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### **Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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### **Unapproved Minutes of the September 23, 2010 C13 and SCOTE Surveillance Panel Meetings Paulsboro, NJ**

The meeting was called to order at 8:50 am by Chairman Jim Gutzwiller. The agenda is shown as **Attachment 1**. The attendance is show in **Attachment 2**. No membership changes were announced.

#### Meeting Minutes

The minutes of previous meetings were approved without objection (Clark, Campbell).

#### Test Hardware Update – Piston Availability

Hind Abi-Akar informed the panel of a production change for the C13 piston (**Attachment 3**). The test C13 pistons will not change, but there will be a change in 2011 to the coating process due to regulatory issues. The final piston coating will not change. There will be a short period of

parts unavailability; a small shipment of 30 pieces will be received in late October to bridge this gap. CAT will order yearly batches of C13 parts through 2015, batch size will be 125 pieces.

#### LTMS v2 Discussion

Jim Moritz presented (**Attachments 4 & 5**) and led a long discussion. General consensus of the group was to consider working towards LTMS v2 after the Cummins ISB v2 work is completed.

Next C13 SP meeting will likely be a conference call as needed to discuss parts availability and / or LTMS v2.

The C13 meeting adjourned at 11:05 am.

### SCOTE Panel Meeting

The SCOTE Panel meeting convened at 11:15 am.

#### PC-9 Fuel

Tom Wingfield (**Attachment 6**) informed the panel of the tweaking that will likely occur with future PC-9 fuel batches as a result of solving the T-11 severity issue. Fuel will be in spec and closer to the PC-9 fuel of five years ago.

#### 1P Parts Availability

Hind Abi-Akar summarized (**Attachment 7**) the current status of parts availability, which hasn't changed much since the prior week's conference call, other than noting that the rusted liner batch has been scrapped. At the time of the meeting, Hind was awaiting an update on inspection results. **<NOTE: Attachment 7 has been updated and includes new information that was not available during the meeting.>** The panel discussed several possible options for going forward. The panel hopes, in a week or two, to have an idea of how many parts will become available from the current batch. A conference call will be held in the near future.

The meeting adjourned at 11:55 am.

## **Attachment 1**

# **Caterpillar C13 Surveillance Panel**

**Meeting Agenda  
September 23, 2010  
8:30 am – 5:00 pm**

**ExxonMobil Research and Development**

- |  |                       |
|--|-----------------------|
| <b>1) Chairman's Comments</b>                                  | <b>Jim Gutzwiller</b> |
| <b>2) Membership / Attendance</b>                              | <b>Jeff Clark</b>     |
| <b>3) Approval of Minutes of last Meeting<br/>May 27, 2010</b> | <b>Jeff Clark</b>     |
| <b>4) Test Hardware Update<br/>- Piston availability</b>       | <b>Group</b>          |
| <b>5) LTMSv2 discussion</b>                                    | <b>Group</b>          |
| <b>6) Old Business</b>   | <b>Group</b>          |
| <b>7) New Business / A.O.B.</b>                                | <b>Jim Gutzwiller</b> |
| <b>8) Next Meeting</b>   | <b>Jim Gutzwiller</b> |

## **Attachment 2**

**CAT C13 / SCOTE SP Meeting Attendance**  
**Paulsboro, NJ**  
**September 23, 2010**

<b>Name</b>	<b>Company</b>
Jim Moritz	Intertek
Jim Gutzwiller	Infineum
Zack Bishop	TEI
Jim Matasic	Lubrizol
Mark Cooper	ChevronOronite
Doyle Boese	Infineum
Tom Wingfield	ChevronPhillips
Chris Castanien	Lubrizol
Jim Rutherford	ChevronOronite
Jeff Clark	TMC
Mike Alessi	ExxonMobil
Jim McCord	SwRI
Hind Abi-Akar	Caterpillar
Riccardo Conti	ExxonMobil
Art Andrews	ExxonMobil
Bob Campbell	Afton
Todd Dvorak	Afton
Jim Carter	Haltermann
Andy Ritchie	Infineum

## **Attachment 3**

# C13 Piston – 1Y4106

- Per information available to Cat at this time:
  - The C13 pistons 1Y-4106 material will not change.
  - The skirt coating of 1Y-4106 will not change. The coating process (bath chemistry) changes due to regulations starting 2011. This change will not impact the final coating composition.
  - Shipping date of 30 pieces of 1Y-4106 is Oct 29. The supplier will try to expedite this date if possible.
  - 1Y-4106 will be available until 2015 with no changes to materials or design or any other aspect. Close to 2015 we will discuss any proposed changes as well as the longevity of the test and need for parts. We anticipate the test will continue beyond 2015.
  - In order to ensure continuity of parts availability, Cat will be ordering the pistons in batches; on a yearly basis. Batch size will be 125 pieces.
  - Parts will be available to the Industry through the normal channels
  - Other C13 parts: no known issues at this time.



