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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

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Unapproved Minutes of the May 18 & 26, 2004 Sequence III Surveillance Panel Teleconferences

Note: These minutes were written as a single entity as the teleconference that was started on May 18, 2004 was continued on May 26, 2004.

Attendees on 5-18-04: Bob Olree, Mike Kasimirsky, Pat Lang, Bill Nahumck, Larry Hamilton, Monica Beyer, Gordon Farnsworth, Dwight Bowden, Jason Bowden, Charlie Leverett, Mark Sutherland, Jo Martinez, Dave Glaenzer, Tim Caudill, Mark Mosher

Meeting was called to order at 10:05 ET on 5-18-04. The agenda was limited to a discussion of a perceived shift in the viscosity results for RO 435 and the effect on SA for Percent Viscosity Increase and MRV.

IIIG Referencing Issues Related to RO 435

During the May 12, 2004 Surveillance Panel meeting in Romulus, Pat Lang and Monica Beyer presented data to the members that it was their opinion that a change in performance of RO 435 has taken place and may be related to the honing change introduced late last year in an effort to have better control of oil consumption. This has created significant problems with labs generating potentially large severity adjustments with the current set of targets for judging reference oil performance. This is particularly true for RO 435. The following information (requested by the Surveillance Panel (SP) to be available prior to this conference call) is from an email that Michael Kasimirsky issued on May 17, 2004 prior to the teleconference meeting. It is included in its entirety.

As the panel requested, I've been digging into the LTMS data in regards to the new honing technique and its impact on test results. Before beginning the analysis, I confirmed the introduction of the new honing technique at each laboratory and made sure that all tests using this method have "NEWHONE" in COM1 in the data. As of 5/12/04, all labs are using the new honing technique so no data after that date will be annotated in that manner.

I prepared analyses of PVIS, ACLW, and WPD (in raw, transformed, and normalized formats) as well as Oil Consumption and Iron Content of the 20h and EOT oil samples. These variables were examined for the effects of oil, lab, honing technique (old or new), as well as various interactions of these factors. I'll try to summarize the few hundred pages of statistical output into a more digestible form for discussion at tomorrow's conference call.

When the data was analyzed for differences related to the new honing technique, I found that PVIS, ACLW, Oil Consumption, 20h Iron Content and EOT Iron Content all had significant differences in performance.

Taking a look at the PVIS differences, below is a summary of the mean PVIS (in reported units) for each reference oil, by honing technique:

	434	435	438
OLD	127.1	217.5	100.1
NEW	112.1	160.1	94.9
Target:	110.4	198.4	96.6

(The Test Target value is shown for reference purposes.)

In the above, only the 435 difference is significant at a 95% confidence level. However, one item worth noting is that the change is directionally the same on all oils: the new honing technique resulted in milder results on all oils.

Oil consumption shows a similar reduction due to the honing technique:

	434	435	438
OLD	4.11	3.97	3.48
NEW	3.99	3.51	3.40

The 20h and EOT Iron Content data shows a similar reduction from the old honing technique to the new honing technique.

Given that the data shows an effect on all reference oils, not just 435, a reexamination of the test targets on reference oil 435 may not be appropriate at this time. In addition, if the overall performance of the test has shifted since the matrix, the performance limits being considered by ILSAC, etc. may not reflect current test performance. A resetting of targets would just mask this performance shift and prevent the Severity Adjustment System from correcting test results back to the previous severity level.

My apologies for not putting together a more polished and detailed summary, but I was very much pressed for time with the conference call scheduled for 10:00EDT tomorrow. As I said, the data is available on the TMC website for folks wishing to prepare their own analysis of the data. If you would like any more details, please feel free to contact me. As I said, I've got several hundred pages of output that I'm trying to condense into a readable format, so forgive me if I've omitted some item of interest to you.

Finally, one unexpected item of note was that I found a difference between laboratories on WPD results, regardless of honing technique. More investigation into this item is needed, but I wished to note it for the panel so they were aware of it.

Please forward this message to the panel for their consideration in regards to Tuesday's conference call.

