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Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Originally Issued: May 18, 2012

Reply to: Richard Grundza
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Pittsburgh, PA 15206
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Unapproved Minutes of the May 17, 2012
Sequence IV Surveillance Panel Conference call

A copy of the Agenda is included as Attachment 1

The attendance sheet is included as Attachment 2.

Bill Buscher agreed to be the motion and action item recorder for the meeting.

Minutes from February 2 and February 9, 2012 Surveillance panel conference calls were approved with no changes.

Action Item Review
Review of the action items from the June 1, 2011 meeting was conducted and the status of those items is listed below.

Motions and Action Items

May 17, 2012 IV Minutes
Conference Call

As Recorded at the Meeting by Bill Buscher

1. 3.1 Surveillance panel chair to contact Nissan to inquire about the potential for Nissan to make an additional test kits. **Waiting on one lab to report hardware needs, then chair to contact Nissan.**

2. 3.2 SwRI to investigate solution to mild cam batch situation to determine if the mild cams can be brought to an acceptable severity level. **SwRI's work continues, but not ready to report at today's meeting. Eric Liu will report on a severity trend study conducted on the last several cam batches in use across the industry.**

3. 3.3 Surveillance panel chair to solicit suppliers for a GF-5 technology reference oil with ACW performance in the 50 to 90 µm range. **Chair has received response from an additive company that is potentially interested in supplying a reference oil that meets these requirements.**

4. 3.4 TMC to reassign RO 1009 assignments that are for the IVA to the VG. **TMC to report status. Rich Grundza has completed this task.**

5. 3.5 Form a task force to further investigate driveline dynamics and the effect on camshaft wear. The task force will be lead by Eric Liu with the following members: Al Lopez, Jerry Brys, Mark Mosher, Rich Grundza, Tim Caudill Christian Porter and Bill Buscher. **Eric Liu to report status.** Eric plans to presenting data from different stand driveline configurations and circulate for potential conference call.

New Business.

Test Target Update.

Jo presented target data for reference oil 1006-2. Her attachment is included as attachment 3. Eric Liu presented an analysis on data used to generate targets. This generated considerable discussion on potential causes, with regards to labs and cam lots. Concerns were raised about reference test acceptance with the new targets. The panel agreed to continue to use the current data and continue with the reduced calibration period until 15 tests are obtained and to continue to use the current targets (mean 100.18, s 18.65) for acceptance until 15 tests are obtained.

Hardware Survey.

Bill Buscher is continuing to pursue hardware from Nissan. He is awaiting one more response to finalize the survey. It appears that at least two labs will not have sufficient hardware to provide testing services till 2016. One lab anticipates they will deplete hardware in 2013, while a second will anticipates the hardware lasting until 2014. Another potential solution to hardware shortage is to find a solution that would allow use of a mild cam batch which was abandoned. This would result in an additional 100 tests worth of hardware being made available. Bill Buscher will continue to work on solution for mild hardware. Another reason for survey is to provide Toyota with an idea of hardware requirements for the IVB test. Survey results have been received from all labs except one. 4500 tests worth of hardware have been procured for the IVA and consumed through a total of three categories. It is anticipated that about 2400 sets of hardware will be needed for GF-6.

With a motion to adjourn from Bill and a second from Rich, the meeting was adjourned at 3:27 PM. The next meeting will be at the call of chair.

Attachment 1

Sequence IVA Surveillance Panel conference Call
May 17, 2012 @ 1:00PM CST

Call in #: 866-588-1857
Pass Code: 2105226802

Agenda

1.0) Roll Call

2.0) Approval of minutes

2.1) Approve the minutes from the March 29, 2012 Sequence IVA Surveillance Panel meeting.

3.0) Action Item Review

3.1 Surveillance panel chair to contact Nissan to inquire about the potential for Nissan to make an additional test kits. **Waiting on one lab to report hardware needs, then chair to contact Nissan.**

3.2 SwRI to investigate solution to mild cam batch situation to determine if the mild cams can be brought to an acceptable severity level. **SwRI's work continues, but not ready to report at today's meeting. Eric Liu will report on a severity trend study conducted on the last several cam batches in use across the industry.**

3.3 Surveillance panel chair to solicit suppliers for a GF-5 technology reference oil with ACW performance in the 50 to 90 µm range. **Chair has received response from an additive company that is potentially interested in supplying a reference oil that meets these requirements.**

3.4 TMC to reassign RO 1009 assignments that are for the IVA to the VG. **TMC to report status.**

3.5 Form a task force to further investigate driveline dynamics and the effect on camshaft wear. The task force will be lead by Eric Liu with the following members: Al Lopez, Jerry Brys, Mark Mosher, Rich Grundza, Tim Claudill Christian Porter and Bill Buscher. **Eric Liu to report status.**

4.) Old Business

4.1) None.

