



Test Monitoring Center

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

MEMORANDUM: 16-046

DATE: November 15, 2016

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

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

SUBJECT: EOEC Testing from April 1, 2016 through September 30, 2016

A total of 309 EOEC tests were reported from 5 labs to the Test Monitoring Center during the period from April 1, 2016 through September 30, 2016.

Please find attached a summary of testing activity this period.

MTK/mtk/mem16-046.mtk.doc

cc: Frank Farber

Jeff Clark

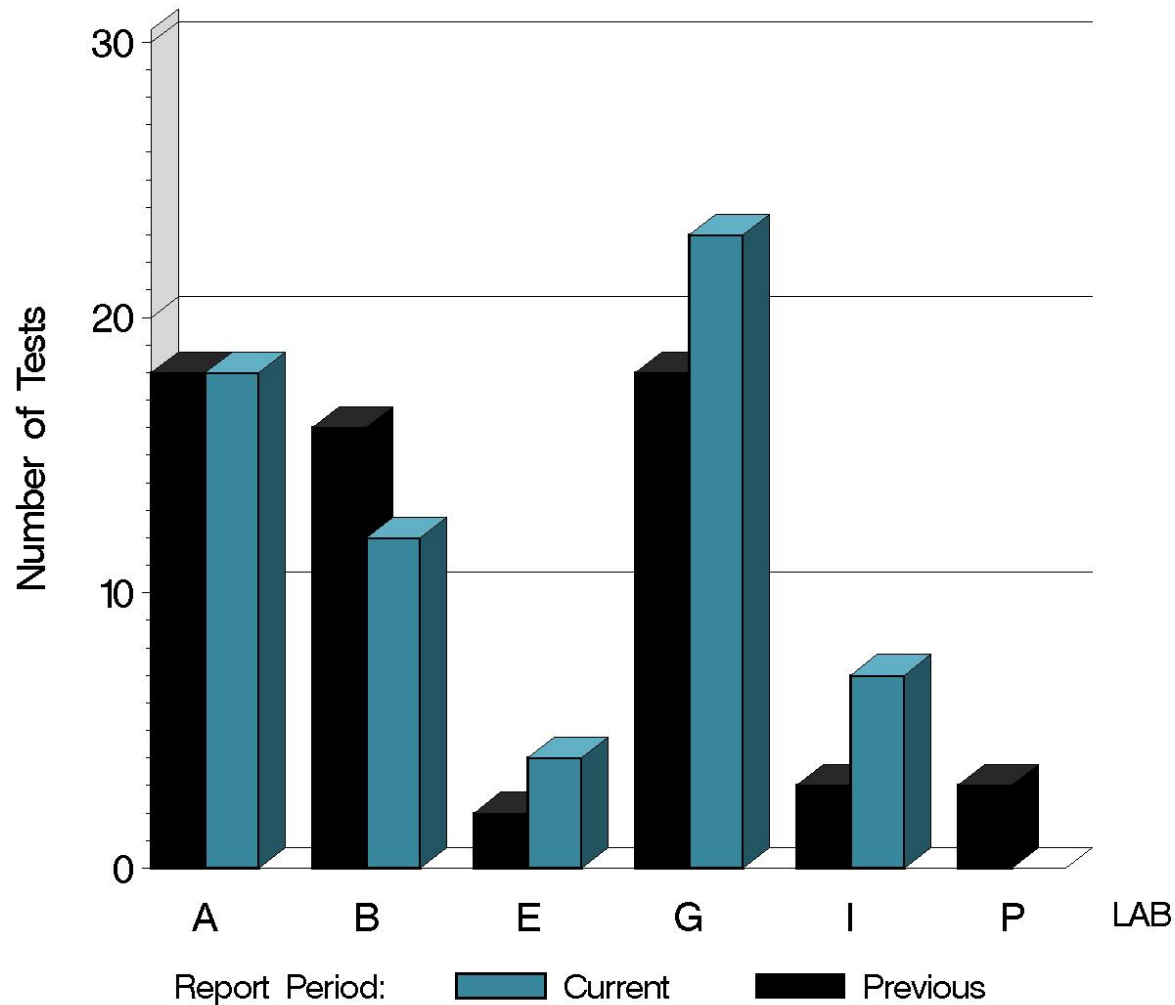
EOEC Surveillance Panel

<ftp://ftp.astmtmc.cmu.edu/docs/bench/eoec/semiannualreports/eoec-10-2016.pdf>

Distribution: email

EOEC (D 7216)