The following information about the number of tests run with old honing technique and the new honing technique was made available by Michael Kasimirsky prior to the meeting.

	434	*435*	*438*	*TOTAL*
OLD	*15*	*16*	*19*	*50*
NEW	*8*	*10*	*6*	*24*
TOTAL	*23*	*26*	*25*	*74*

The SP was in agreement that, based on the data presented, a mild shift in performance has been demonstrated with a more pronounced effect on RO 435. However, the direction of the shift was consistent across all reference oils and that the ranking order has remained consistent. Looking at the new honing new, RO 435 is still classed a fail, although it is closer to the GF-4 pass limit. There have been no reversals, fail oils becoming pass oils.

The panel reviewed what changes have been made to the test to improve the control and precision since we accepted the Precision Matrix. They include the following.

1. The different appearance of the face of second compression ring (rough vs. smooth)
2. The change in the honing technique used

3. Changing the specified build oil from EF-411 to the test oil for valve train assembly
4. Clarifying the amount of the build oil used for valve train assembly

We all agreed that we would continue to use a pooled standard deviation for the calculation of the Severity Adjustments (SA).

The following motion was presented.

Motion 1: By Pat Lang, seconded by Dwight Bowden. S*et the reference oil targets for RO 435 using all currently available (26) valid and statistically acceptable reference tests in the TMC database to set new test targets and again at 30 tests. The effective date would be May 12, 2004.*

The motion was discussed. Many members wanted additional time to evaluate the TMC data and asked for further data related to means and standard deviations. Concerns were also expressed that we are still not taking any action related to the SA for MRV in the IIIGA. With the need to be better informed, Pat Lang withdrew his motion and the panel requested that additional analysis be done by the TMC comparing before and after honing change data.

The panel with Pat's assessment and agree to reconvene at 10:00 am EDT on May 21, 2004.

Adjournment

The meeting was recessed at approximately 11:35 AM and we agreed to resume on May 21, 2004at 10:00 am EDT.

The meeting from May 18, 2004 was reconvened at 2:05 pm ET on May 26, 2004. (The delay from May 21, 2004 to May 26, 2004 was due to scheduling and meeting conflicts with some of the voting members.)

Attendees on 1-15-04: Sid Clark, Bob Olree, Mike Kasimirsky, Pat Lang, Bill Nahumck, Larry Hamilton, Monica Beyer, Gordon Farnsworth, Andrew Ritchie, Dwight Bowden, Jason Bowden, Adam Bowden, Timothy Miranda, Charlie Leverett, Mark Sutherland, Jo Martinez, Dave Glaenzer, Mark Mosher

Special Note: The membership was pleased that Sid Clark was able to join the meeting.

Membership Change: Timothy Miranda will be replacing Irwin Goldblatt as Castrol's voting representative for this panel and for all of the other surveillance panels.

The agenda consisted of one item, the resumption of discussion around the perceived shift in the viscosity increase parameter for RO 435 and the associated influence on the SA for % Viscosity Increase and MRV.

Continuation of the Discussion of IIIG Referencing Issues Related to RO 435

The additional analysis done by the TMC is shown in **Attachment 1**. The discussion continued in an effort to better understand the magnitude and impact of the honing change on the reference oil targets. Using all the available data, there is a small impact on the test targets. However, the impact on the % Viscosity Increase was apparent when the data is segregated. Still the ranking and performance of the oils remained consistent with no reversals. The discussion then moved to the impact on Severity Adjustments (SA). The impact of the current severity versus the existing test targets for the %Vis Inc has generated concern at the labs related to the SA that can result. This can be compounded when you take into account that the % Vis Inc (that may be already skewed) is used to calculate the SA for MRV for oil RO 435, any deviations approaching the maximum k values will likely be further skewed from the resultant transformation. Pat Lang also reminded the panel the MRV result for RO 435 produces a Yield Stress. This makes the apparent viscosity for the test unusable for the direct calculation of a SA for the MRV. That is why we have been using the % Vis Inc data. If we can not effectively find a useful alternative, the suggestion was made that it may not be appropriate to apply a SA when we can not determine the proper calculation. The following motion was made.

