



Test Monitoring Center

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

MEMORANDUM: 17-045

DATE: November 22, 2017

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

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

SUBJECT: EOEC Testing from April 1, 2017 through September 30, 2017

A total of 341 EOEC tests were reported from 8 labs to the Test Monitoring Center during the period from April 1, 2017 through September 30, 2017.

Please find attached a summary of testing activity this period.

MTK/mtk/mem17-045.mtk.doc

cc: Frank Farber

Jeff Clark

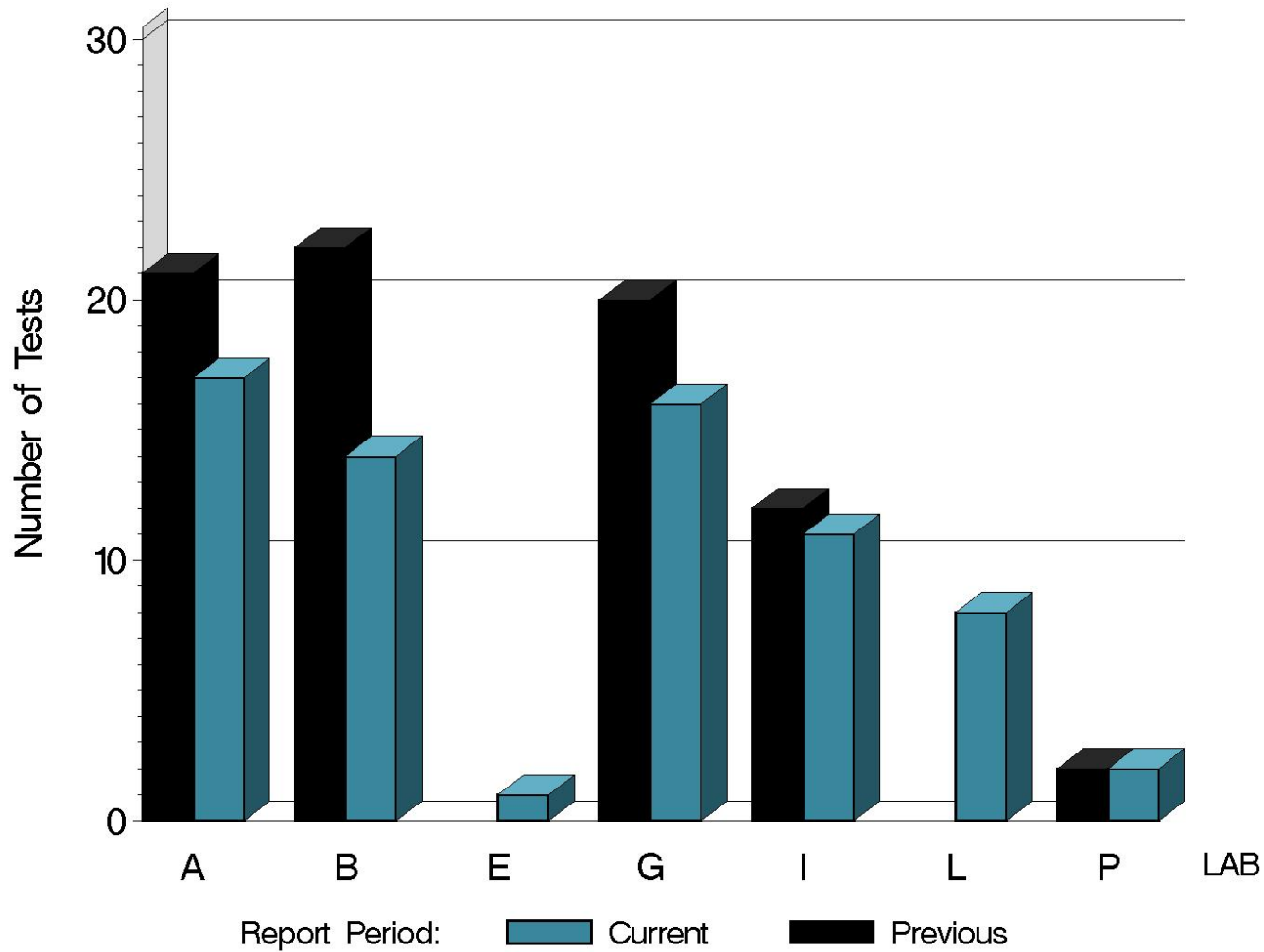
EOEC Surveillance Panel

<http://www.astmtmc.cmu.edu/docs/bench/eoec/semiannualreports/eoec-10-2017.pdf>

Distribution: email

EOEC (D 7216)

