



## Test Monitoring Center

@ Carnegie Mellon University  
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<http://astmtmc.cmu.edu>  
412-365-1000

MEMORANDUM: 18-018

DATE: June 13, 2018

TO: Mike Birke,  
Chairman, Engine Oil Elastomer Compatibility Surveillance Panel

FROM: Michael T. Kasimirsky *Michael T. Kasimirsky*

SUBJECT: EOEC Testing from October 1, 2017 through March 31, 2018

A total of 263 EOEC tests were reported from 7 labs to the Test Monitoring Center during the period from October 1, 2017 through March 31, 2018.

Please find attached a summary of testing activity this period.

MTK/mtk/mem18-018.mtk.doc

cc: Frank Farber

Jeff Clark

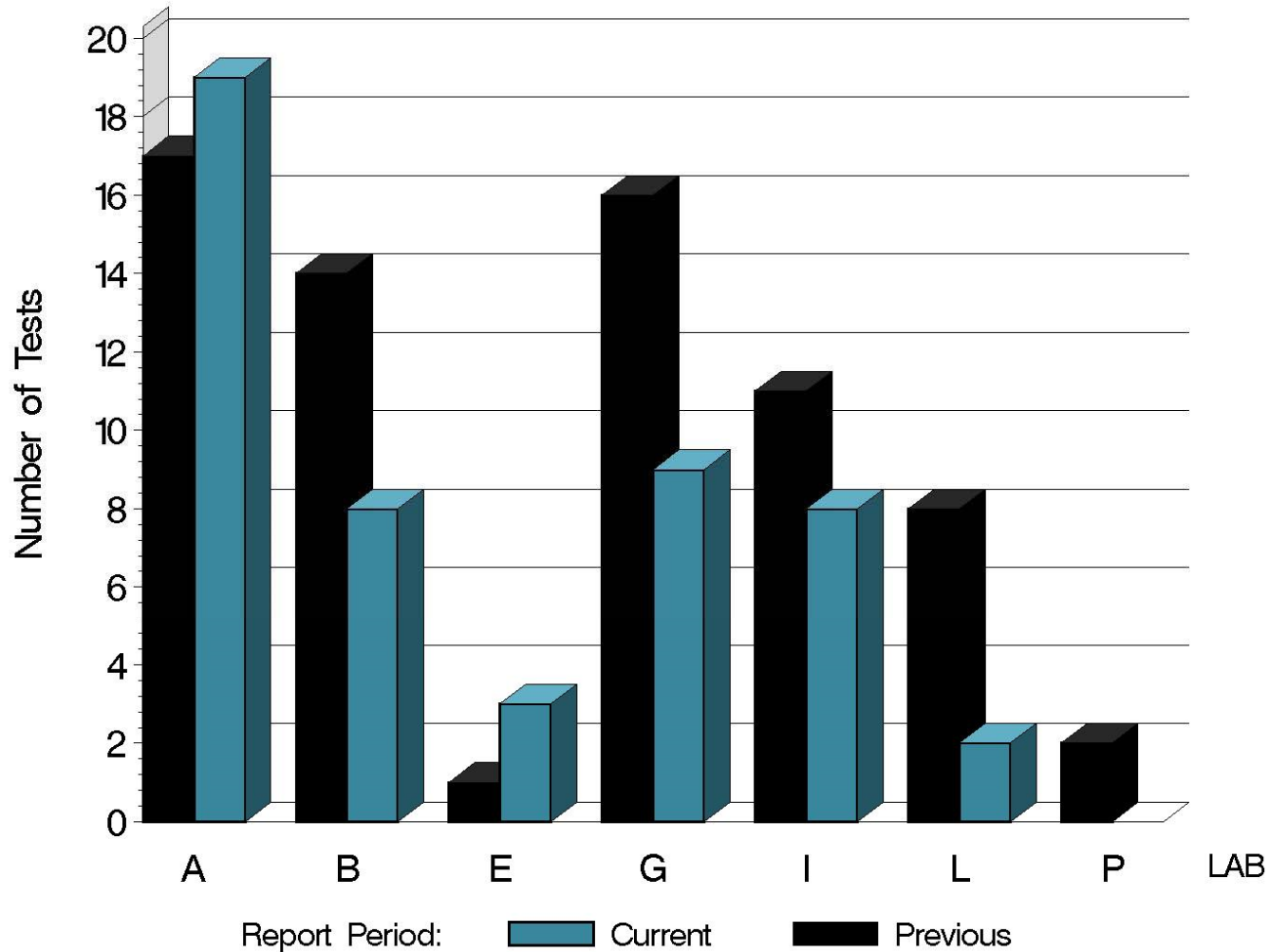
EOEC Surveillance Panel

