

## LDEOC/EOEC SURVEILLANCE PANEL

A LDEOC/EOEC conference call was held on 10-13-21, at 9 am Central Standard Time. The following esteemed members were on the call:

Mike Birke – SwRI  
Doyle Boese – Infineum  
Vince Donndelinger - Lubrizol  
Robert Stockwell – Oronite  
Becky Grinfield – SwRI  
Gefei Wu – Valvoline  
Kimberly Gutierrez - Intertek  
Dennis Gaal – ExxonMobil  
Jason Bowden – OHT  
Kai Malyska – ISP  
Charles Nystrom – SwRI  
Maggie Smerdon – Savant  
Ismael Apolinar – Intertek

The purpose of the call was to discuss/accept the proposed LDEOC ACM-1 batch 25 volume change industry correction factor. This ICF was calculated in a different manner than the previous batches due to the fact the surveillance panel chair sent out instructions which stated an accompanying reference CMIR with batch 24 was not required. The statistical analysis was performed accordingly. Doyle made his presentation (attached), and the data shows there is little difference between the previous batch 24 and batch 25. His recommendation is we should accept the proposed ICF of -2.55, and then monitor the data as more becomes available. If the ICF needs to be revisited, the SP will reconvene to discuss. A motion was made to accept the LDEOC ACM-1 volume change of -2.55. There was unanimous approval by the surveillance panel. Mike Birke suggested TMC have three weeks to distribute the information letter, and he will get off line with Tom Schofield to discuss implementation. Vince Donndelinger proposed the SP consider adopting a one size fits all ICF of -2.52 for all future batches of ACM-1. The number is based on the average of all correction factors batches 19 – 24. There was general agreement that his idea should be considered. Mike Birke will bring the topic up as new business at the next SP meeting. There was no further discussion, and the call adjourned at 9:32 am.

# LDEOC ACM-1 Batch 24 Industry Correction Factor

D. Boese

September 13, 2021

Performance you can rely on.

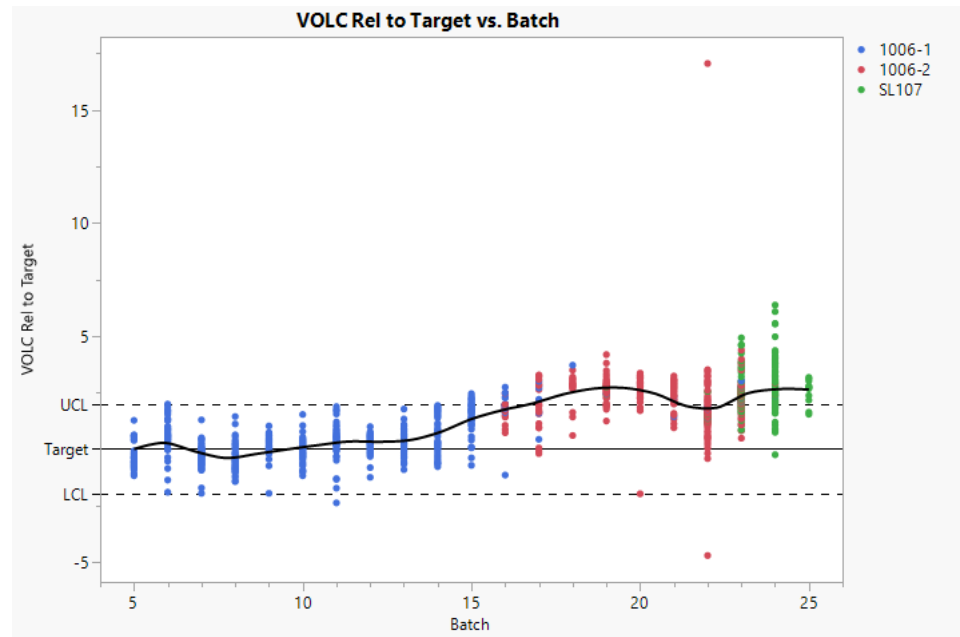


# Summary

- Contrary to prior ACM-1 ICF Batch Round Robins, for all but one lab, a reference from the prior batch was not run with Batch 25 to verify the baths were calibrated and to adjust for severity of the bath. Is this a concern for the Surveillance Panel?
- Based on the data available, the estimate for the Volume Change Industry Correction Factor (ICF) is -2.55% for Batch 25 ACM-1.
- Batch 25 ACM-1 sample averages for HARD and TENS are within 1.5 and 0.5 standard deviations of target, respectively.