5.) New Business

5.1 Review and discuss industry statisticians' recommendations on target updates for reference oil 1006-2 (Seq IVA RO 1006-2 Targets 042512.pptx).

5.2 Review and discuss Eric Liu's cam batch severity trend study (120514_IVA_RO 1006-2 cam batch comparisonv2.pptx).

5.3 Discuss updating targets for reference oil 1006-2.

5.4 Review reduced stand calibration period and discuss restoring.

5.5 Review and discuss IVA and IVB Hardware Survey results (IVA-IVB Hardware Survey - Summary.xlsx).

6.) Next Meeting

Call of the chairman

7.) Meeting Adjourned

Attachment 2

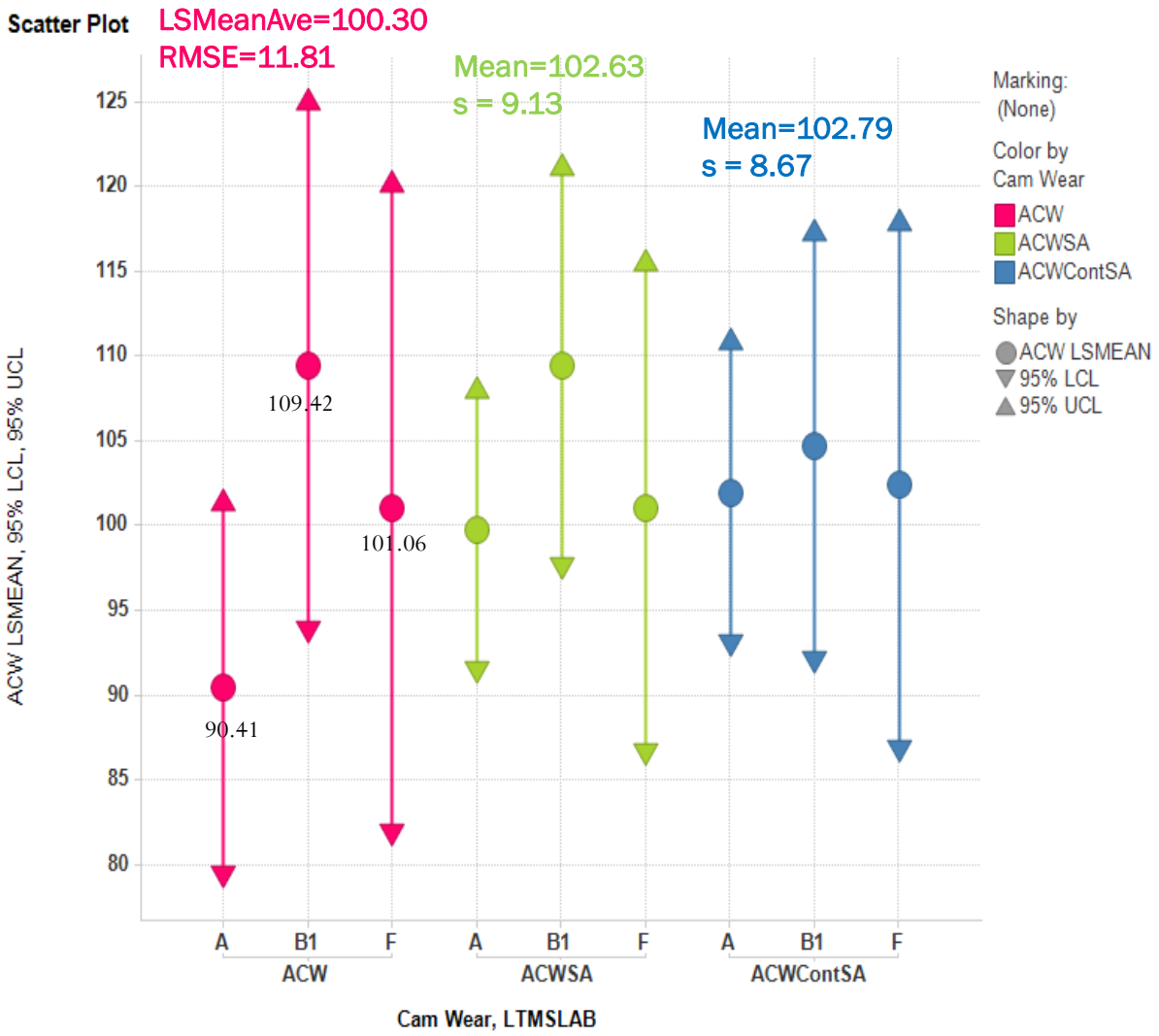
List of Participants

Name	Affiliation
Jerome Brys	Lubrizol
Adam Sworski	Ashland
David Glaenzer	Afton
Rich Grundza	TMC
Teri Kowalski	Toyota
Eric Liu	SwRI
Al Lopez	Intertek
Mark Mosher	ExxonMobil
Andy Ritchie	Infinium
Doyle Boese	Infinium
Gordon Farnsworth	Infinium
Jo Martinez	Oronite
George Szappanos	Lubrizol
Jason Bowden	OHT
Matt Snider	GM
Ron Romano	Ford
Jim Linden	Toyota
Matt Bowden	OHT

Seq IVA RO 1006-2 Targets

April 25, 2012

Mean and Standard Deviation



- Lab A is marginally milder than Lab B1.(p-value=0.12)
- Lab F is *not* significantly different than A and B1.
- Applying normal severity adjustment reduces differences between A and B1/F.
- Applying continuous severity adjustment reduces differences between labs.

Recommendation

- Use normal severity adjusted data to calculate mean and standard deviation
  - Mean = 102.63
  - Standard Deviation = 9.13

- Use pooled s of 1007 and 1006-2 for severity adjustment
  - Pooled s = 14.10
    - 1007: s=15.40 n=31
    - 1006-2: s=9.13 n=11

Attachment 4

SOUTHWEST RESEARCH INSTITUTE®

Review of Sequence IVA Camshaft Batch Performance

Prepared by:

Eric Liu
Southwest Research Institute

May 18, 2012

Review of Suggested Test Limits for RO 1006-2

- Suggested test limits do NOT cover all ranges of donated test results
  - Mean = 102.63, Stdev = 9.13 → 86.196 – 119.064 acceptance bands
  - 7 of 13 donated tests do NOT fit in the acceptance bands (5 mild, 2 severe)
- Suggested test limits are NOT representative of all sources of variation
- Need to better understand sources of variation between labs before establishing new limits