## **Attachment 4**

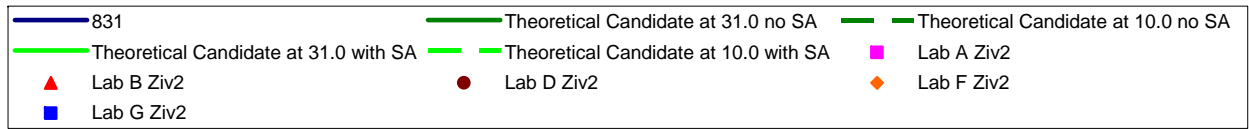
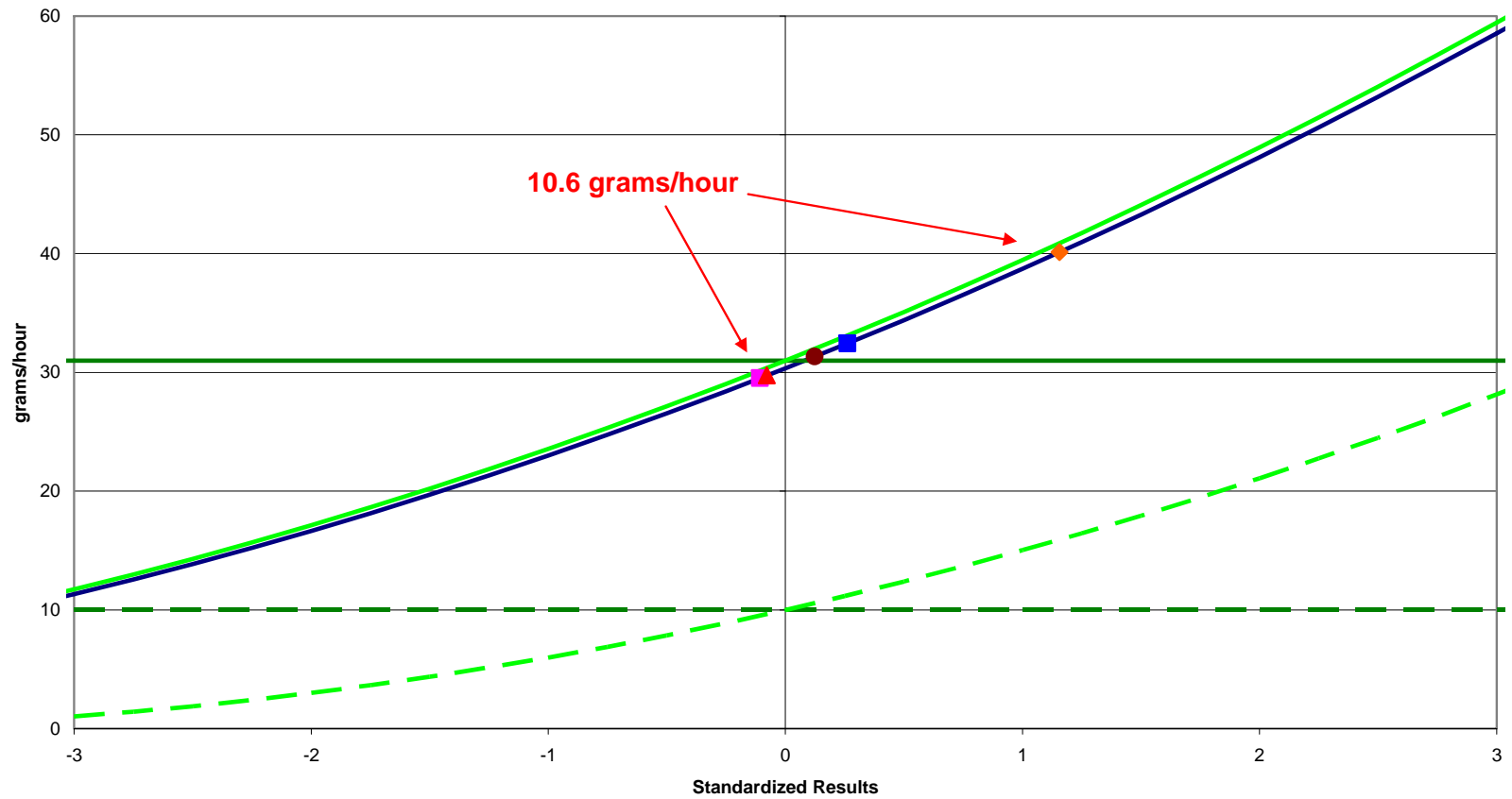
# Standardized vs. Measured Units for the C13

# Historical Performance

	Min Yi	Max Yi	Min Ziv2	Max Ziv2	Pass Limit	Effective Pass Limit at Min Zi	Effective Pass Limit at Max Zi	Delta in Measured Units
OCD	-1.72	2.35	-1.02	1.83	31.0	23.4	47.3	23.8