Motion 1: By Pat Lang, seconded by Monica Beyer. S*et the reference oil targets for all three reference oils (434, 435, 438) using all currently available valid and statistically acceptable reference tests in the TMC database to set new test targets and again at 30 tests. The effective date would be June 1, 2004.*

After further discussion, Bill Nahumck suggested that the motion be amended to not fix targets for any reference oil until 35 tests. The motioner and seconder agreed to this amendment. The effective date of the motion will be June 1, 2004. It was further clarified that the Surveillance Panel would continue to further analyze the reference oil data to try and quantify the impact of the changes noted on May 12, 2004. If the motion is approved, the Surveillance Panel will continue to investigate any potential means of applying a severity adjustment to the non-reference MRV results. This also implies that RO 435 will be re-introduced in the referencing of Sequence IIIG/IIIGA stands.

With no further discussion, the chairman called the question. **The motion passed with a vote of 10 for, 1 against and 0 waives.**

Adjournment

The meeting was adjourned at approximately 2:45 pm. The next meeting will be at call of the chairman.

ATTACHMENT 1

Current Reference Oil 434 Test Targets (N=20)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.7040	0.3877
WPD	4.73	1.01
ACLW	3.4872	0.2061
MRV	10.7378	0.40442

Potential Reference Oil 434 Test Targets (N=23; all data to date)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.7269	0.3859
WPD	4.80	0.96
ACLW	3.4657	0.1993
MRV	10.7881	0.45550

Potential Reference Oil 434 Test Targets (N=8; new hone data only)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.6754	0.2980
WPD	4.69	0.79
ACLW	3.4145	0.2514
MRV	10.8670	0.49107

Current Reference Oil 435 Test Targets (N=19)		
Parameter	**Mean**	**Standard Deviation**
PVIS	5.2903	0.2852
WPD	3.53	0.47
ACLW	3.5596	0.1960
MRV	N/A*	N/A*

*MRV results for 435 use the calculated Yi value for PVIS in the MRV control charts

Potential Reference Oil 435 Test Targets (N=26; all data to date)		
Parameter	**Mean**	**Standard Deviation**
PVIS	5.2333	0.2924
WPD	3.58	0.51
ACLW	3.5044	0.2256
MRV	N/A*	N/A*

*MRV results for 435 use the calculated Yi value for PVIS in the MRV control charts