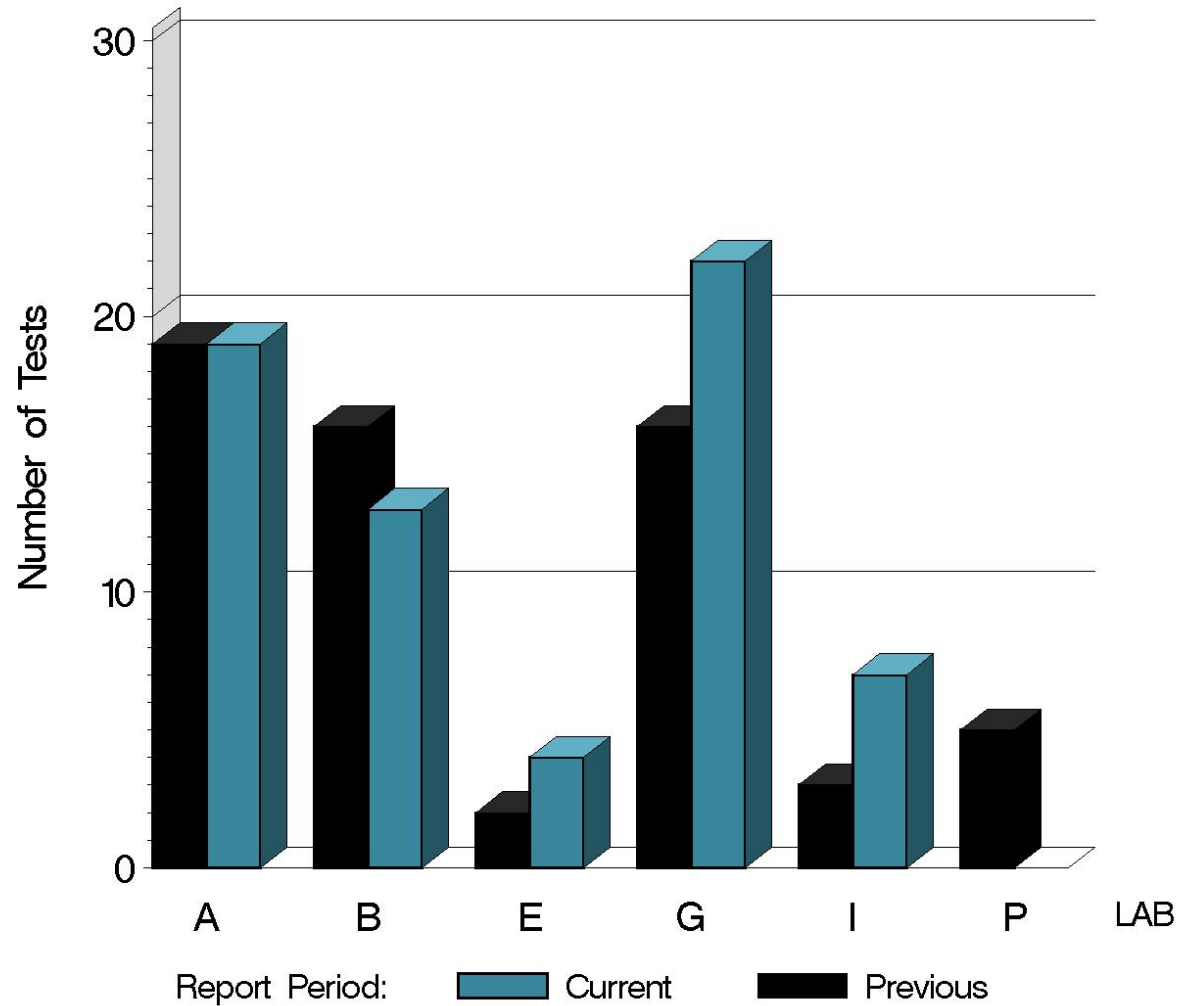
NUMBER OF FLUOROELASTOMER TESTS
REPORTED BY LAB AND REPORT PERIOD



9:45:26 15NOV2016

EOEC (D 7216)