\* Pass limits assume SA applied using reference oil standard deviation

C13 Oil Consumption Delta

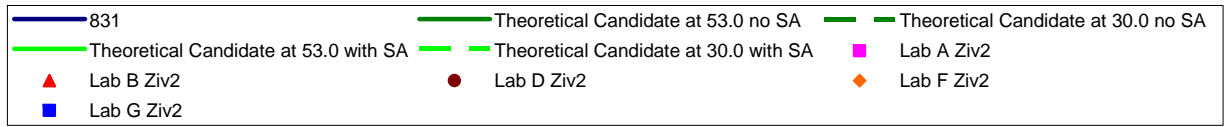
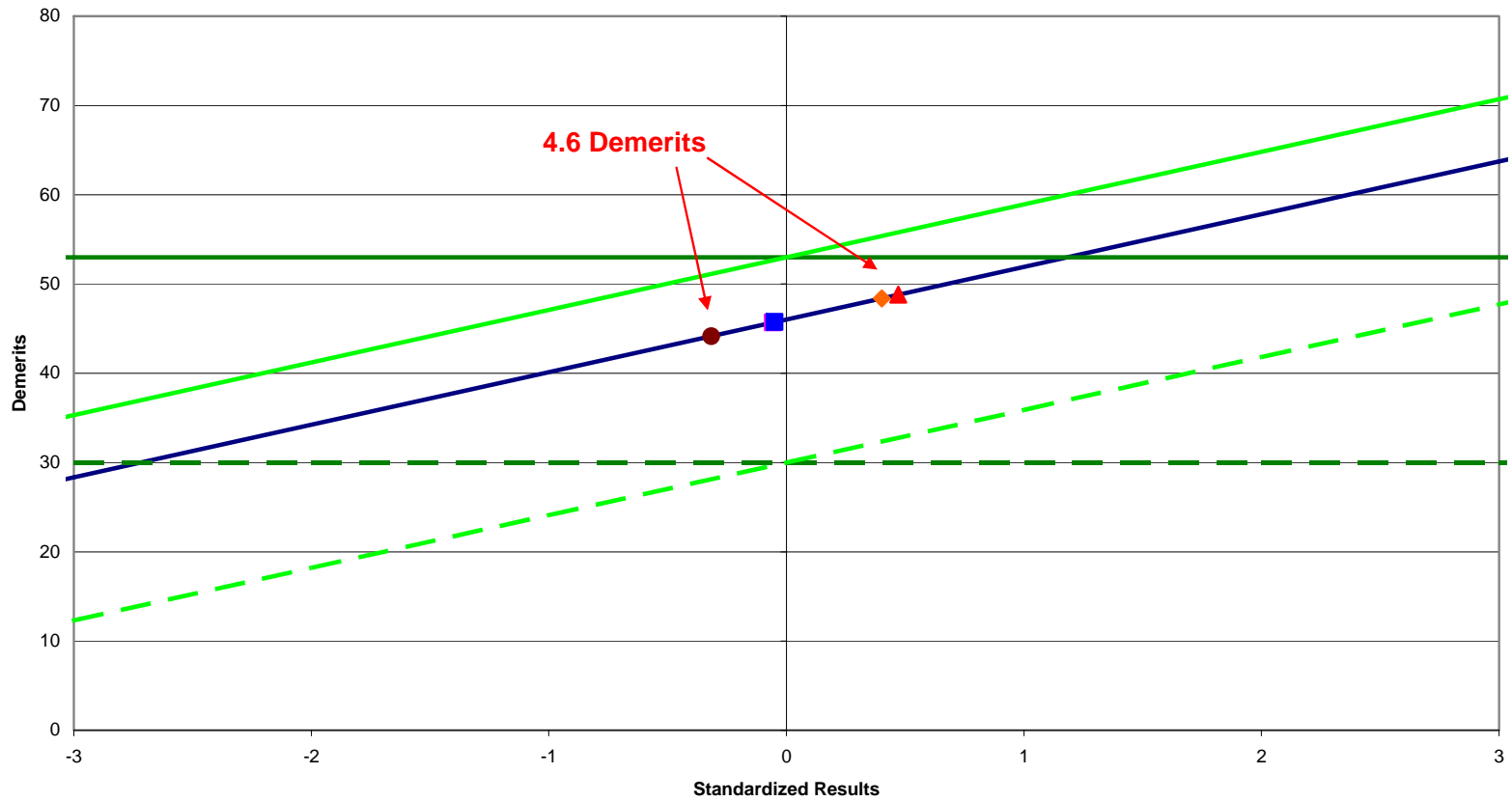


# Historical Performance

	Min Yi	Max Yi	Min Ziv2	Max Ziv2	Pass Limit	Effective Pass Limit at Min Zi	Effective Pass Limit at Max Zi	Delta in Measured Units
<b>TGC</b>	-2.15	1.82	-1.44	0.73	53.0	44.5	57.3	12.8