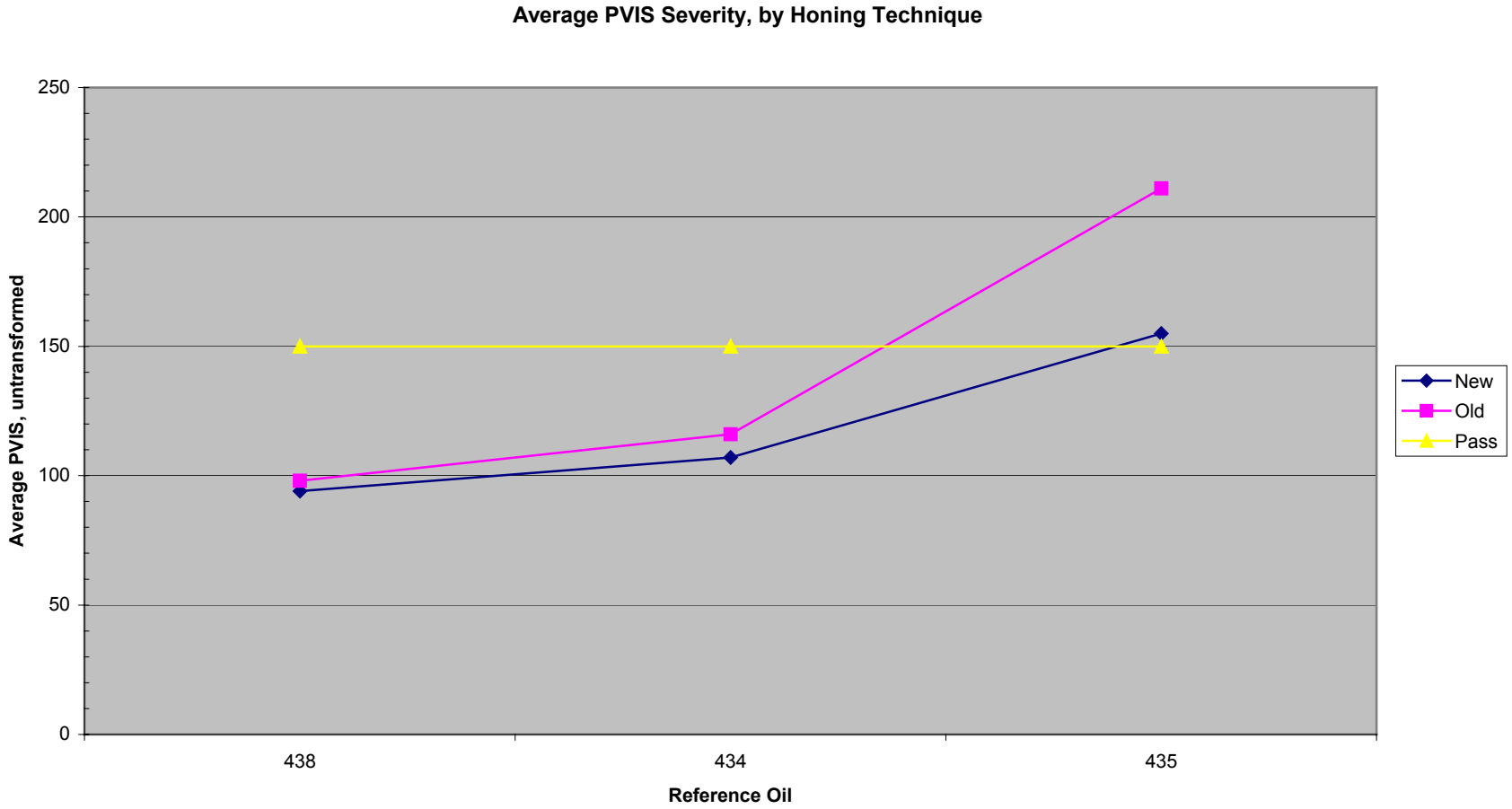
Potential Reference Oil 435 Test Targets (N=10; new hone data only)		
Parameter	**Mean**	**Standard Deviation**
PVIS	5.0440	0.2550
WPD	3.71	0.56
ACLW	3.3989	0.2173
MRV	N/A*	N/A*