<http://www.astmtmc.cmu.edu/docs/bench/eoec/semiannualreports/eoec-04-2018.pdf>

Distribution: email

# EOEC (D 7216)

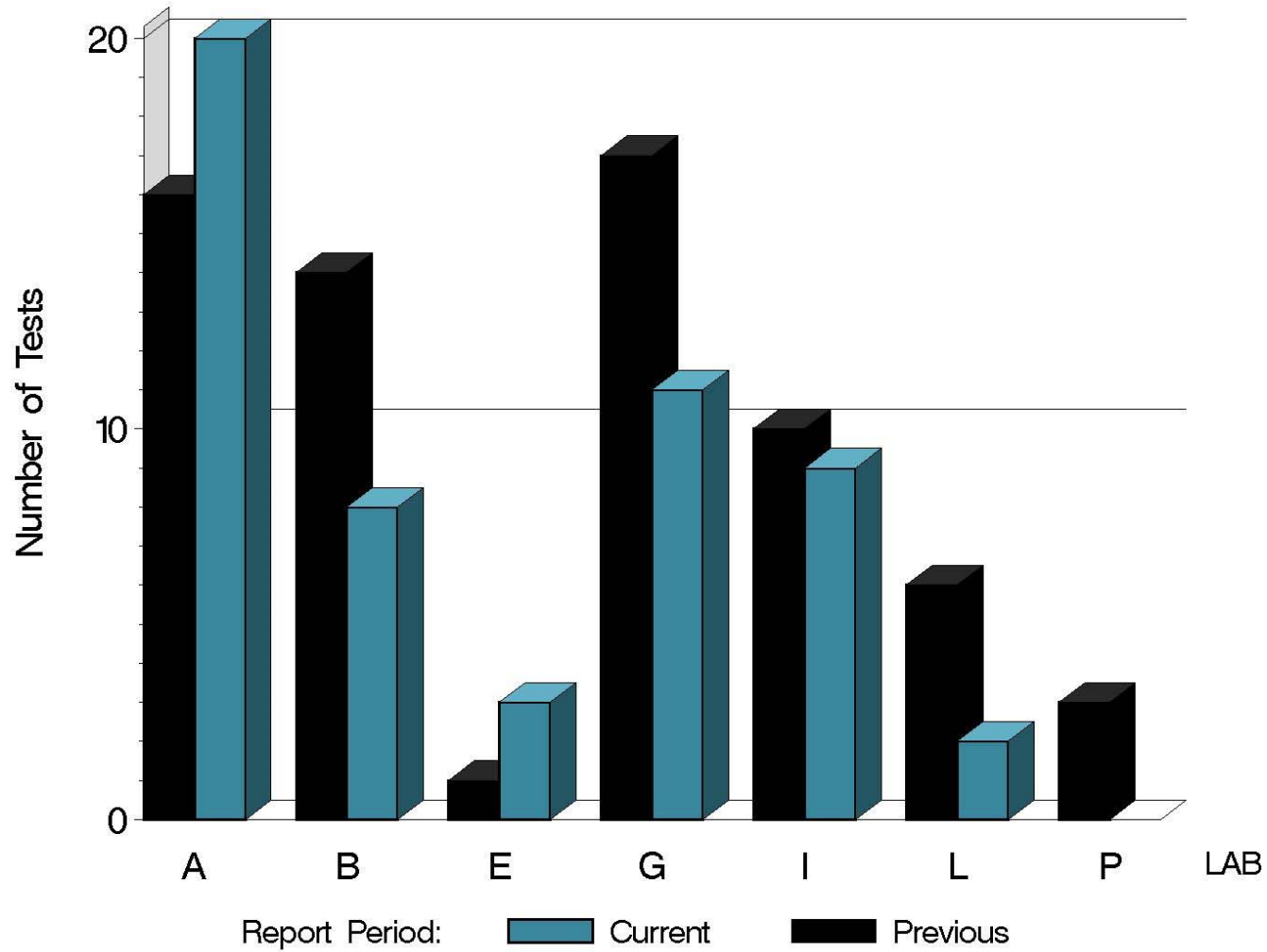
NUMBER OF FLUOROELASTOMER TESTS  
REPORTED BY LAB AND REPORT PERIOD



9:22:36 13JUN2018

# EOEC (D 7216)

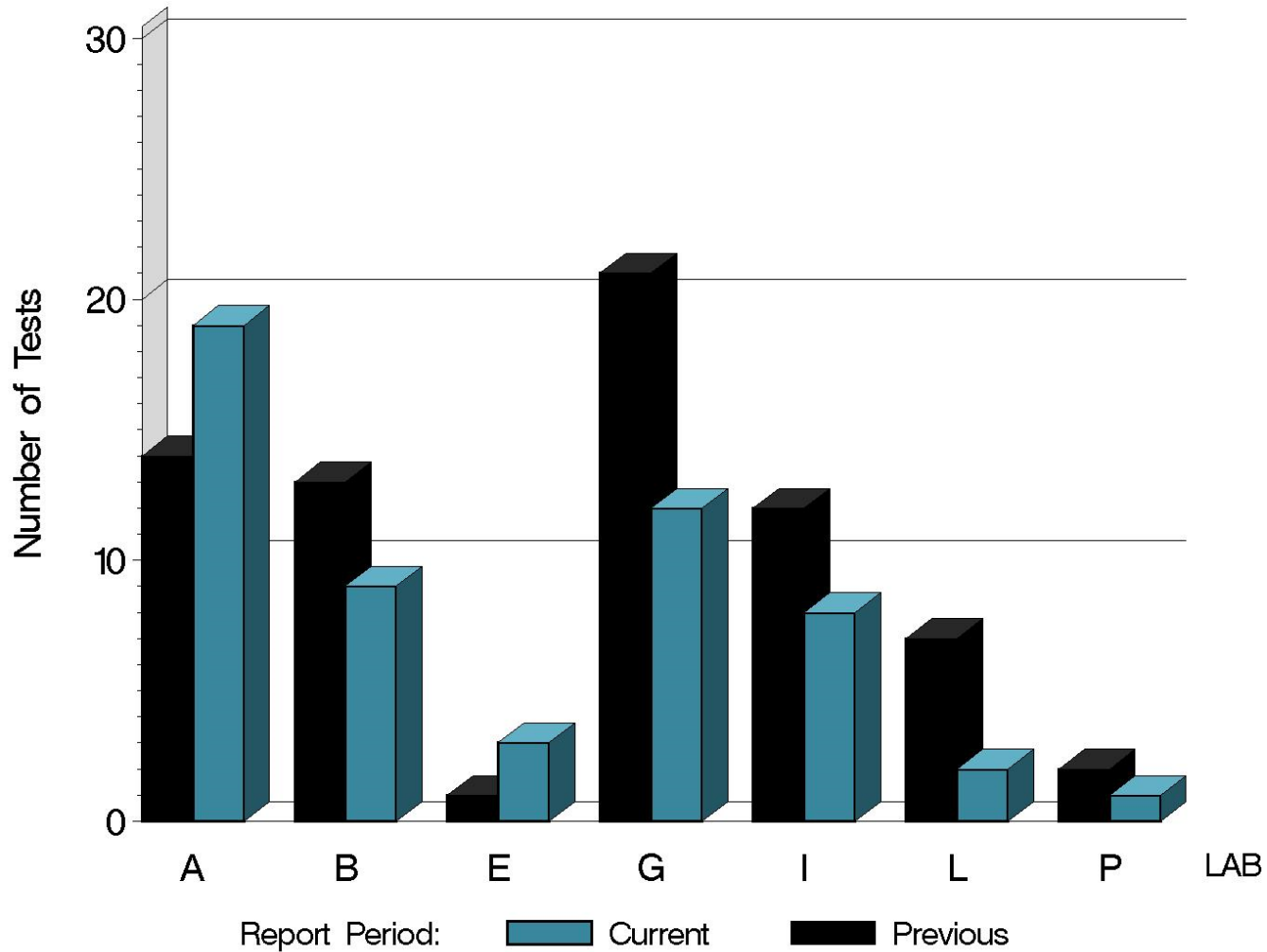
## NUMBER OF NITRILE TESTS REPORTED BY LAB AND REPORT PERIOD