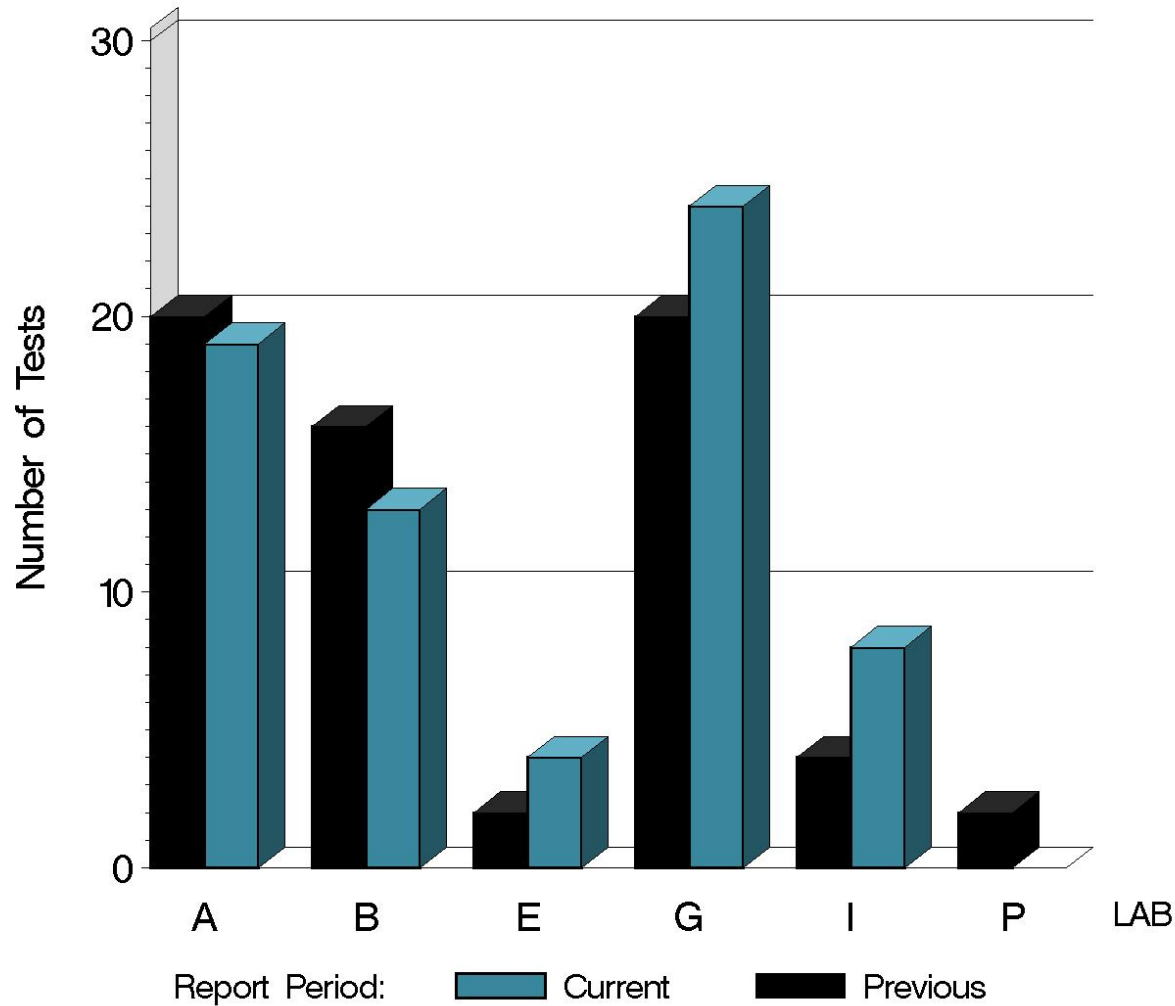
NUMBER OF NITRILE TESTS REPORTED BY LAB AND REPORT PERIOD



8:57:04 15NOV2016

EOEC (D 7216)