\* Pass limits assume SA applied using reference oil standard deviation

**C13 Top Groove Carbon**

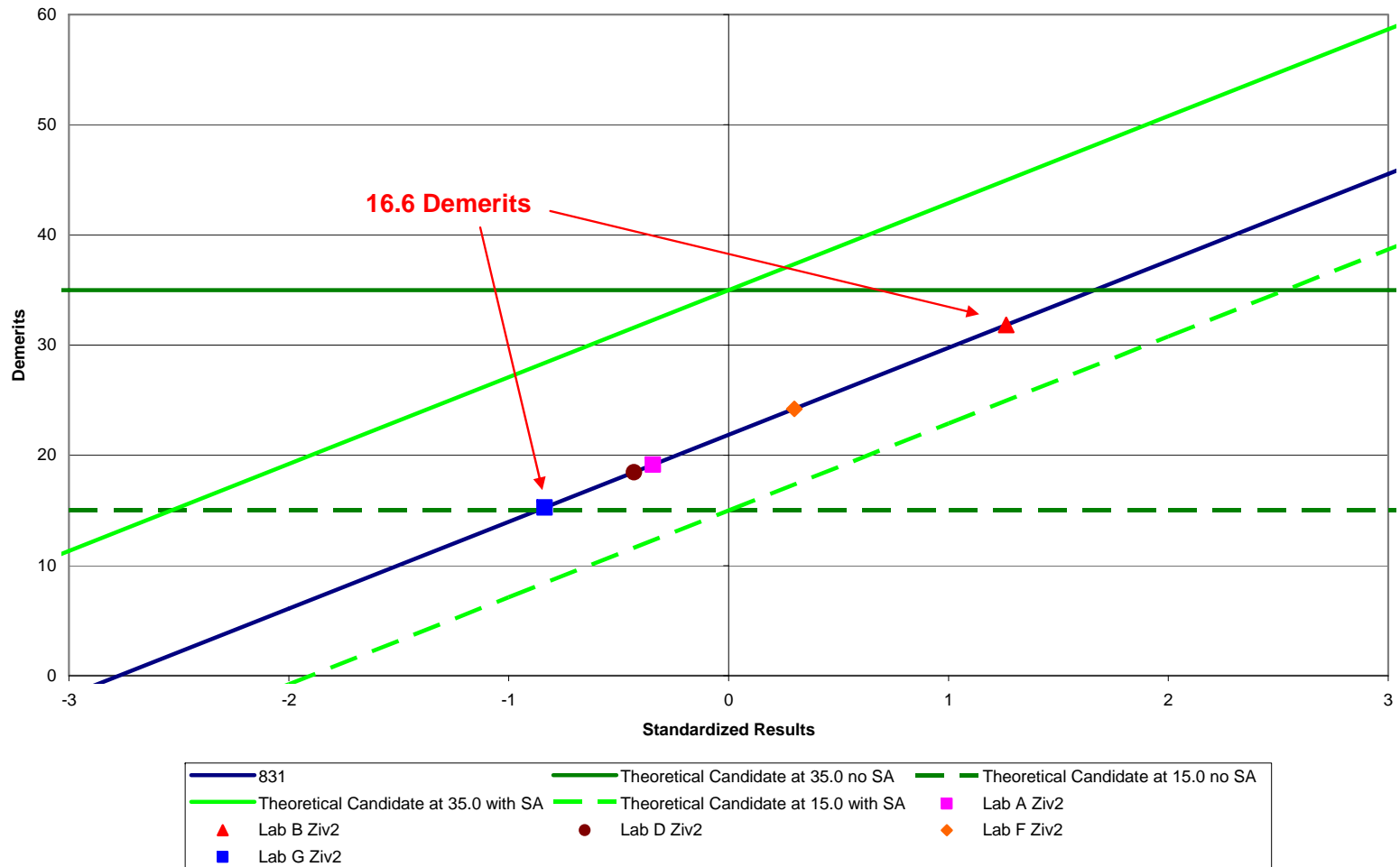


# Historical Performance

	Min Yi	Max Yi	Min Ziv2	Max Ziv2	Pass Limit	Effective Pass Limit at Min Zi	Effective Pass Limit at Max Zi	Delta in Measured Units
<b>TLC</b>	-1.97	1.72	-1.01	1.26	35.0	27.1	45.0	17.9