10:33:58 13JUN2018

# EOEC (D 7216)

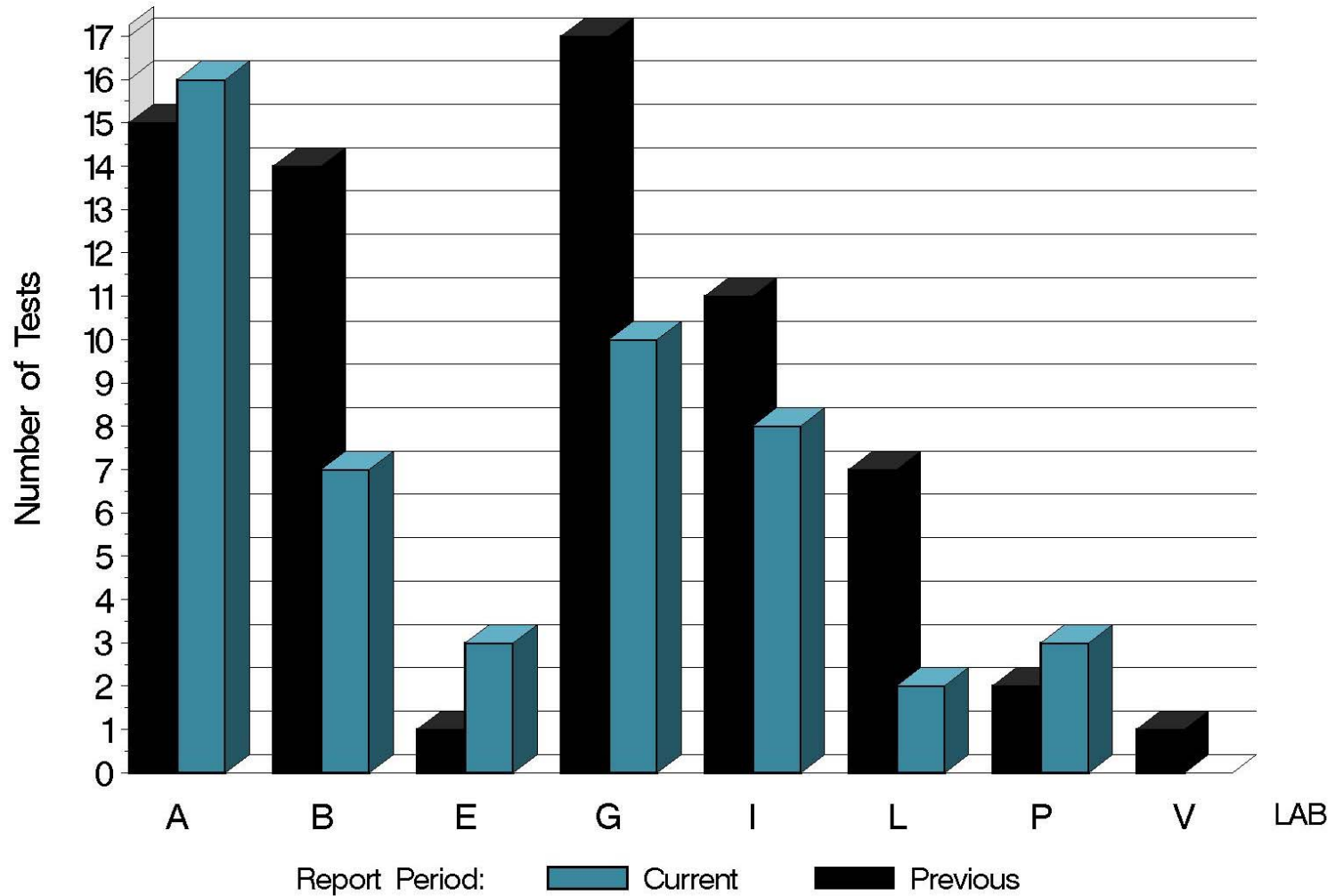
## NUMBER OF POLYACRYLATE TESTS REPORTED BY LAB AND REPORT PERIOD