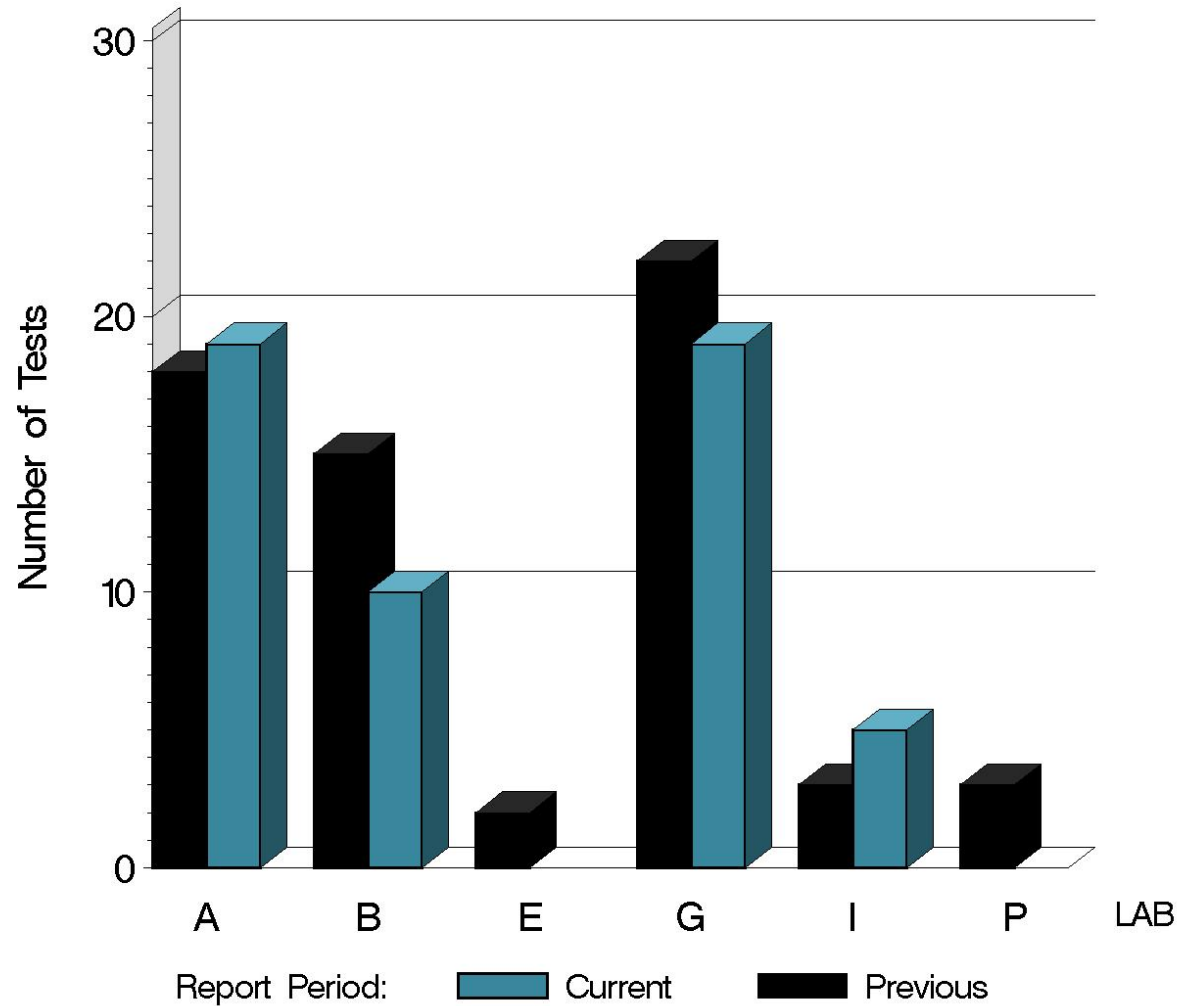
NUMBER OF POLYACRYLATE TESTS
REPORTED BY LAB AND REPORT PERIOD



8:57:04 15NOV2016

EOEC (D 7216)