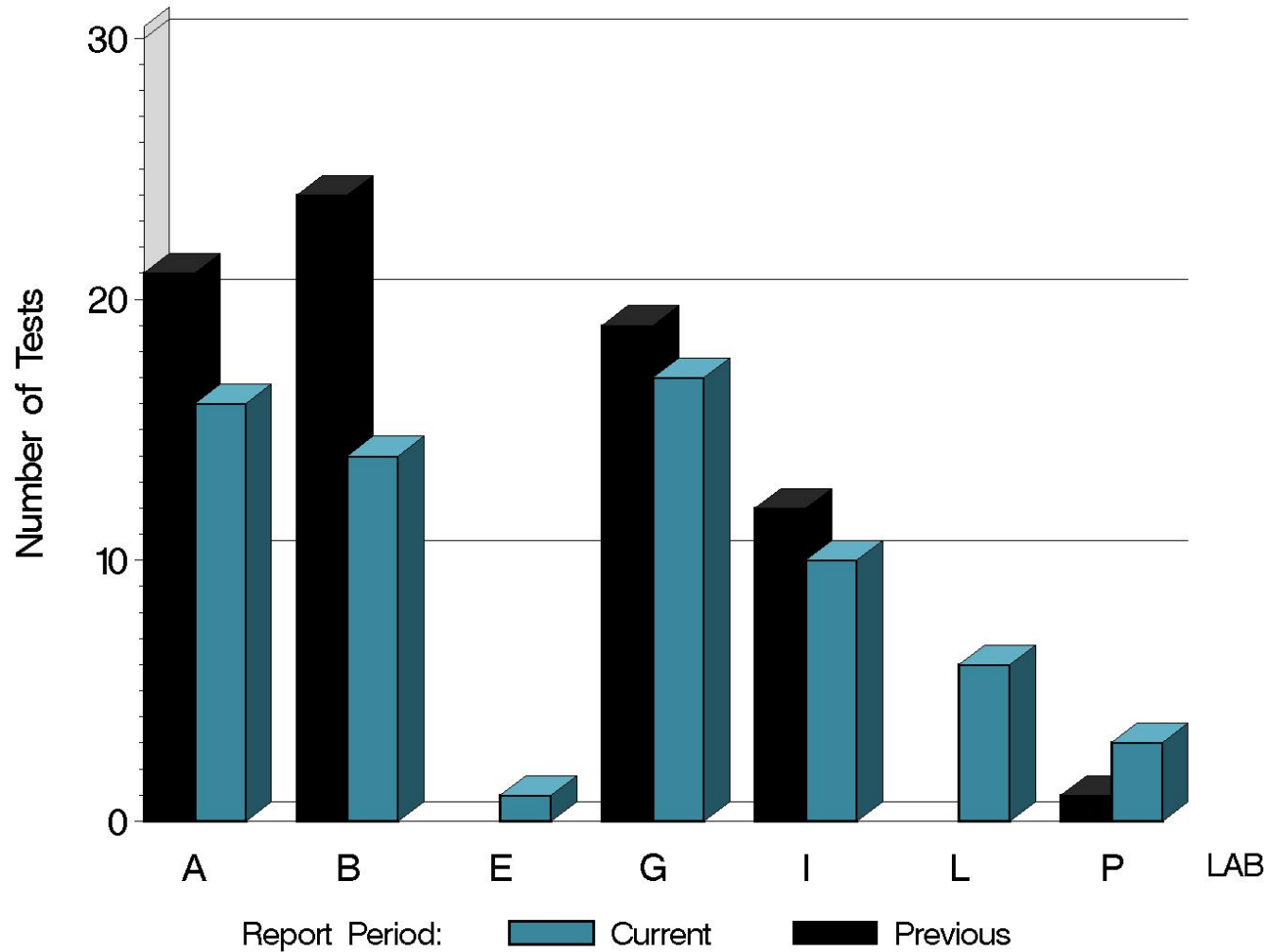
NUMBER OF FLUOROELASTOMER TESTS
REPORTED BY LAB AND REPORT PERIOD