9:22:36 13JUN2018

# EOEC (D 7216)

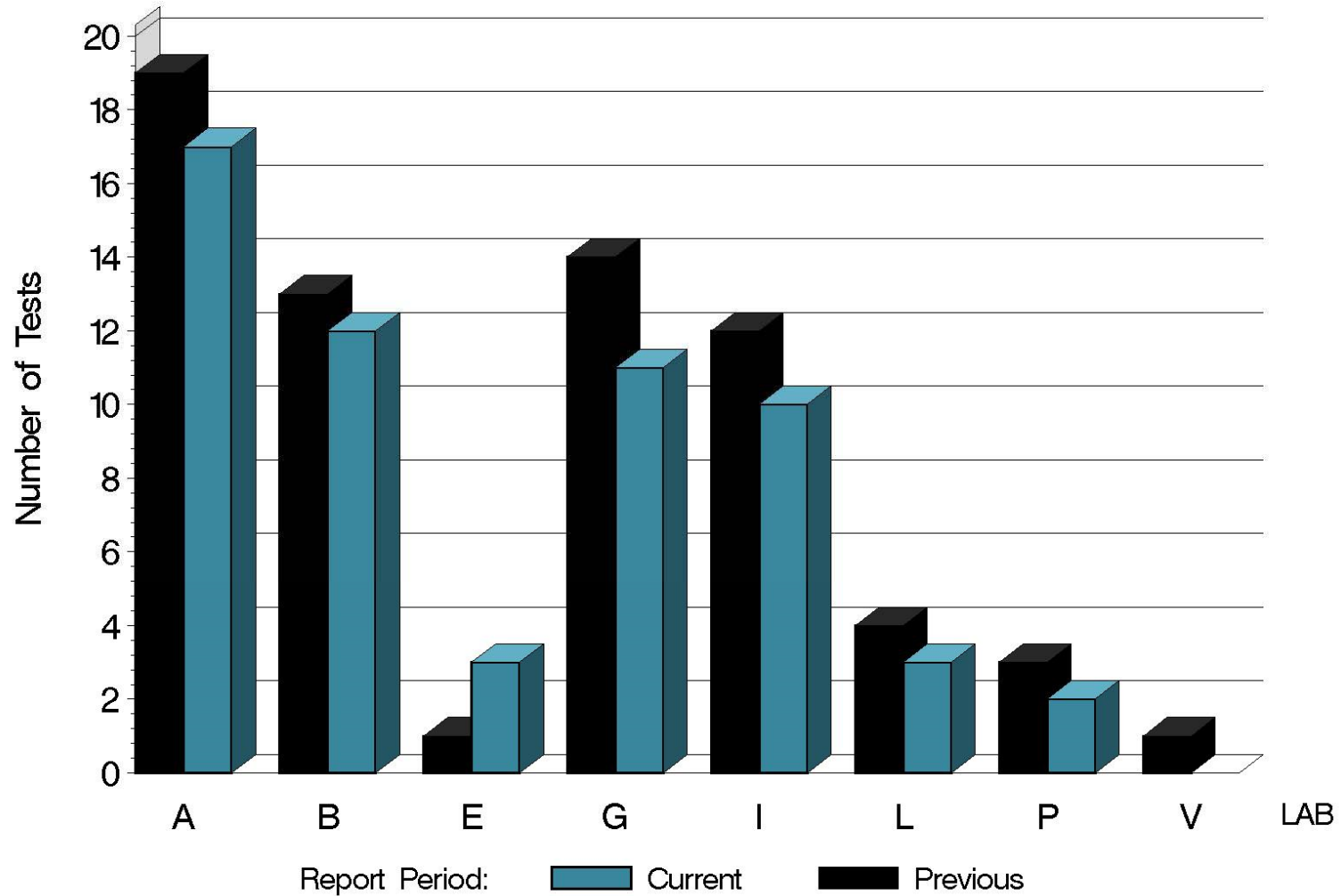
## NUMBER OF SILICONE TESTS REPORTED BY LAB AND REPORT PERIOD