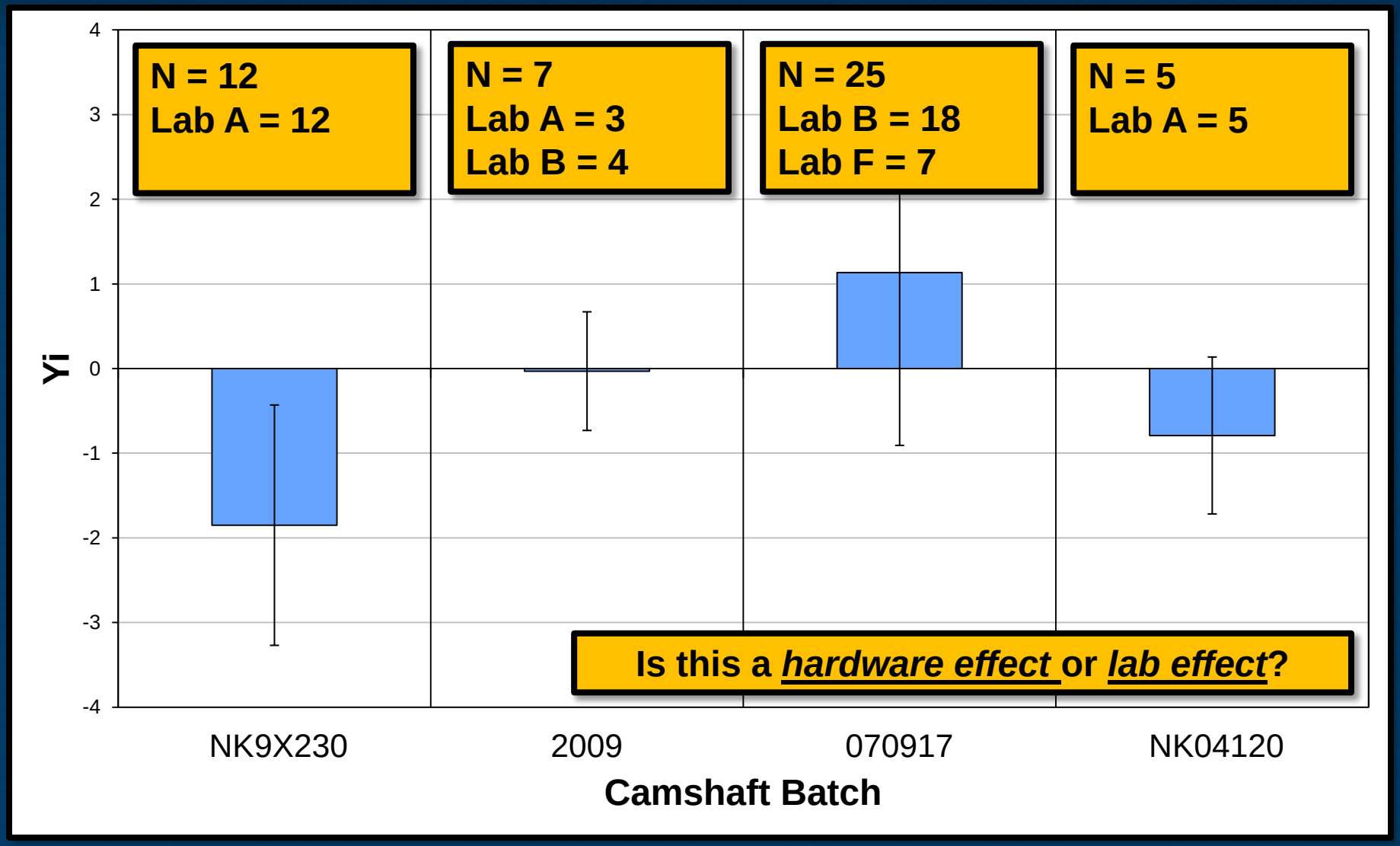
Suggested Source of Variation

- Camshaft batch variations are inherent variations to the test that must be accounted for in the calculation of new targets for RO 1006-2