\* Pass limits assume SA applied using reference oil standard deviation

C13 TLC

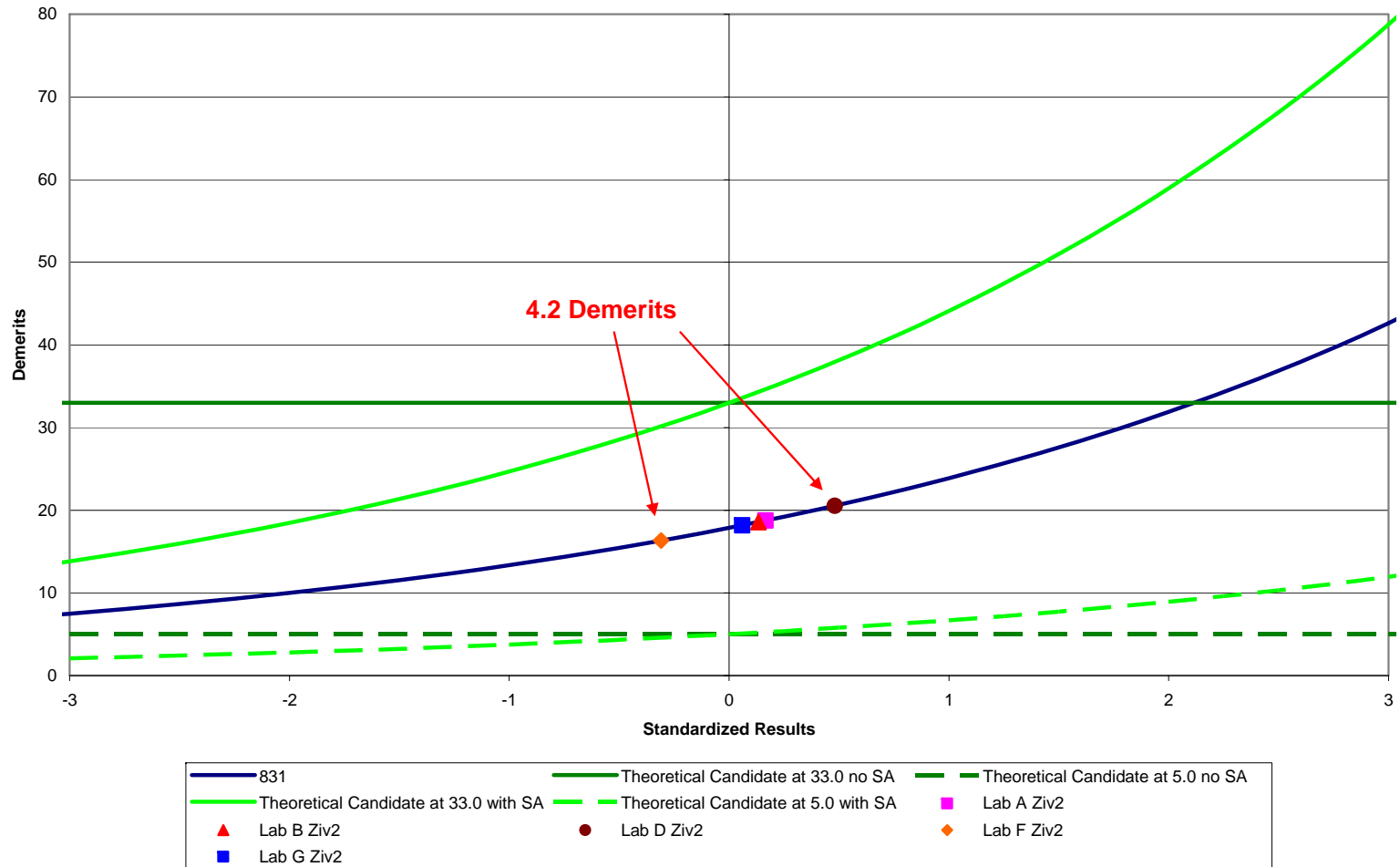


# Historical Performance

	Min Yi	Max Yi	Min Ziv2	Max Ziv2	Pass Limit	Effective Pass Limit at Min Zi	Effective Pass Limit at Max Zi	Delta in Measured Units
R2TC	-1.98	3.05	-1.31	0.75	33.0	22.6	41.0	18.4

\* Pass limits assume SA applied using reference oil standard deviation

## C13 Second Ring Top Carbon



## **Attachment 5**

**Click on link to access:**

[ftp://ftp.astmtmc.cmu.edu/docs/diesel/CAT\\_C13/minutes/2010/2010-09-23.Meeting/](ftp://ftp.astmtmc.cmu.edu/docs/diesel/CAT_C13/minutes/2010/2010-09-23.Meeting/)