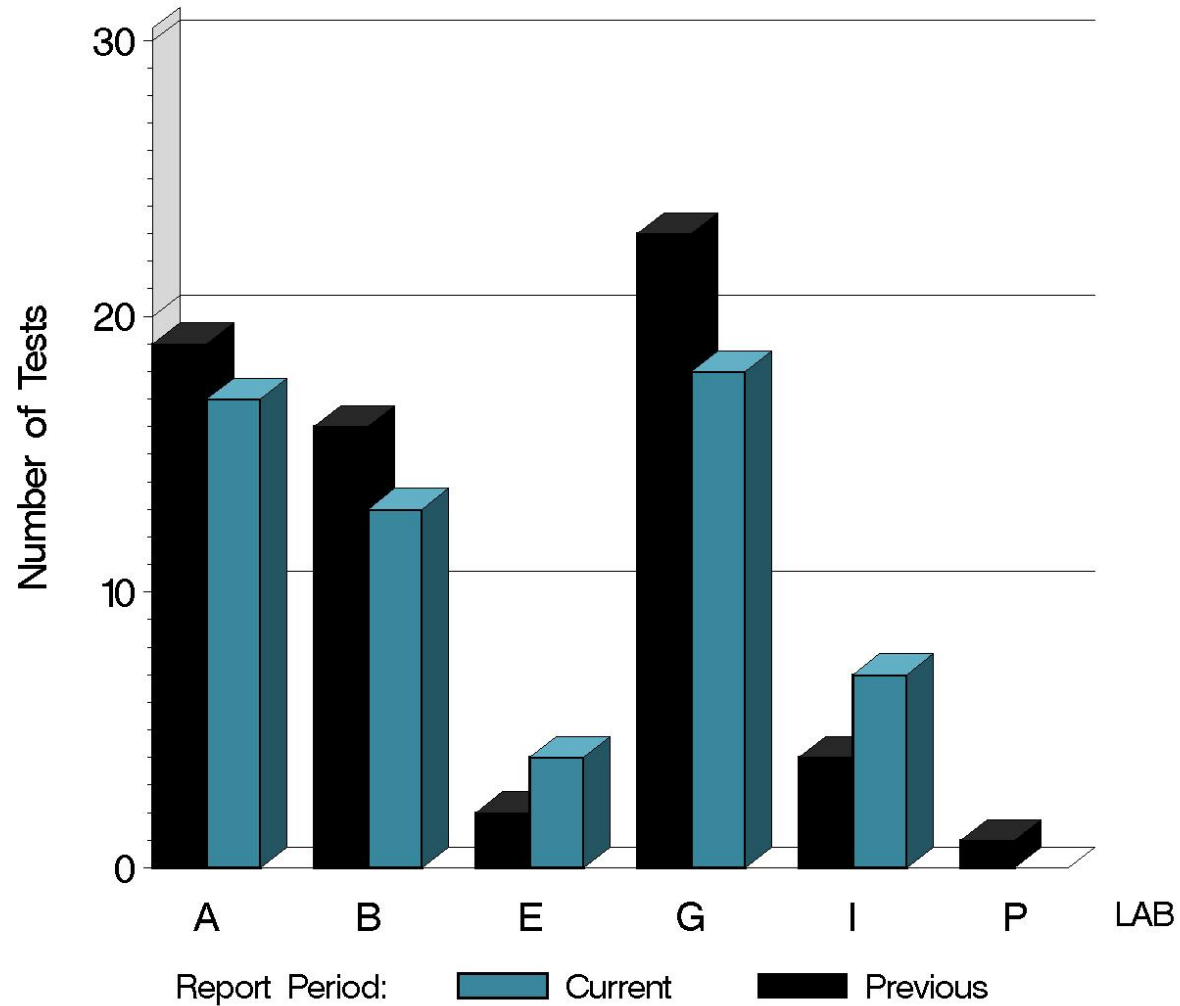
NUMBER OF SILICONE TESTS REPORTED BY LAB AND REPORT PERIOD



8:57:04 15NOV2016

EOEC (D 7216)