10:02:05 22NOV2017

EOEC (D 7216)

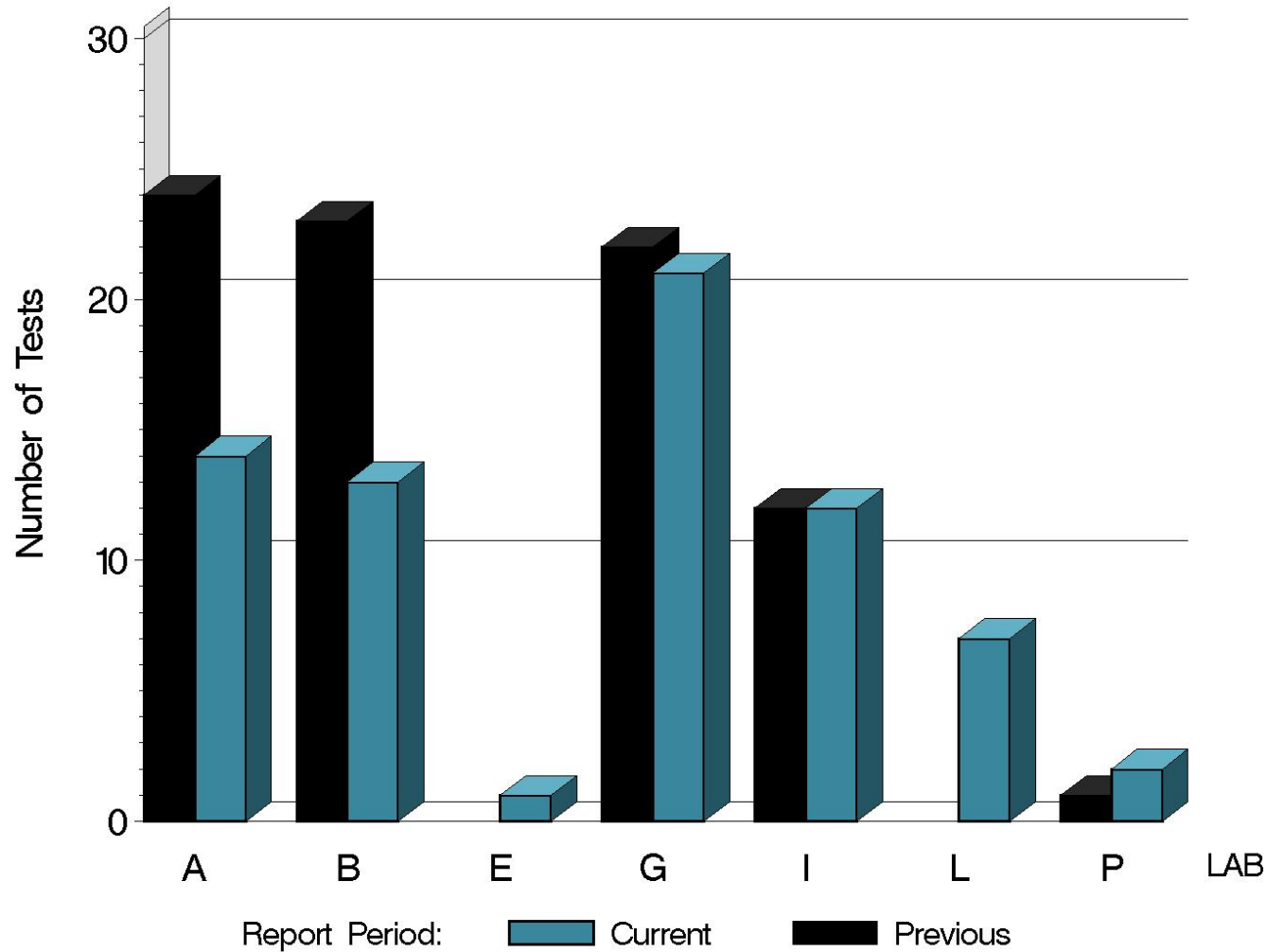
NUMBER OF NITRILE TESTS
REPORTED BY LAB AND REPORT PERIOD



11:51:10 22NOV2017

EOEC (D 7216)