## **Attachment 6**





# Chevron Phillips Chemical Co. Specialty Chemicals

**Tom Wingfield**

**Surveillance Panel Meetings**

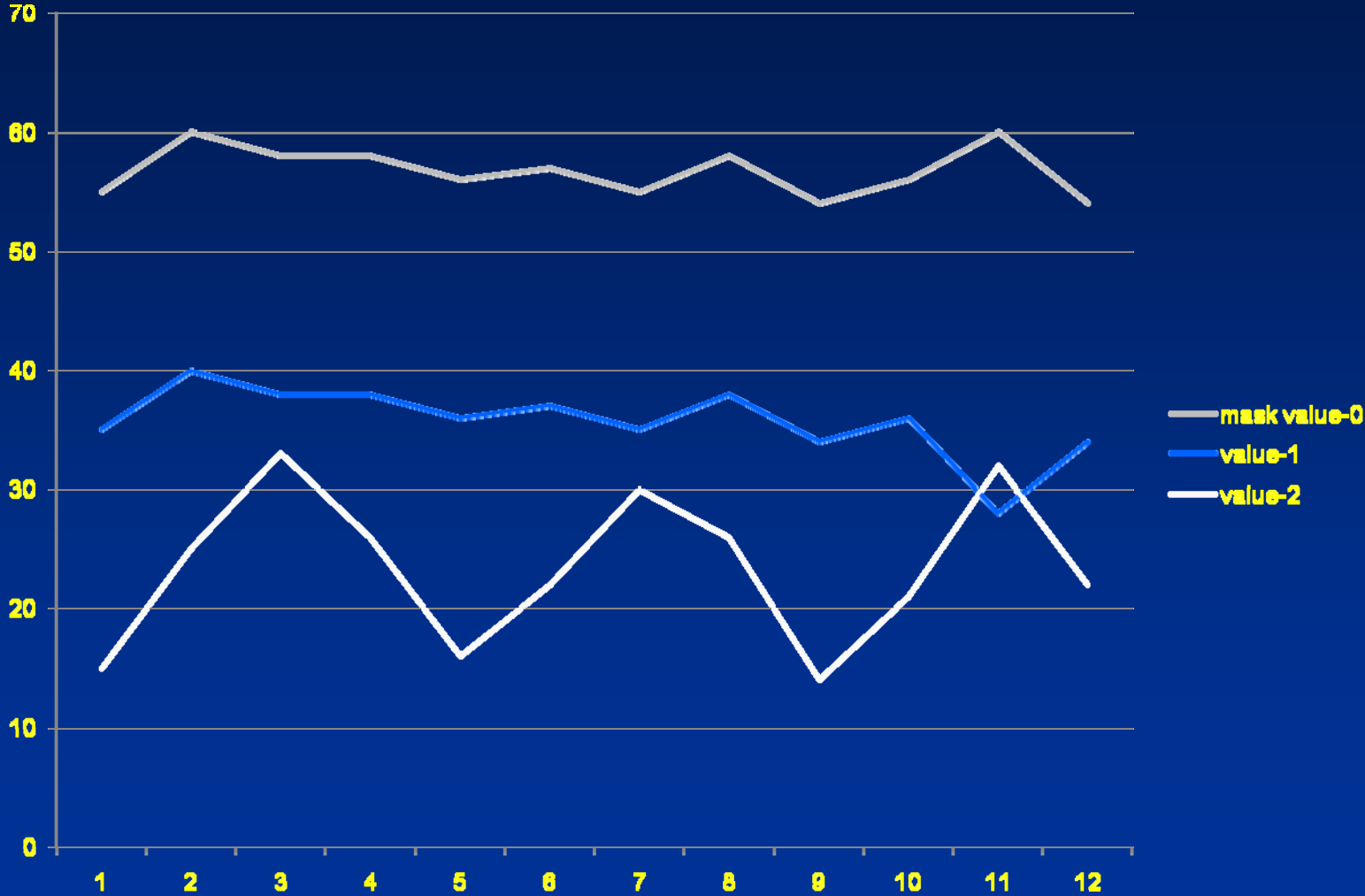
**PC-9 Diesel Fuel**

Tom Wingfield  
Surveillance Panels  
Sept 21-23, 2010



# EXAMPLE

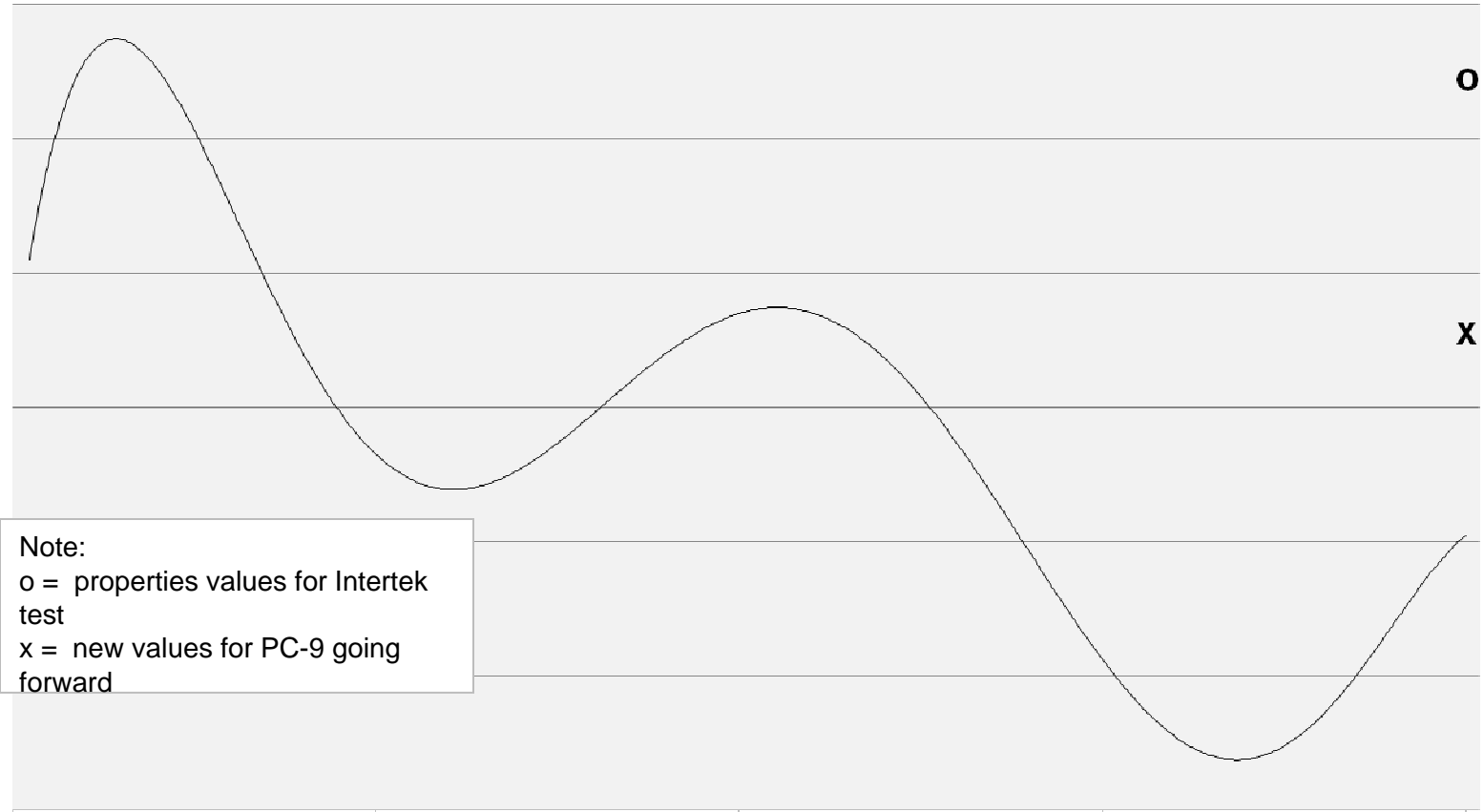
## Masking of Properties Trend



Tom Wingfield  
Surveillance Panels  
Sept 21-23, 2010



# PC-9 Diesel – Properties Trend



3/6/2005

7/19/2006

12/1/2007

4/14/2009

8/27/2010