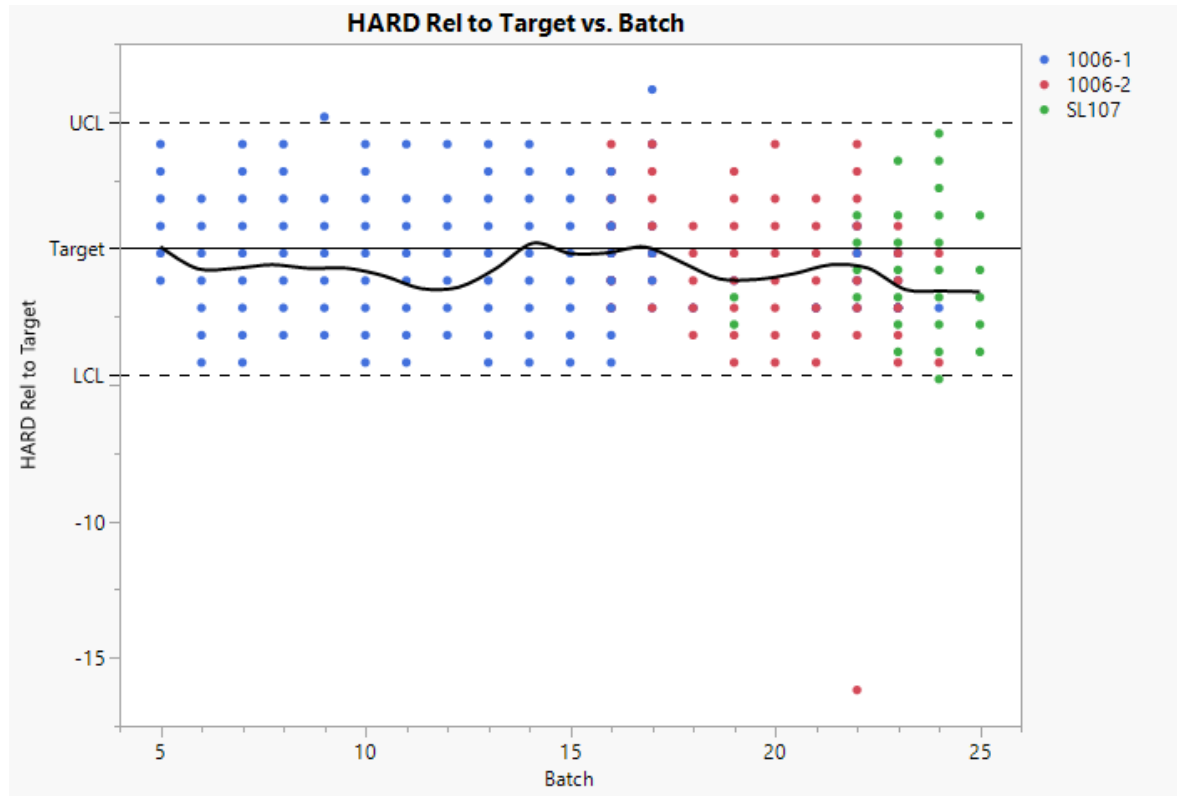
- The data is as of September 30, 2021.
- Six labs (A, B, E, G, I and V) each ran in separate baths 2 tests of Batch 25 ACM-1.
  - One lab (B) included in each bath a Batch 24 ACM-1 as a reference.
  - The remaining labs did not include Batch 24 as a reference.
- For prior ACM-1 batch ICF round robin testing, the most recent batch was run as a reference with the batch for which an ICF was being evaluated to verify the baths were calibrated and to adjust for severity of the bath. That part of the instructions were inadvertently omitted for this round robin.
- If only tests including both reference batches (24 and 25) were included an insufficient number of tests would be available to estimate the ICF.
- For both Lab B pairs of tests, Batch 25 VOLC was higher than Batch 24 for an average difference of 0.65 (4.59 versus 5.16 and 4.50 versus 5.22).
- For Batch 25, ICF is estimated without verifying the bath is in calibration or the use of the prior batch to adjust the severity of the result. Is that acceptable?