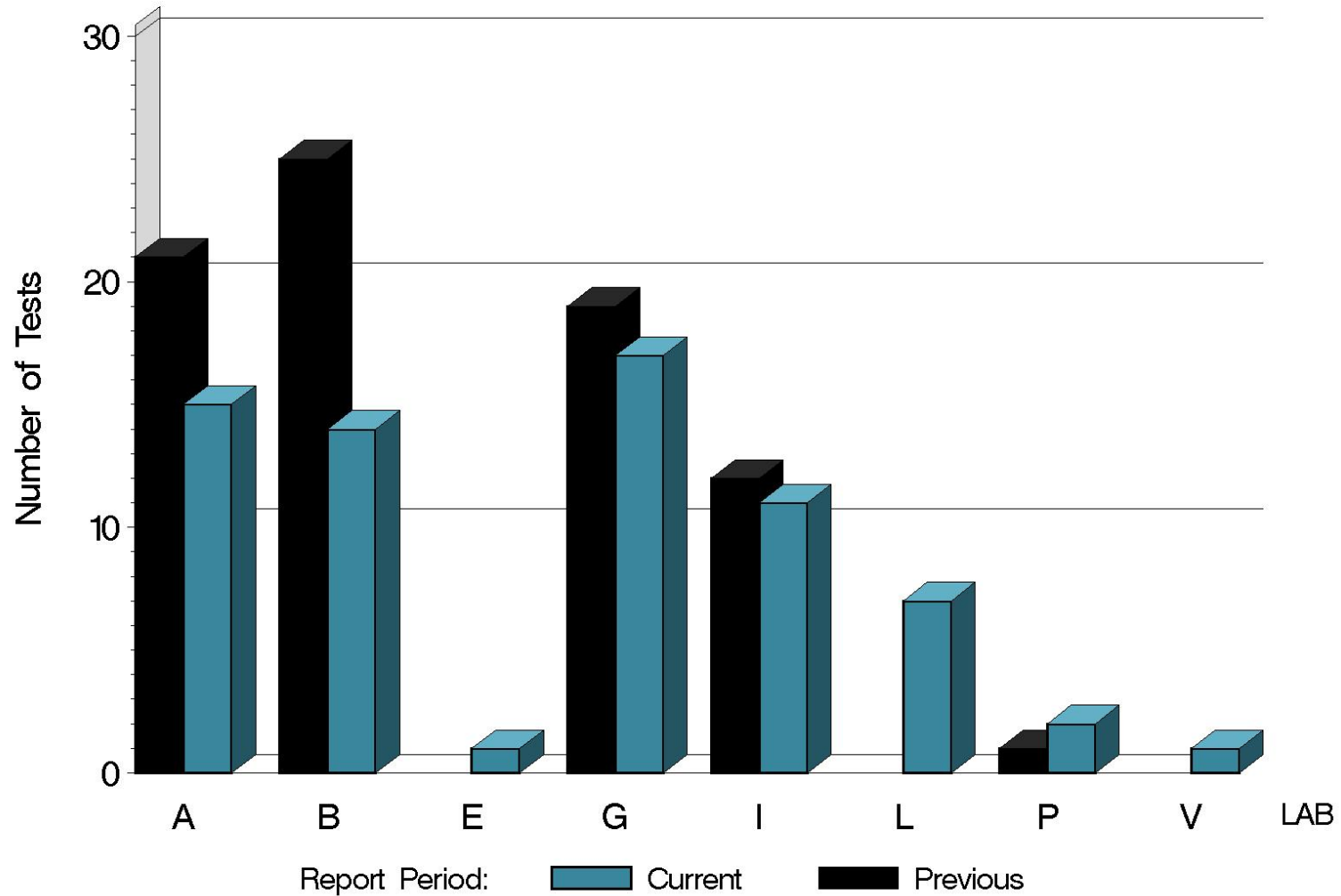
NUMBER OF POLYACRYLATE TESTS
REPORTED BY LAB AND REPORT PERIOD



11:51:10 22NOV2017

EOEC (D 7216)

