6.91
BF	6.47	6.61	6.32	6.6	6.8	6.54	6.2	6.49
FL	6.42	7.52	6.47	6.35	7.16	7.01	7.17	6.24
JB	6	6.73	5.37	6.03	6.91	6.49	6.63	6.35
AB	6.52	6.74	6.43	6.81	7.28	6.99	6.69	6.68
	6.315714	6.931429	6.255714	6.378571	7.19	6.827143	6.668571	6.487143

iv) The data for the “mild” pistons is summarized below:

Rating activity	LZ Pistons							
	1	2	3	4	5	6	7	8
JK	8.88	9.26	9.06	8.96	9.5	8.97	8.98	9.16
JC	9.01	9.24	9.45	9.4	9.76	9.31	9.22	9.28
VDC	9.02	9.25	9.25	8.88	9.48	8.65	8.74	9.143
BF	9.26	9.5	9.16	8.87	9.68	9.35	9.34	9.11
FL	9.13	9.4	9.36	8.99	9.67	9.31	9.42	9.42
JB	8.8	8.96	8.81	8.59	9.35	8.65	8.82	8.94
AB	8.99	9.1	9.18	8.9	9.46	9	9.24	9.13
	9.012857	9.244286	9.181429	8.941429	9.557143	9.034286	9.108571	9.169

2. WRAP-UP MEETING:

a) General Discussion:

- i) The main problem with the original ratings appears to be the fact that the [50%] rated area was not properly defined.

- (1) The group decided that the [50%] rated area should extend 17mm from the bottom of the oil ring chamfer.
- (2) The horizontal boundaries of the rating area will be the wrist pin reliefs.
- (3) Valvoline supplied a new piston skirt template that significantly improved this problem.
 - (a) Afton will revise this template to change 12.5% to 10%.
- ii) Some of the raters found it useful to cover the unrated lower-half of the skirt with masking tape.
- iii) The Sequence VH procedure will need to be updated to identify the boundaries of the 50% rated area.

b) Different Sludge Gauges:

- i) Sludge locations #3 and #9 on the valve deck are different for the VH cylinder heads.
- ii) Southwest, Intertek and Lubrizol are using a narrow sludge gauge for these locations.
- iii) Afton and Valvoline are still using the wider sludge gauges.
- iv) All of the labs need to standardize their sludge rating tools for these two regions.

c) Preventing this Type of Problem in the Future:

- i) There was a lot of discussion about preventing this type of problem in the future.
- ii) The group agreed that there needs to be better communication between the Raters and the Surveillance Panels/Development Task Forces.
- iii) This can be done by forming an official Rater Task Force or Surveillance Panel.
 - (1) This was discussed at the ASTM Rater Conference that was held on 06-14-2016.

Action Items	Person responsible	Completion Date
The Sequence VH procedure will need to be updated to identify the boundaries of the 50% rated area.	Ford	
All labs need to standardize their sludge rating tools.	All Labs	

Follow-up Notes/Updates:	Initials	Date Added