9:22:36 13JUN2018

# EOEC (D 7216)

## NUMBER OF VAMAC TESTS REPORTED BY LAB AND REPORT PERIOD



9:22:36 13JUN2018

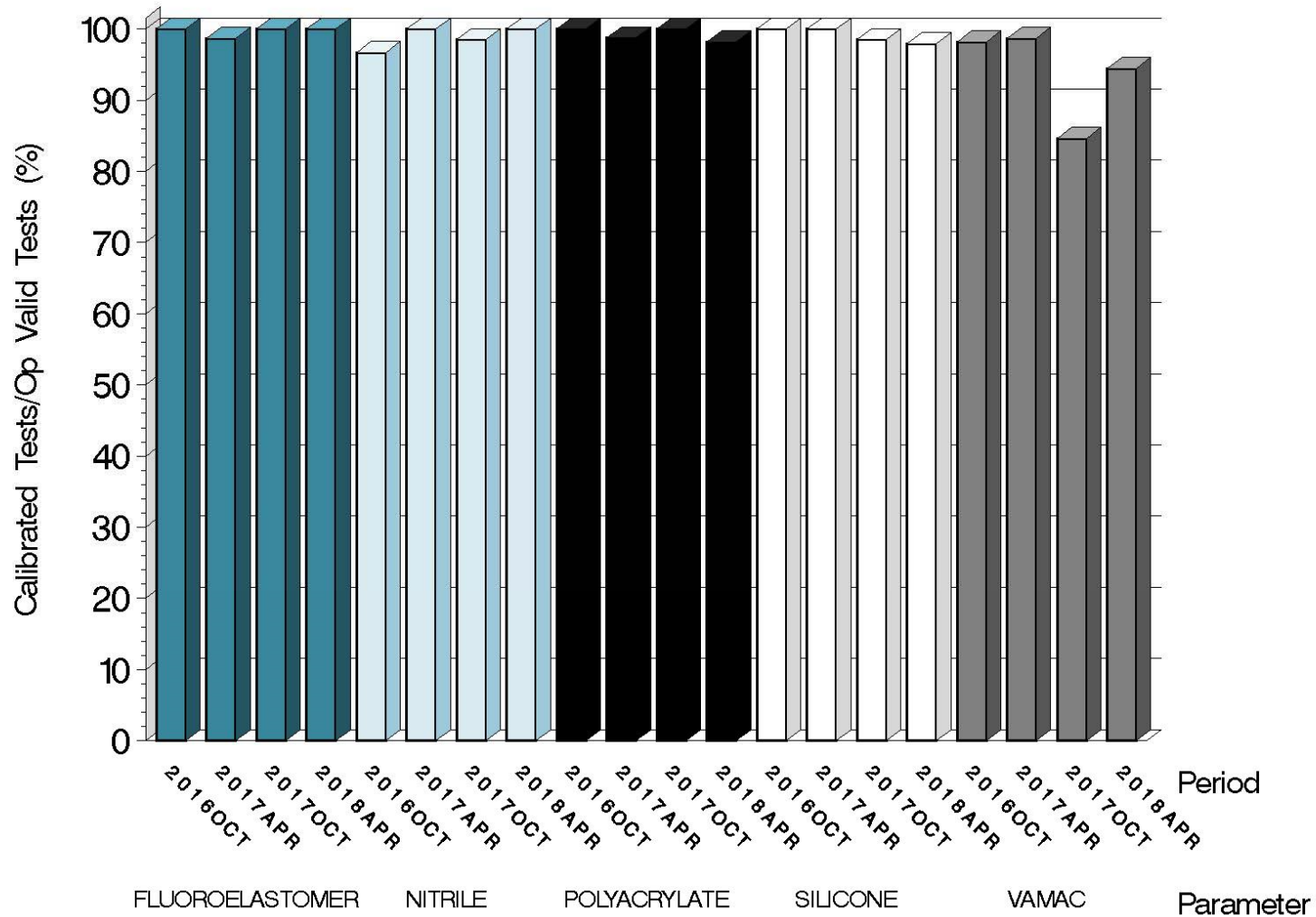
# EOEC (D 7216)