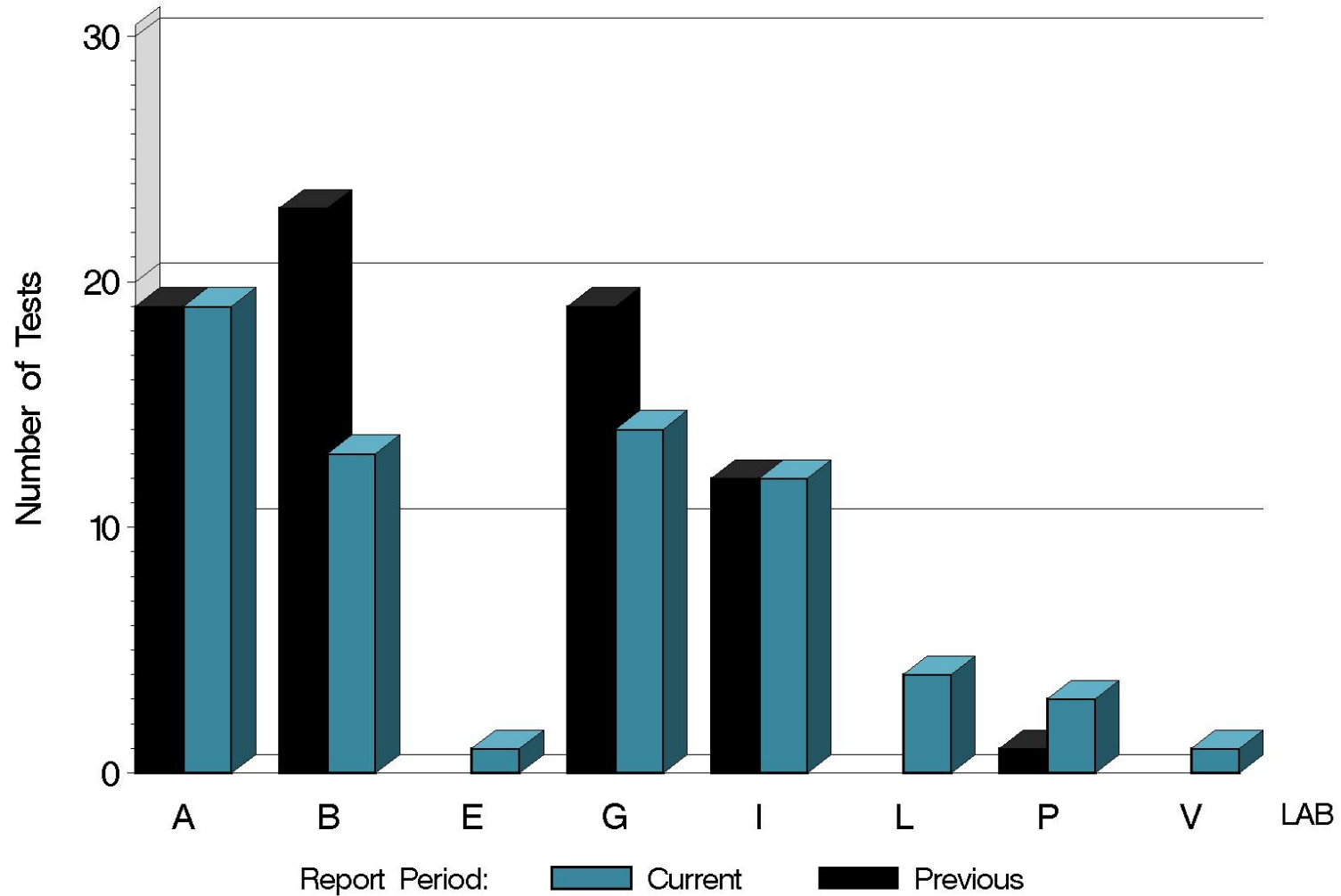
NUMBER OF SILICONE TESTS REPORTED BY LAB AND REPORT PERIOD



11:51:10 22NOV2017

EOEC (D 7216)