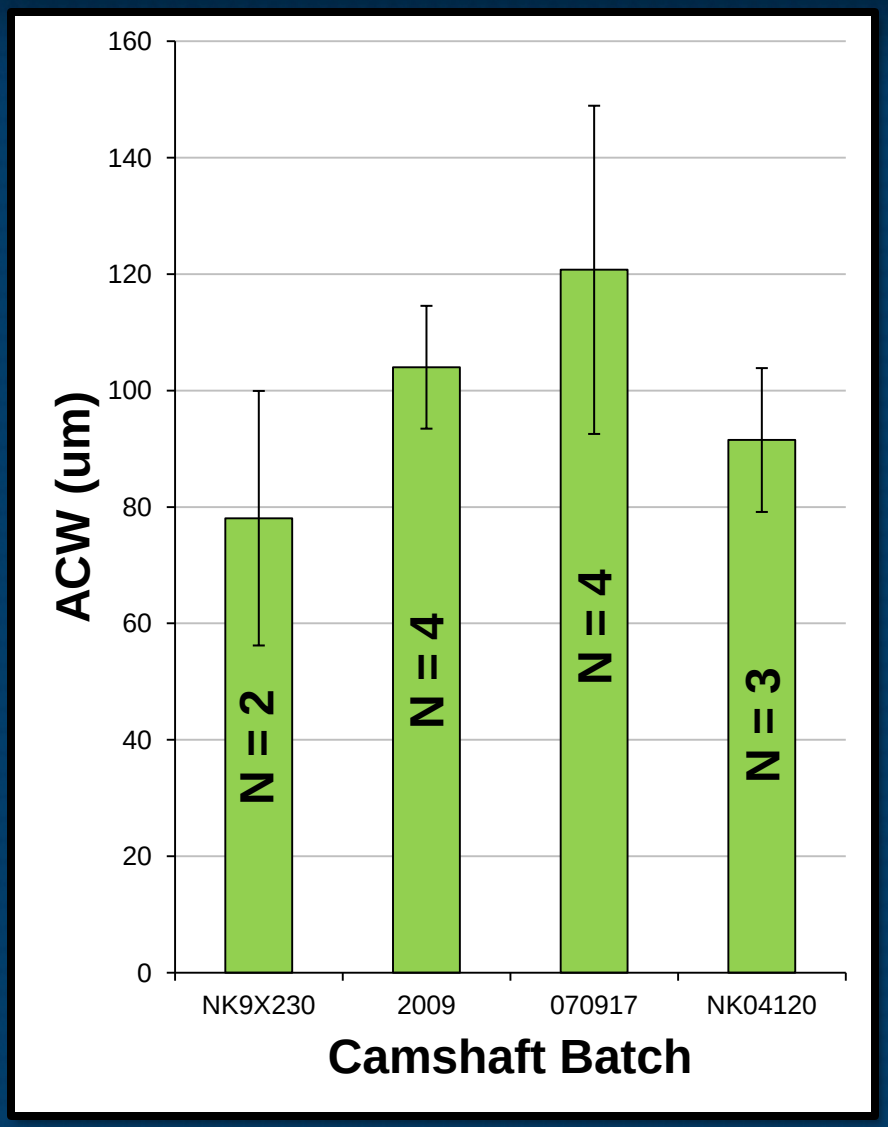
Objectives

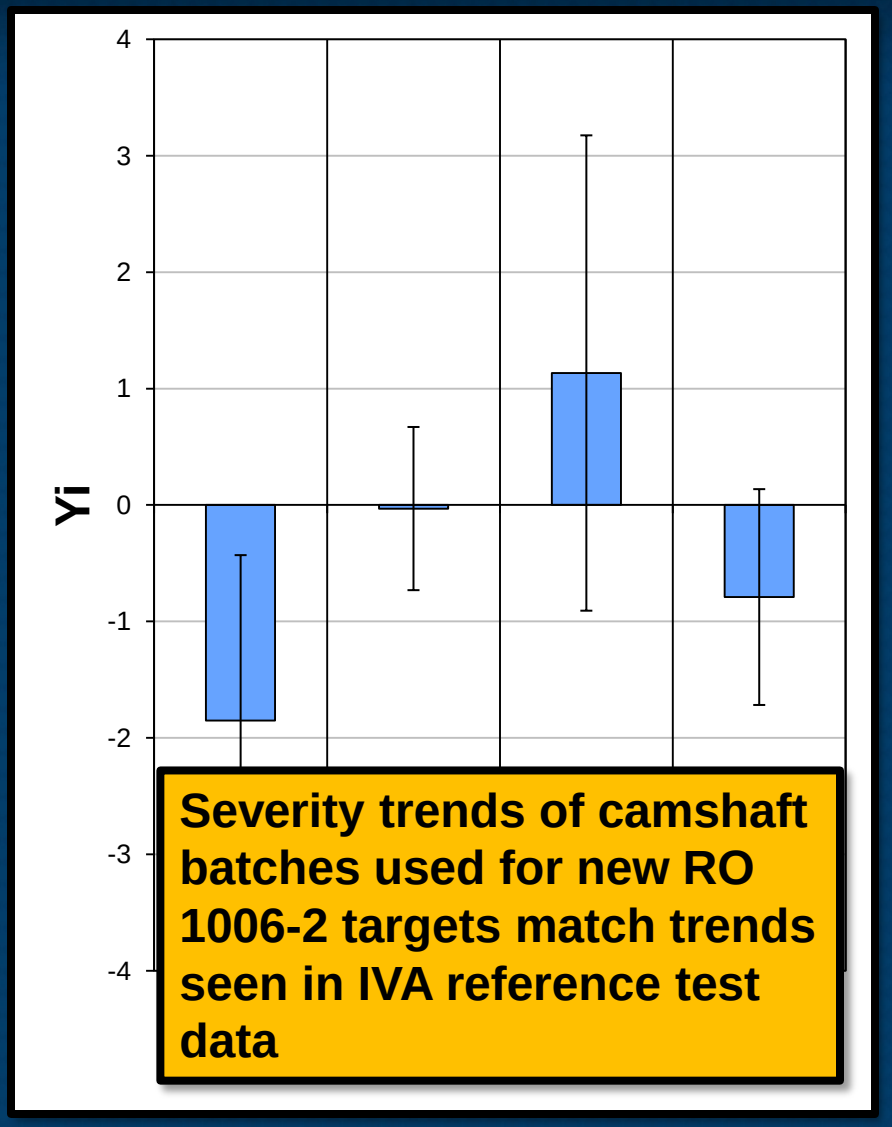
- To compare Sequence IVA reference test results between:
  - Different camshaft batches
  - Different test labs within the set of common camshaft batches
- To determine if camshaft batches affect reference test severity