NUMBER OF VAMAC TESTS REPORTED BY LAB AND REPORT PERIOD



8:57:04 15NOV2016

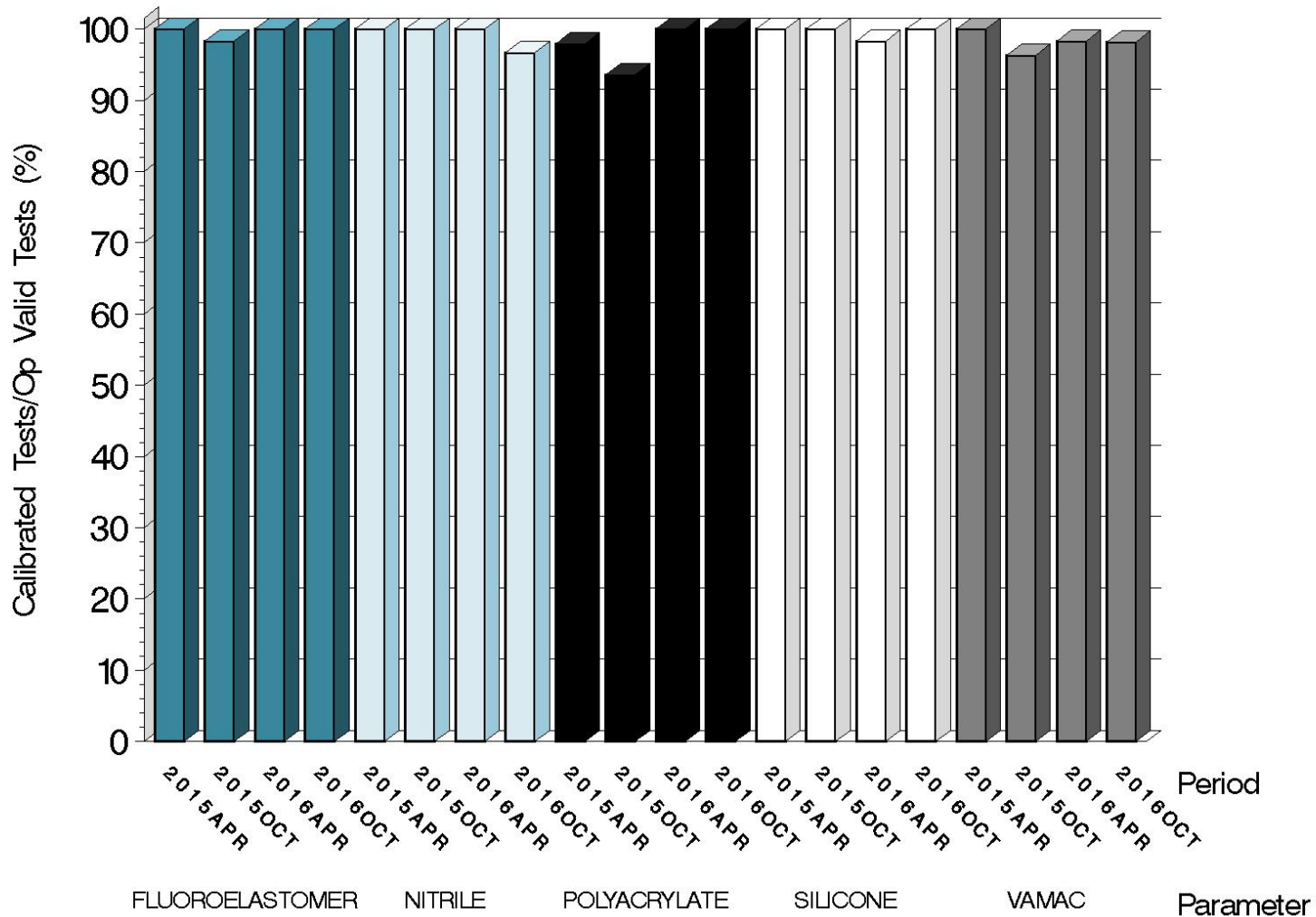
EOEC (D 7216)

Test Distribution by Oil and Validity

		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	59	58	64	52	53	286	281
Rejected	OC	0	2	0	0	1	3	2
Information Run	NI	4	4	4	0	3	15	28
Invalid Information Run	LI	0	0	0	0	1	1	0
Operationally Invalid (lab)	LC	1	0	0	0	0	1	1
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0	0	0
Aborted Calibration	XC	0	1	0	1	1	3	0
Total		64	65	68	53	59	309	312

EOEC (D 7216)

OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA



8:57:04 15NOV2016

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	1	18	5.5	1	19	5.3	0	19	0	1	19	5.3	1	17	5.9	4	92	4.3
B	0	12	0	0	13	0	0	13	0	0	10	0	0	13	0	0	61	0
E	0	4	0	0	4	0	0	4	0	0	0	0	0	4	0	0	16	0
G	0	23	0	0	22	0	0	24	0	0	19	0	0	18	0	0	106	0
I	0	7	0	0	7	0	0	8	0	0	5	0	0	7	0	0	34	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	64	1.6	1	65	1.5	0	68	0	1	53	1.9	1	59	1.7	4	309	1.3

EOEC (D 7216)

CAUSES FOR LOST TESTS

Lab	Cause	Elastomer					Validity			Loss Rate		
		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	VAMAC	LC	RC	XC	Lost	Starts	%
		A	Bath Failure	0	1	0	0	1	0	0	2	2
	Specimens Thrown Out	1	0	0	1	0	1	0	1	2	92	2.2
	Lost	1	1	0	1	1	1	0	3			
	Starts	64	65	68	53	59	309	309	309			
	%	1.6	1.5	0	1.9	1.7	0.3	0	1.0			

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

EOEC (D 7216)

Average Δ 's by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Fluoroelastomer	A	17	0.246	0.586	-0.401	-0.984
	B	12	-0.484	0.280	-0.057	-0.903
	E	2	-0.574	-0.591	-0.098	-1.377
	G	23	-0.350	-0.453	0.171	-0.333
	I	5	1.149	-0.227	0.333	-0.161
	P	0	-	-	-	-
	Industry	59	-0.086	0.010	-0.035	-0.657
Nitrile	A	18	1.450	1.536	-1.128	-0.817
	B	13	2.015	1.360	-0.763	-0.258
	E	2	1.810	-0.379	-2.370	-1.158
	G	22	1.276	0.880	-0.335	-0.128
	I	5	1.486	0.751	-1.360	-0.845
	P	0	-	-	-	-
	Industry	60	1.523	1.128	-0.819	-0.457
Polyacrylate	A	19	1.128	0.693	-0.050	0.789
	B	13	1.809	-0.229	-0.717	0.349
	E	2	1.270	0.283	0.167	1.416
	G	24	1.077	1.256	0.301	0.816
	I	6	2.320	-0.643	-0.612	0.092
	P	0	-	-	-	-
	Industry	64	1.363	0.578	-0.100	0.664
Silicone	A	18	0.260	-0.381	1.396	0.246
	B	10	0.536	-0.490	0.381	0.302
	E	0	-	-	-	-
	G	19	1.518	-0.813	-0.486	-0.955
	I	5	-0.686	-0.049	-1.308	0.778
	P	0	-	-	-	-
	Industry	52	0.682	-0.528	0.253	-0.131
VAMAC	A	16	-0.565	-0.979	-0.087	0.336
	B	13	0.175	-1.687	-0.299	-0.203
	E	2	-1.342	-3.347	1.002	1.410
	G	18	-0.221	-0.014	-0.023	-0.201
	I	5	0.695	-2.611	-1.200	-1.291
	P	0	-	-	-	-
	Industry	54	-0.184	-1.067	-0.180	-0.084

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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	ftp://ftp.astmtmc.cmu.edu/refdata/bench/eoecf/data/
Nitrile	ftp://ftp.astmtmc.cmu.edu/refdata/bench/eoecn/data/
Polyacrylate	ftp://ftp.astmtmc.cmu.edu/refdata/bench/eoecp/data/
Silicone	ftp://ftp.astmtmc.cmu.edu/refdata/bench/eoecs/data/
VAMAC	ftp://ftp.astmtmc.cmu.edu/refdata/bench/eoecv/data/

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:

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

EOEC (D 7216)

INFORMATION LETTERS

- No EOEC Information Letters were issued this period.

EOEC (D 7216)

STATUS OF REFERENCE OIL SUPPLY

Oil	Samples @ Labs	@ TMC	
		Samples (750 mL)	Gallons
1006-1	32	0	0
1006-2	221	11,132	2206
Total	253	11,132	2206

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. These will be evaluated after 30 data points on each elastomer type are available.