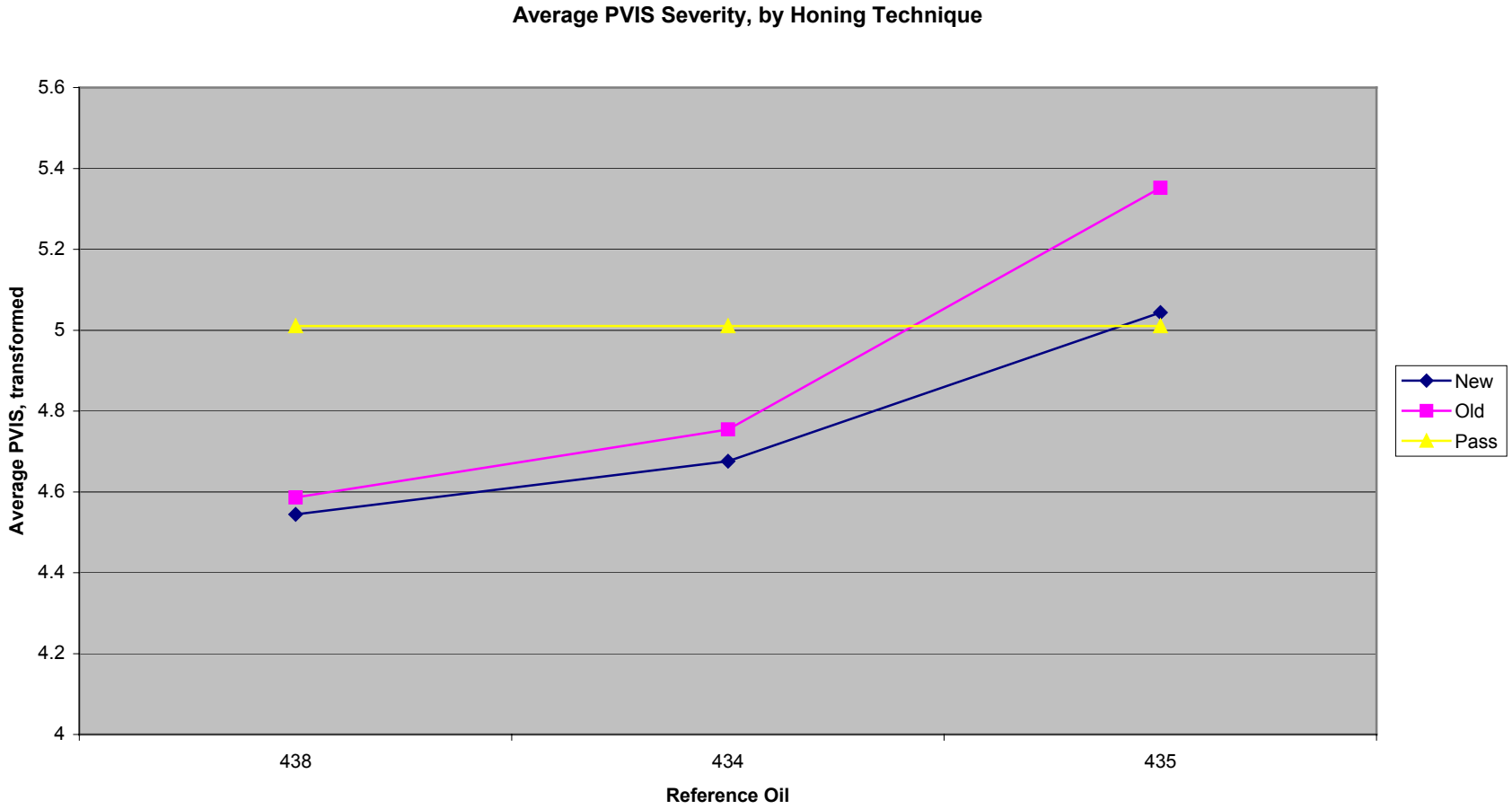
*MRV results for 435 use the calculated Yi value for PVIS in the MRV control charts