Camshaft Batch Performance in 2011-2012

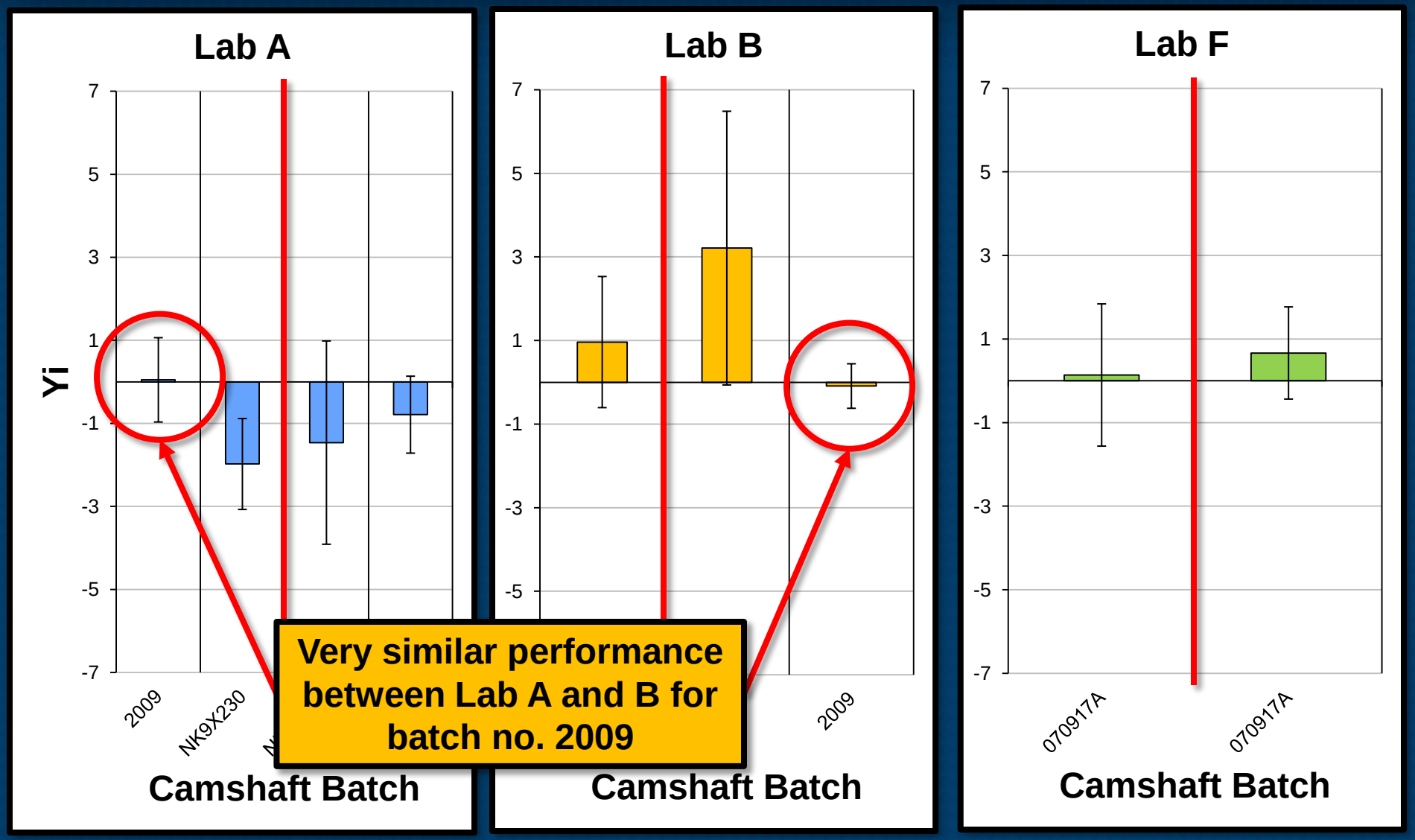


Severity of Camshaft Batches Used for New RO 1006-2 Targets