Tom Wingfield  
Surveillance Panels  
Sept 21-23, 2010

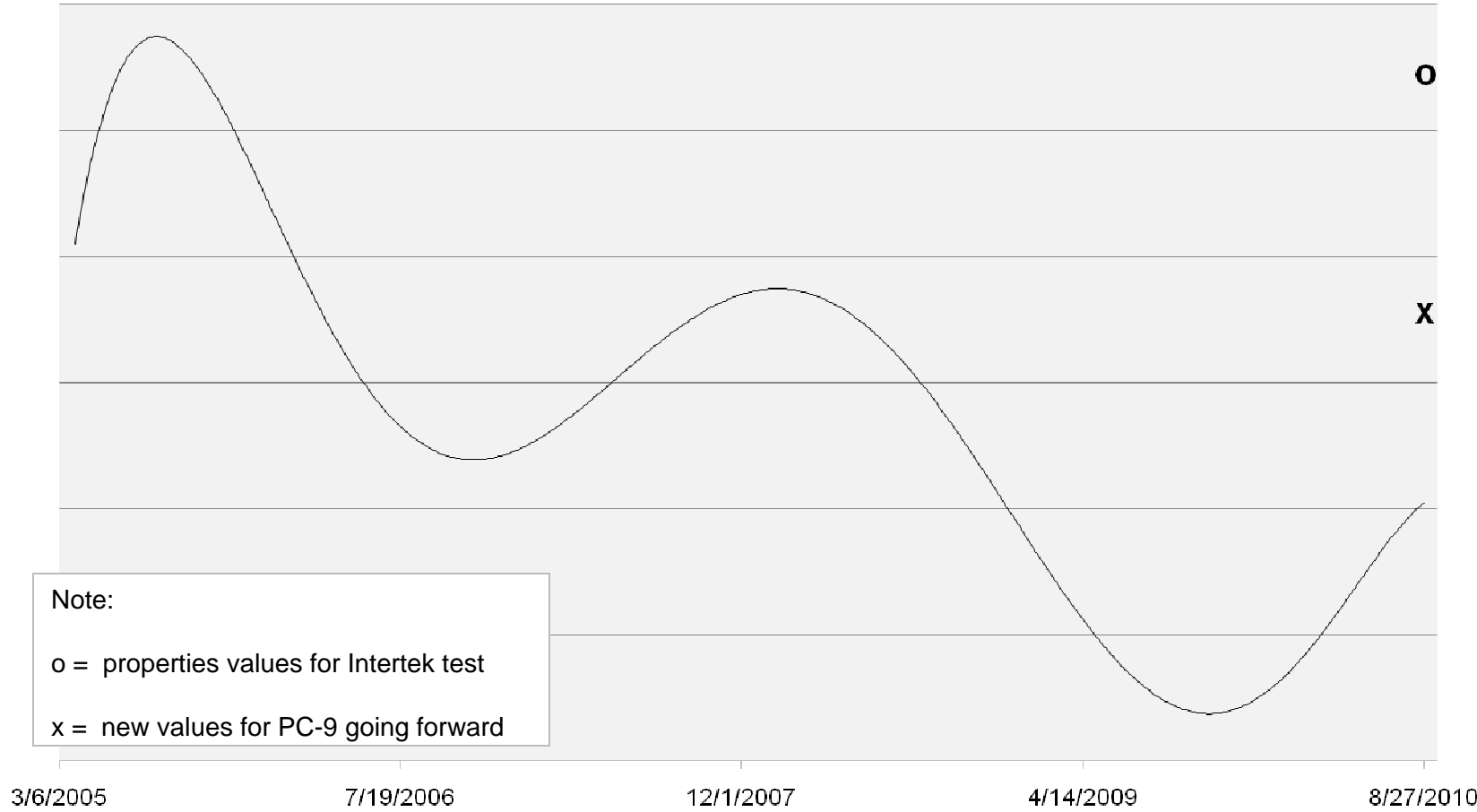


## Executive Summary

- For our initial test at Intertek, we turned the knobs to achieve the data point “o”
- With the Intertek test, the primary objective was to assure that the knobs we turned would give a severe result, which it did.
- For the test at Intertek, the resulting PC-9 was *near* specification
- For the PC-9 going forward, we are dialing back the knobs to achieve the data point “x”