# Unadjusted Volume Change Relative to Target



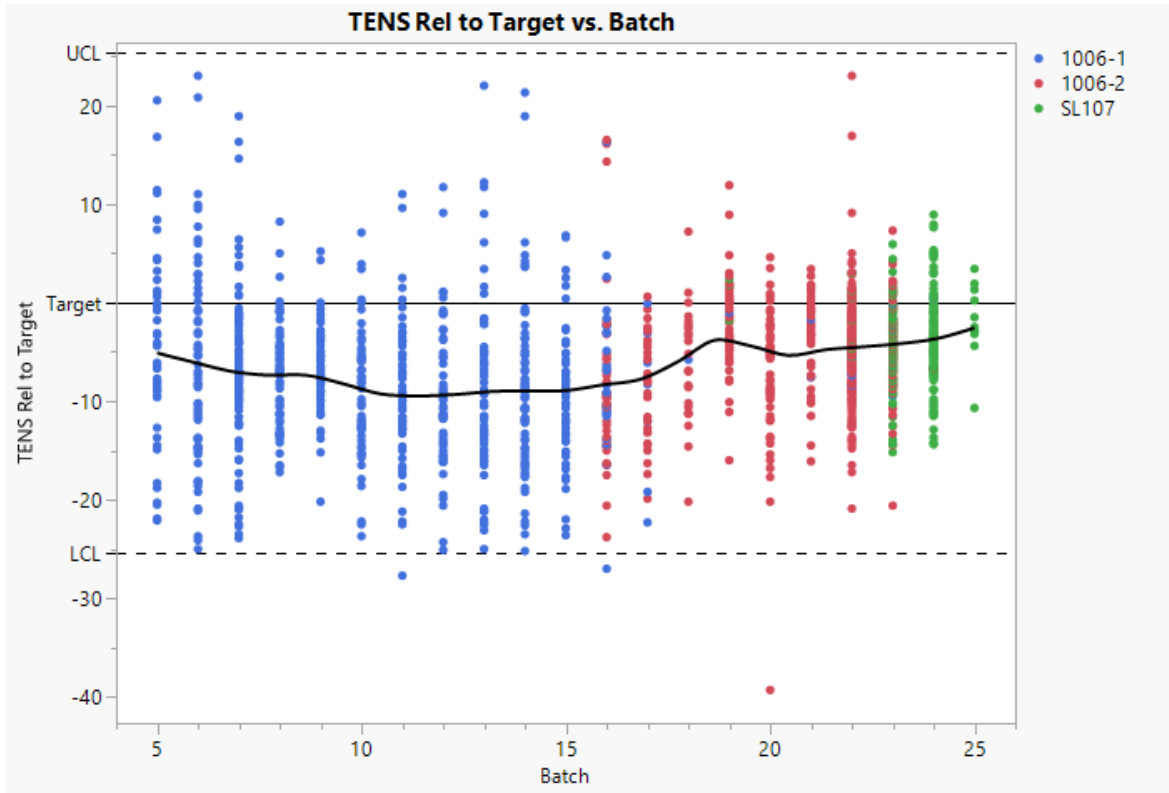
- Plotted is Volume Change without ICF relative to the applicable target for batches at the current targets for RO 1006 and SL107.
  - Only operationally valid data are plotted.
- Batch 25 VOLC appears similar to Batch 24.
- 8 of the 12 unadjusted Batch 25 VOLC results are higher than the upper calibration limits.

# Hardness Change



- Plotted is HARD Relative to Target for batches at the current targets for RO 1006 and SL107.
  - Only operationally valid data are plotted.
- Batch 25 HARD appears similar to previous batches.
- All 12 unadjusted Batch 25 HARD results are within the calibration limits with the average being approximately 1 standard deviation below target.

# Tensile Strength Change



- Plotted is TENS Relative to Target for batches at the current targets for RO 1006 and SL107.
  - Only operationally valid data are plotted.
- Batch 25 TENS appears similar relative to recent batches.
- All 12 unadjusted Batch 25 TENS results are within the calibration limits.

# Industry Correction Factor



Statistic	VOLC	HARD	TENS
Target	2.05	-0.21	2.58
Batch 25 Avg	4.60	-2	0.6
ICF	-2.55		
p-Value	< 0.0001		

- The ICF (Target – Batch 25) for VOLC is -2.55% and is statistically significant.
  - The ICF for Batch 24 is -2.43.
  - The 2 Batch 25 VOLCs in Lab B averaged 0.65 higher than the Batch 24 VOLCs ran in the same baths. This would indicate that the ICF for Batch 25 should be approximately 0.65 lower than that of Batch 24, however, this estimate is based on a very small sample size.
- ICFs are not calculated for HARD and TENS.



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