## Test Distribution by Oil and Validity

		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	49	51	53	48	51	252	321
Rejected	OC	0	0	1	1	3	5	12
Information Run	NI	0	0	0	0	0	0	0
Invalid Information Run	LI	0	0	0	0	0	0	0
Operationally Invalid (lab)	LC	0	1	0	0	4	5	0
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0	0	0
Aborted Calibration	XC	0	1	0	0	0	1	8
<b>Total</b>		<b>49</b>	<b>53</b>	<b>54</b>	<b>49</b>	<b>58</b>	<b>263</b>	<b>341</b>

# EOEC (D 7216)

OPERATIONALLY VALID TESTS  
MEETING ACCEPTANCE CRITERIA



9:22:36 13JUN2018



# EOEC (D 7216)

## LOST TESTS PER START BY LAB AND ELASTOMER TYPE

Lab	Fluoroelastomer			Nitrile			Polyacrylate			Silicone			Vamac			Total		
	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%
A	0	19	0	0	20	0	0	19	0	0	16	0	0	17	0	0	91	0
B	0	8	0	1	8	13	0	9	0	0	7	0	4	12	33	5	44	11
E	0	3	0	0	3	0	0	3	0	0	3	0	0	3	0	0	15	0
G	0	9	0	1	11	9.1	0	12	0	0	10	0	0	11	0	1	53	1.9
I	0	8	0	0	9	0	0	8	0	0	8	0	0	10	0	0	43	0
L	0	2	0	0	2	0	0	2	0	0	2	0	0	3	0	0	11	0
P	0	0	0	0	0	0	0	1	0	0	3	0	0	2	0	0	6	0
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	49	0	2	53	3.7	0	54	0	0	49	0	4	58	6.9	6	263	2.3

# EOEC (D 7216)

## CAUSES FOR LOST TESTS

Lab	Cause	Elastomer					Validity			Loss Rate		
		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	VAMAC	LC	RC	XC	Lost	Starts	%
G	Wrong Temperature	0	1	0	0	0	0	1	1	53	1.9	
B	Bath Failure	0	0	0	0	4	4	0	4	44	9.1	
	Broken Sample Tube	0	1	0	0	0	1	0	1	44	2.3	
	Lost	0	2	0	0	4	5	0	1			
	Starts	49	53	54	49	58	263	263	263			
	%	0	3.8	0	0	6.9	1.9	0	0.4			

Lost tests are calibration attempts that were either aborted or operationally invalid