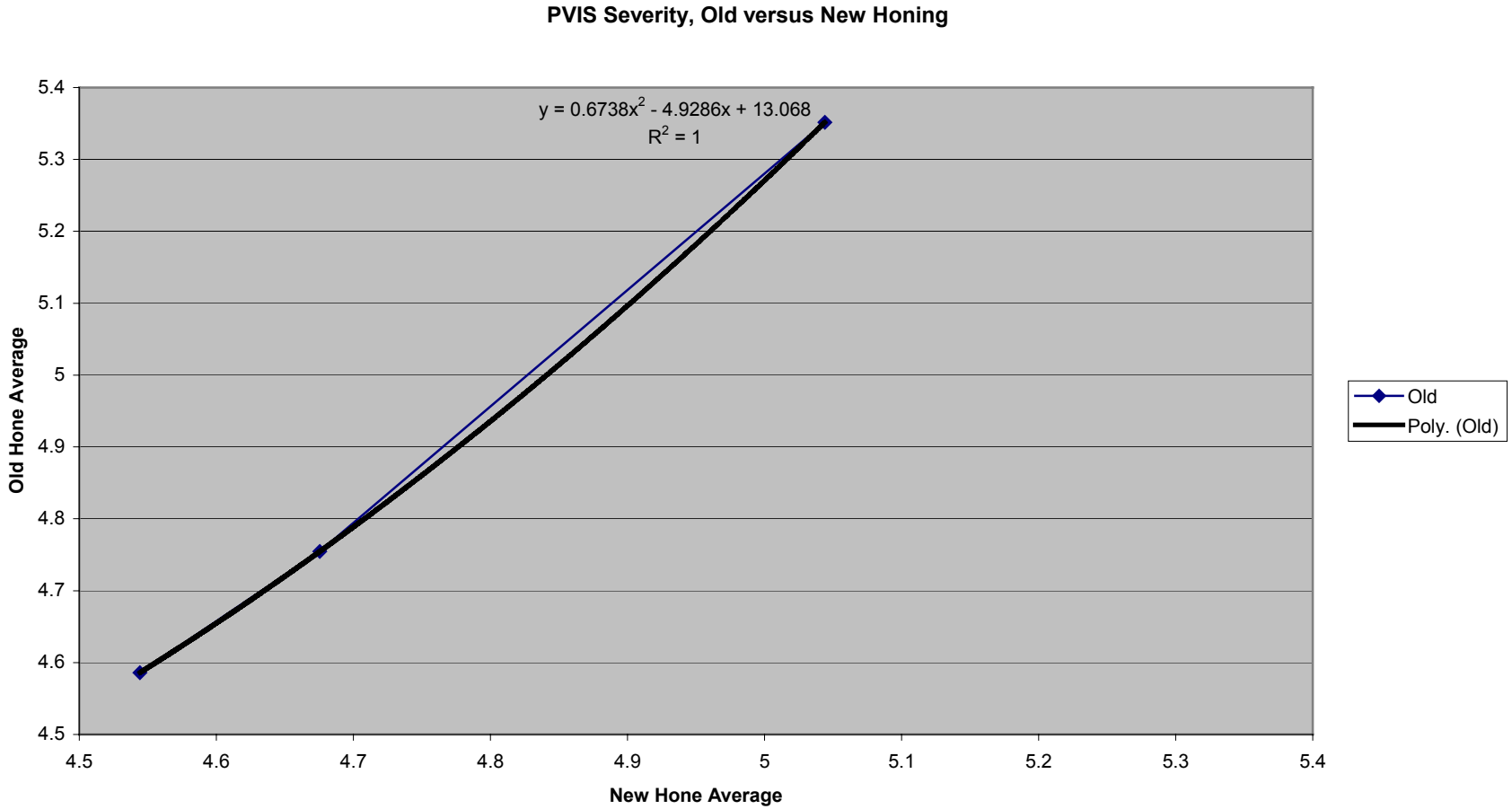
Current Reference Oil 438 Test Targets (N=22)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.5707	0.1953
WPD	3.22	0.36
ACLW*	2.8902	0.1946
MRV	9.8351	0.17518