# PC-9 Diesel – Properties Trend



Tom Wingfield  
Surveillance Panels  
Sept 21-23, 2010



## Conclusions

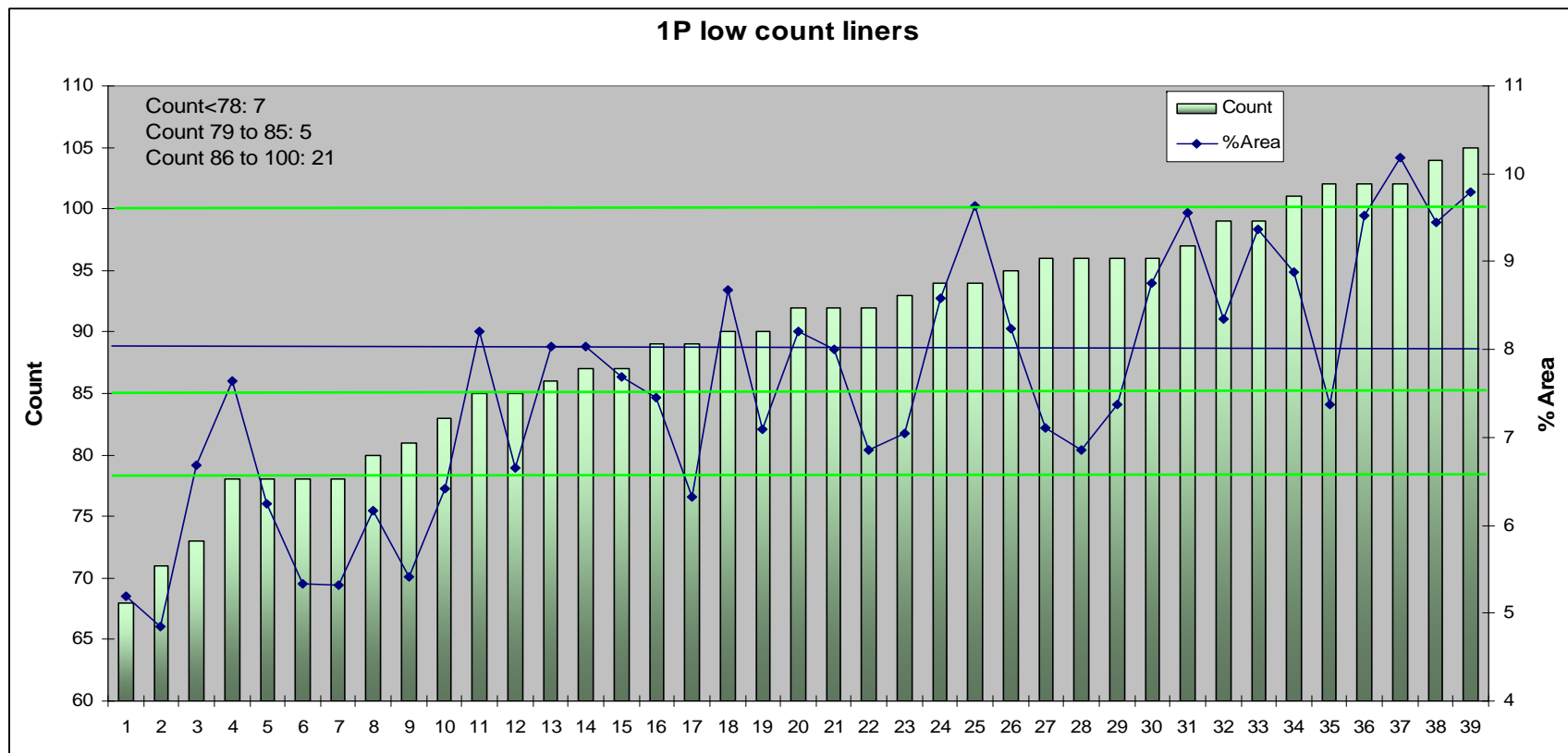
- PC-9 going forward will be on-spec and still achieve the severity desired for the T-11 test
- All of this was necessary because of the changing nature of available refining streams which are tuned to meet the *commercial* fuels market

## **Attachment 7**

# 1P Liners Availability

Current liner availability:

- 350 liners have been ordered. Each is inspected for porosity count and area
- Of the first 96 inspected liners:
  - 7: Count<78
  - 5: Count 79 to 85
  - 21: Count 86 to 100
- The liners of <78 count will be made ready for ordering ASAP.
- The rest of the batches will be received on a weekly basis. Results will be reported to the 1P panel.





# 1P Liners Availability

- Running a 1P test using higher count than the current limit will be discussed. Cat will consider supporting this test.
  - The higher count will be determined per a distribution analysis and potentially in combination with area inspection. Area of 8% or less is considered passing (based on historic data – otherwise, this upper limit has to be revised)

## Options considered:

- 3406 liner does not fit in the current 1P test stand due to differences in the design (Center support versus upper lip support). Honing may also be different.
  - Review engineering modifications required to make the design change
- The rusted batch of previous liners have been scrapped.

## Actions:

- Based on the results of the inspection, Cat may work through purchasing to expedite another batch from the supplier and to understand the cause of the high failure rate.
- For the borderline passing liners, consideration will be given to the re-inspection of the upper third/2 thirds of the liners. Upon favorable count, the liners may be considered passing.
- Long term: Cat is looking into developing the 1P stand to accept a current C15 production liner.