# EOEC (D 7216)

Average $\Delta$ /s by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Fluoroelastomer	A	19	-0.498	0.414	-0.321	-1.218
	B	8	-0.422	0.489	0.006	-0.630
	E	3	0.000	-1.197	0.042	-1.232
	G	9	-0.631	-0.540	-0.014	-0.602
	I	8	0.135	-0.193	0.697	-0.167
	L	2	-0.338	0.545	0.596	-1.739
	P	-	-	-	-	-
	Industry	49	-0.370	0.058	0.015	-0.859
Nitrile	A	20	1.710	1.062	0.119	-0.541
	B	7	2.037	1.074	-0.310	-0.386
	E	3	1.726	-1.320	-1.029	0.465
	G	10	1.860	0.808	-0.548	-1.247
	I	9	1.769	1.065	0.047	-0.636
	L	2	0.946	0.186	-1.038	0.097
	P	-	-	-	-	-
	Industry	51	1.766	0.840	-0.196	-0.591
Polyacrylate	A	19	1.723	-0.448	0.302	0.233
	B	9	2.057	-0.951	-0.051	0.880
	E	3	1.588	-1.383	0.674	1.906
	G	12	1.666	0.515	0.193	0.660
	I	8	1.967	-0.619	-0.101	0.546
	L	2	1.533	0.283	-0.126	1.826
	P	1	2.276	-0.272	-0.229	0.847
	Industry	54	1.798	-0.365	0.154	0.646

# EOEC (D 7216)

Average $\Delta/s$ by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Silicone	A	16	0.296	-1.011	0.879	0.059
	B	7	0.226	-0.945	-0.057	-0.333
	E	3	0.223	0.408	-1.901	-1.415
	G	10	1.497	-0.588	0.751	-0.749
	I	8	-1.058	0.245	-0.376	0.473
	L	2	-0.586	1.716	-0.786	0.006
	P	3	0.038	-0.408	-1.632	-0.221
	V	-	-	-	-	-
	Industry	49	0.254	-0.475	0.123	-0.204
VAMAC	A	17	0.154	-1.521	0.455	0.103
	B	8	0.093	-1.637	0.331	-0.941
	E	3	-0.463	-4.926	-0.521	1.195
	G	11	1.015	-1.003	-0.410	-0.696
	I	10	0.459	-1.453	-0.056	-0.670
	L	3	0.087	1.389	-0.120	-0.354
	P	2	0.752	-1.242	-2.223	-0.539
	V	-	-	-	-	-
	Industry	54	0.361	-1.437	-0.019	-0.346

# EOEC (D 7216)

Individual test results can be viewed at the links shown in the following table:

<i>Links to Individual Test Result Data</i>	
<b>Elastomer Type</b>	<b>Web Link to Data</b>
Fluoroelastomer	<a href="http://www.astmtmc.cmu.edu/refdata/bench/eoecf/data/">http://www.astmtmc.cmu.edu/refdata/bench/eoecf/data/</a>
Nitrile	<a href="http://www.astmtmc.cmu.edu/refdata/bench/eoecn/data/">http://www.astmtmc.cmu.edu/refdata/bench/eoecn/data/</a>
Polyacrylate	<a href="http://www.astmtmc.cmu.edu/refdata/bench/eoecp/data/">http://www.astmtmc.cmu.edu/refdata/bench/eoecp/data/</a>
Silicone	<a href="http://www.astmtmc.cmu.edu/refdata/bench/eoecs/data/">http://www.astmtmc.cmu.edu/refdata/bench/eoecs/data/</a>
VAMAC	<a href="http://www.astmtmc.cmu.edu/refdata/bench/eoecv/data/">http://www.astmtmc.cmu.edu/refdata/bench/eoecv/data/</a>

## EOEC (D 7216)

# Severity & Precision Analysis

Due to statistically significant lab differences, a meaningful summary of industry level severity and precision cannot be provided.

A more detailed summary of this situation is available from the following link:

<http://www.astmtmc.cmu.edu/docs/bench/eoec/memos/EOEC%20Baseline%20Analysis.pdf>

# EOEC (D 7216)

## INFORMATION LETTERS

No Information Letters were issued this period.

# EOEC (D 7216)

## STATUS OF REFERENCE OIL SUPPLY

Oil	Samples @ Labs	@ TMC	
		Samples (750 mL)	Gallons
1006-1	10	0	0
1006-2	316	6,500	1288
Total	326	6,500	1288

The TMC inventory of oil 1006-1 is depleted.

Reference Oil 1006-2 has been approved for EOEC testing, using the existing test targets for reference oil 1006-1.