Comparison of Camshaft Batch Performance During RO 1006-2 Matrix



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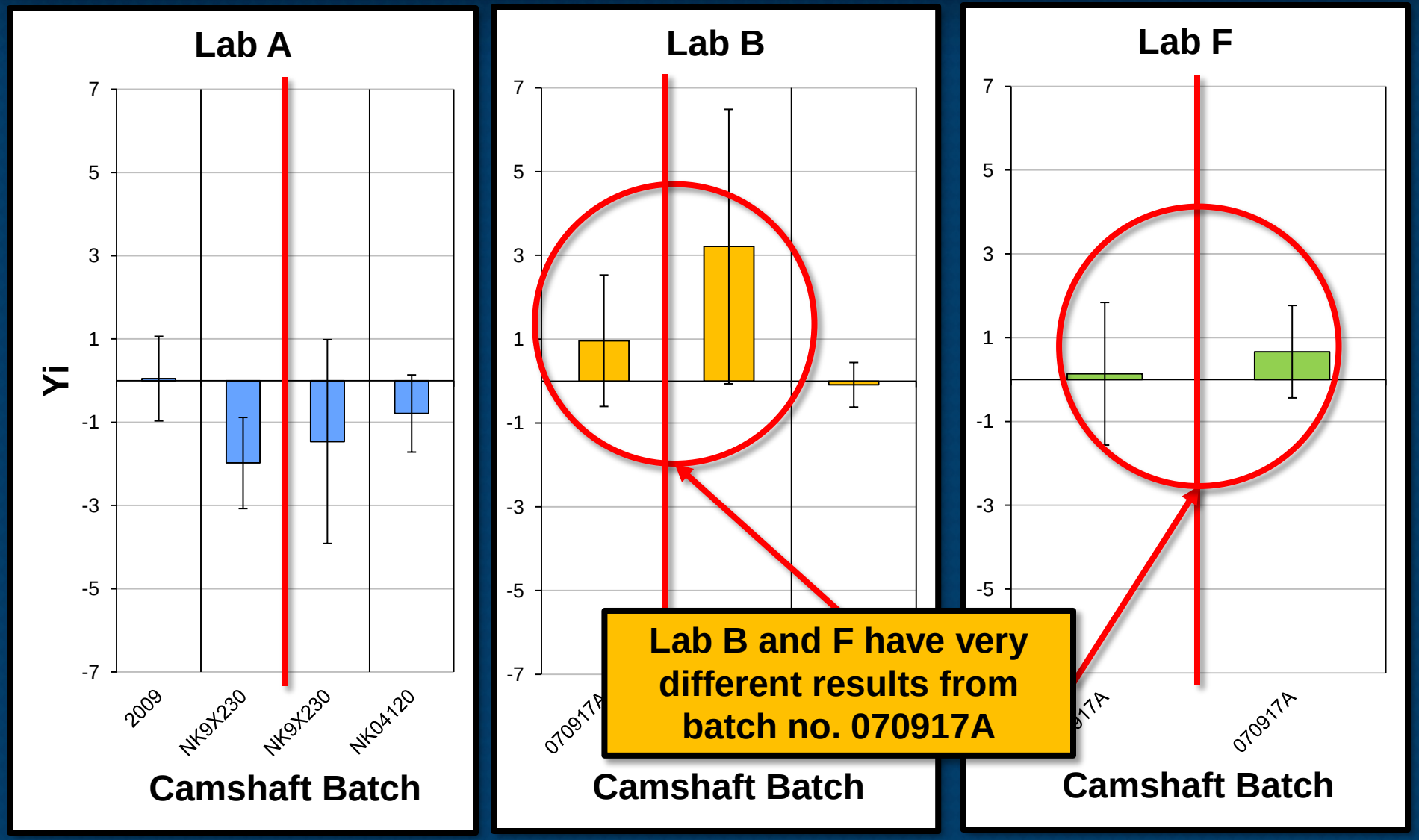