NUMBER OF VAMAC TESTS REPORTED BY LAB AND REPORT PERIOD



10:02:05 22NOV2017

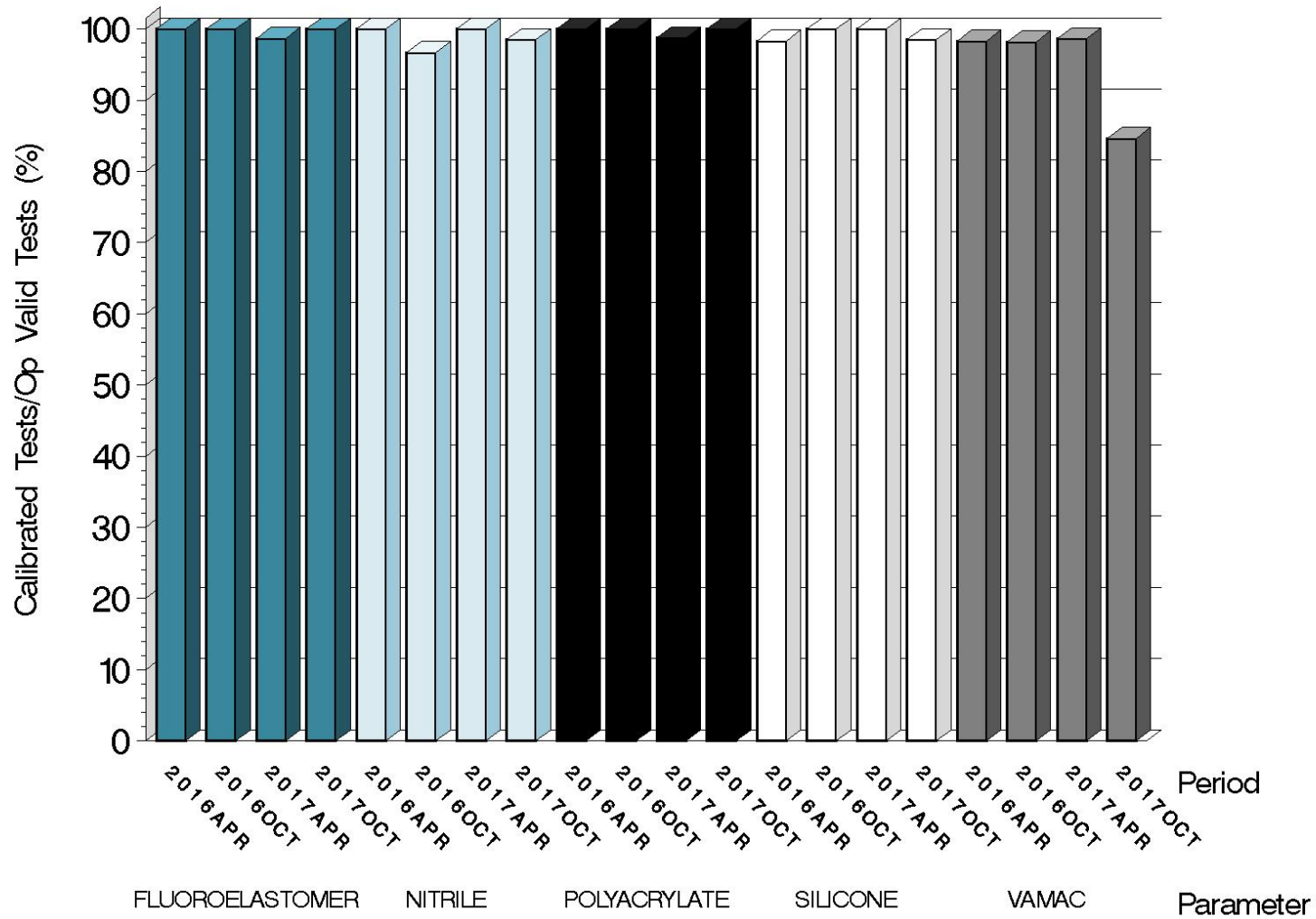
EOEC (D 7216)

Test Distribution by Oil and Validity

		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	67	66	68	65	55	321	372
Rejected	OC	0	1	0	1	10	12	3
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	0	0	0	0	0	0
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0	0	0
Aborted Calibration	XC	2	0	2	2	2	8	3
Total		69	67	70	68	67	341	378

EOEC (D 7216)

OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA



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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	17	0	0	16	0	0	14	0	0	15	0	0	19	0	0	81	0
B	1	14	7.1	0	14	0	1	13	7.7	0	14	0	0	13	0	2	68	2.9
E	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	5	0
G	0	16	0	0	17	0	0	21	0	0	17	0	0	14	0	0	85	0
I	0	11	0	0	10	0	0	12	0	0	11	0	0	12	0	0	56	0
L	1	8	12.5	0	6	0	1	7	14.3	2	7	28.6	2	4	50	6	32	18.8
P	0	2	0	0	3	0	0	2	0	0	2	0	0	3	0	0	12	0
V	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0
Total	2	69	2.9	0	67	0	2	70	2.9	2	68	2.9	2	67	3.0	8	341	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	%
		B	Bath Failure	1	0	1	0	0	0	2	2	68
L	Bath Failure	1	0	1	0	1	0	0	3	3	32	9.4
	Improper Test Length	0	0	0	2	1	0	0	3	3	32	9.4
	Lost	2	0	2	2	2	0	0	6			
	Starts	69	67	70	68	67	341	341	341			
	%	2.9	0	2.9	2.9	3.0	0	0	1.8			

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

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Average Δ 's by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Fluoroelastomer	A	17	-0.556	0.559	-0.022	-0.970
	B	13	-0.494	0.283	0.170	-0.560
	E	1	-1.149	-0.136	-0.434	-1.690
	G	16	-0.372	-0.619	0.164	-0.444
	I	11	0.147	0.277	0.605	-0.101
	L	7	-0.048	0.643	-0.440	-1.121
	P	2	0.135	1.000	-0.022	-0.863
	Industry	67	-0.320	0.189	0.113	-0.645
Nitrile	A	16	1.410	1.105	-0.481	-0.472
	B	14	1.801	1.155	-0.654	-0.618
	E	1	2.131	-0.944	-1.984	-0.592
	G	17	1.443	1.150	-1.323	-1.202
	I	10	2.044	0.808	-0.750	-0.390
	L	6	1.476	1.034	-1.845	-0.784
	P	3	2.353	1.693	-1.082	-0.571
	Industry	67	1.654	1.072	-0.942	-0.710
Polyacrylate	A	14	1.626	-0.471	-0.323	0.594
	B	12	2.000	-0.457	-0.343	0.788
	E	1	1.789	0.283	-0.604	0.177
	G	21	1.412	0.707	0.089	0.705
	I	12	2.311	-0.319	-0.286	0.207
	L	6	1.621	0.283	-0.693	0.971
	P	2	1.882	-0.550	-0.024	1.468
	Industry	68	1.756	-0.003	-0.221	0.647

EOEC (D 7216)

Elastomer	Average Δ 's by Lab					
	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Silicone	A	15	0.272	-0.931	0.474	-0.277
	B	14	0.206	-0.560	-0.466	-0.420
	E	1	0.224	0.735	-1.427	-0.915
	G	17	1.493	-1.081	0.037	-0.928
	I	11	-0.873	0.022	-0.075	-0.077
	L	5	-0.684	1.716	0.536	0.678
	P	2	-0.305	-0.245	-2.078	-0.693
	V	1	0.780	1.716	1.557	0.515
	Industry	66	0.299	-0.446	-0.015	-0.379
VAMAC	A	19	0.694	-2.433	0.364	-0.023
	B	13	0.616	-2.335	0.338	-0.590
	E	1	-0.604	-1.768	0.475	0.214
	G	14	0.844	-1.317	0.029	0.034
	I	12	1.352	-2.295	-0.705	-0.636
	L	2	0.574	-1.242	-0.241	0.166
	P	3	1.047	-2.470	-1.593	-0.206
	V	1	-0.027	-0.716	-0.209	-0.120
	Industry	65	0.814	-2.076	-0.027	-0.238

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

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

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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

EOEC Information Letter 17-1, Sequence No. 6, dated April 12, 2017.

- New Reference Oil
- Light Duty Polyacrylate Elastomer Correction Factor for Volume Change

EOEC Information Letter 17-2, Sequence No. 7, dated April 27, 2017.

- Light Duty Polyacrylate Elastomer Correction Factor for Volume Change

EOEC Information Letter 17-3, Sequence No. 8, dated August 7, 2017.

- Light Duty Polyacrylate Elastomer Correction Factor for Volume Change

EOEC Information Letter 17-4, Sequence No. 9, dated September 24, 2017.

- Light Duty Polyacrylate Elastomer Correction Factor for Volume Change

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STATUS OF REFERENCE OIL SUPPLY

Oil	Samples @ Labs	@ TMC	
		Samples (750 mL)	Gallons
1006-1	26	0	0
1006-2	343	7,930	1572
Total	369	7,930	1572

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.