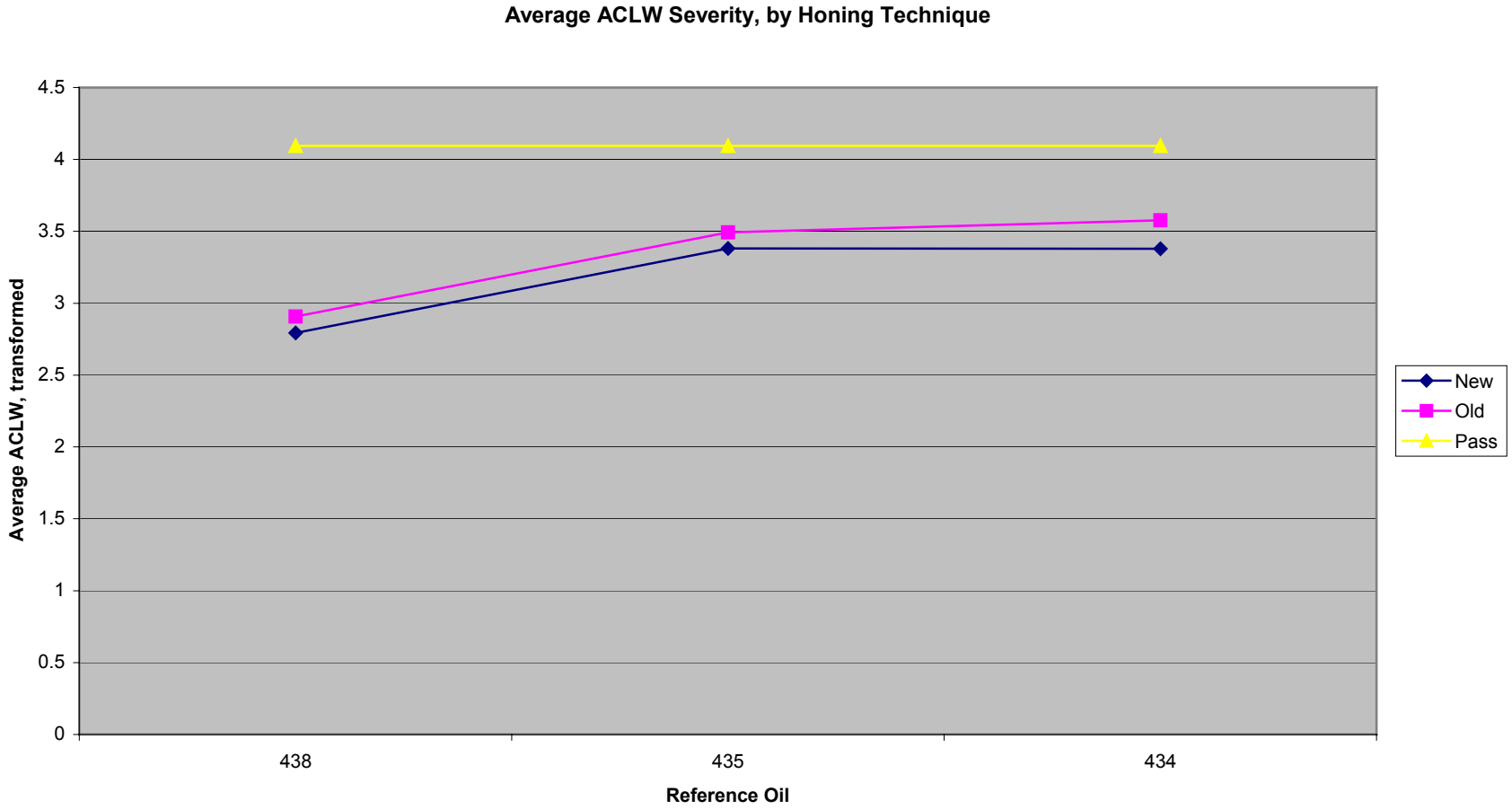
Potential Reference Oil 438 Test Targets (N=25; all data to date)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.5761	0.1877
WPD	3.20	0.35
ACLW*	2.8741	0.1900
MRV	9.8405	0.16998

Potential Reference Oil 438 Test Targets (N=6; new hone data only)		
Parameter	**Mean**	**Standard Deviation**
PVIS	4.5443	0.1464
WPD	3.28	0.37
ACLW	2.7931	0.1496
MRV	9.8332	0.12383


Average PVIS Severity, by Honing Technique
250
200
150
100
50
0
Average PVIS, untransformed
438
434
435
Reference Oil
New
Old
Pass


Average PVIS Severity, by Honing Technique
Average PVIS, transformed
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
438
434
435
Reference Oil
New
Old
Pass


PVIS Severity, Old versus New Honing
y = 0.6738x2 - 4.9286x + 13.068
R2 = 1
Old Hone Average
New Hone Average
5.4
5.3
5.2
5.1
5
4.9
4.8
4.7
4.6
4.5
4.5
4.6
4.7
4.8
4.9
5
5.1
5.2
5.3
5.4
Old
Poly. (Old)


Average ACLW Severity, by Honing Technique
Average ACLW, transformed
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
438
435
434
Reference Oil
New
Old
Pass