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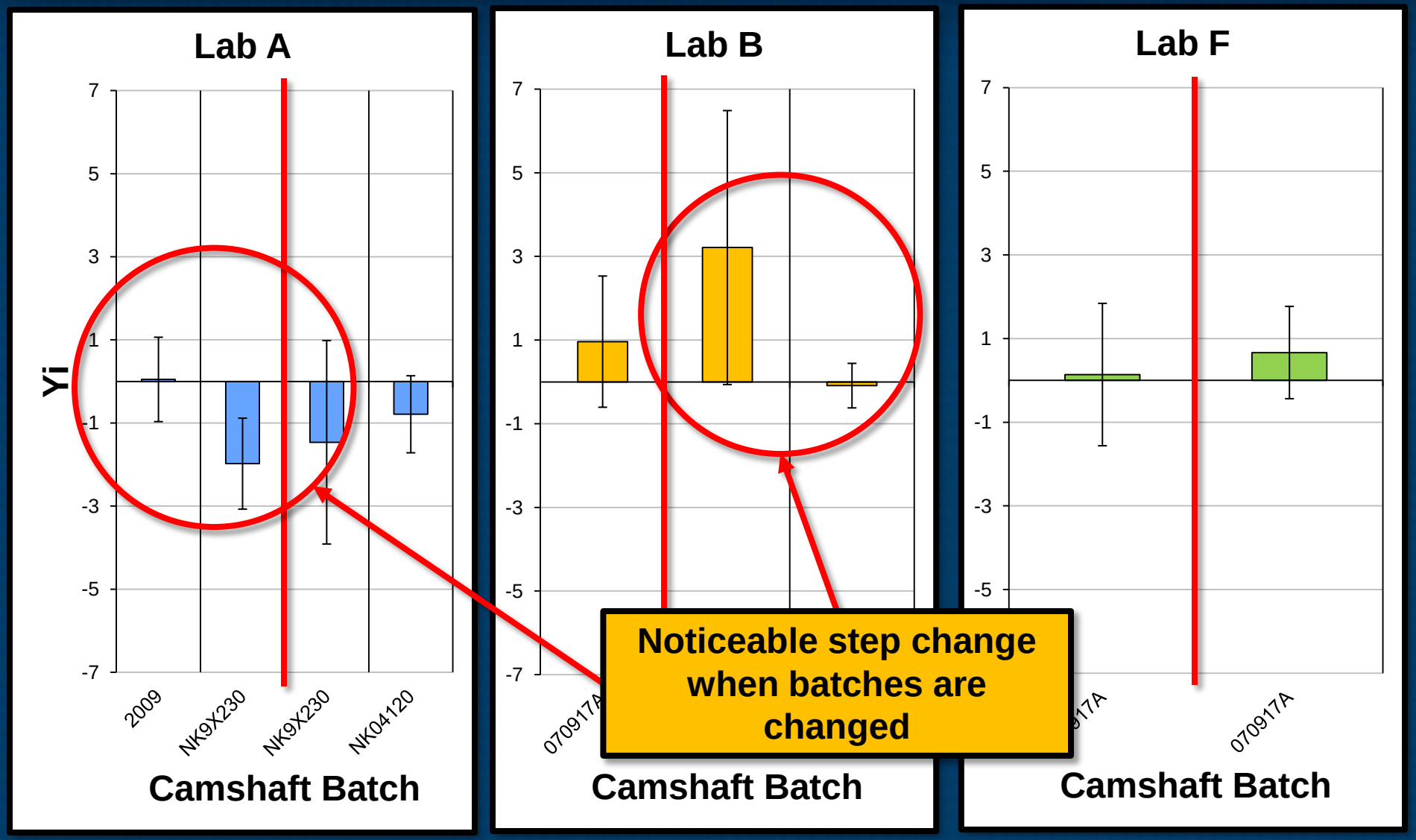

Observations

- Performance of cam batch no. 2009 between Labs A and B suggests little lab variation
- Performance of cam batch no. 070917A between Labs B and F suggests lab variation exists
- Noticeable differences when cam batches are changed

Conclusions and Recommendations

- Evidence presented show potential lab or hardware effects
- Not enough data generated with camshaft batches shared between labs to pinpoint a lab effect or hardware effect
- If hardware effect is identified, ***how can we establish limits to address this?***