A Program of ASTM International

Test Monitoring Center

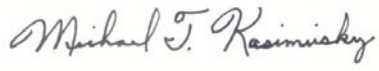
@ Carnegie Mellon University
6555 Penn Avenue, Pittsburgh, PA 15206, USA

http://astmtmc.cmu.edu
412-365-1000

MEMORANDUM: 16-014

DATE: May 4, 2016

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

FROM: Michael T. Kasimirsky 

SUBJECT: EOEC Testing from October 1, 2015 through March 31, 2016

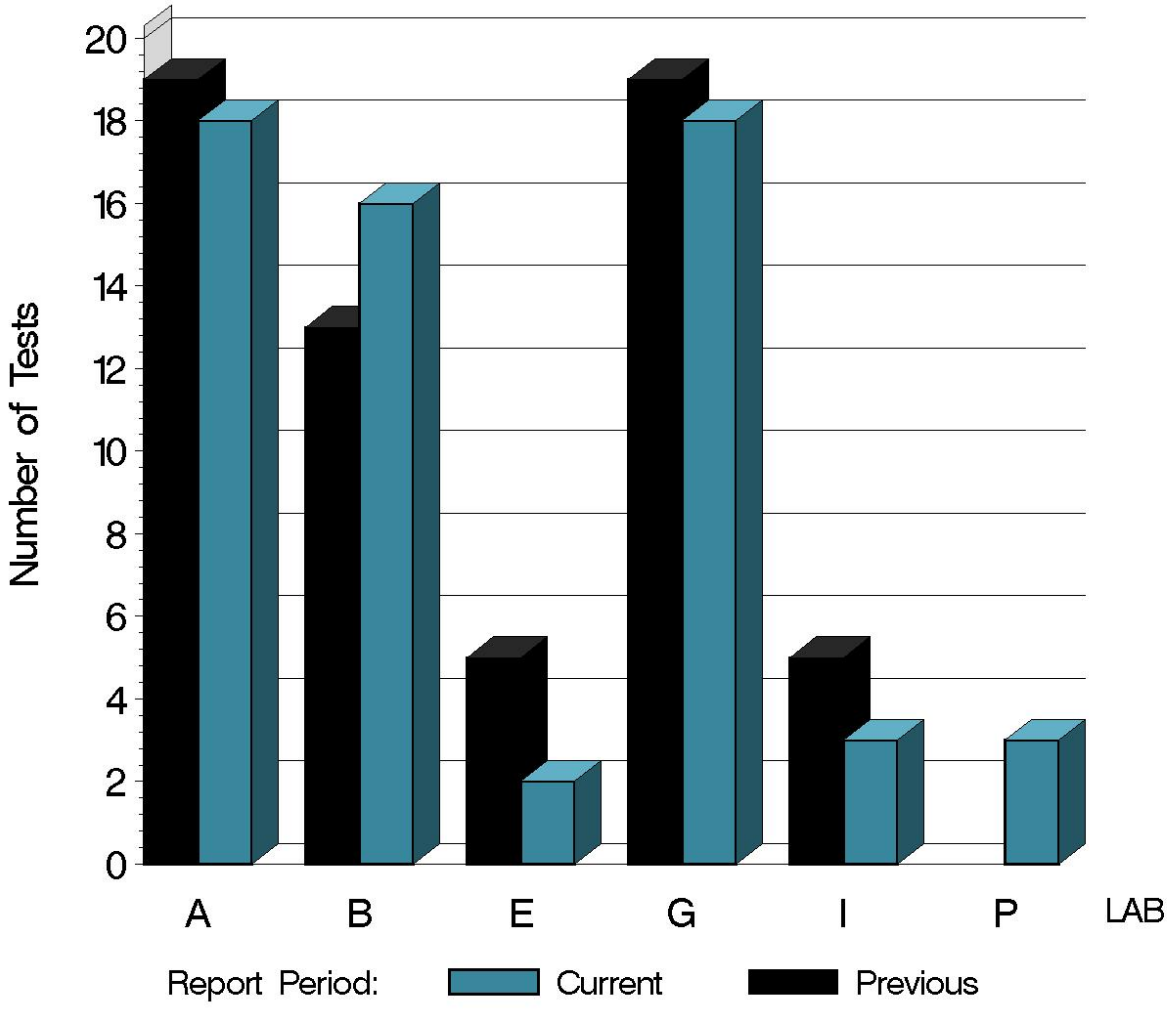
A total of 312 EOEC tests were reported from 6 labs to the Test Monitoring Center during the period from October 1, 2015 through March 31, 2016.

Please find attached a summary of testing activity this period.

MTK/mtk/mem16-014.mtk.doc
cc: Frank Farber
Jeff Clark
EOEC Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/bench/eoec/semiannualreports/eoec-04-2016.pdf

Distribution: email

EOEC (D 7216)



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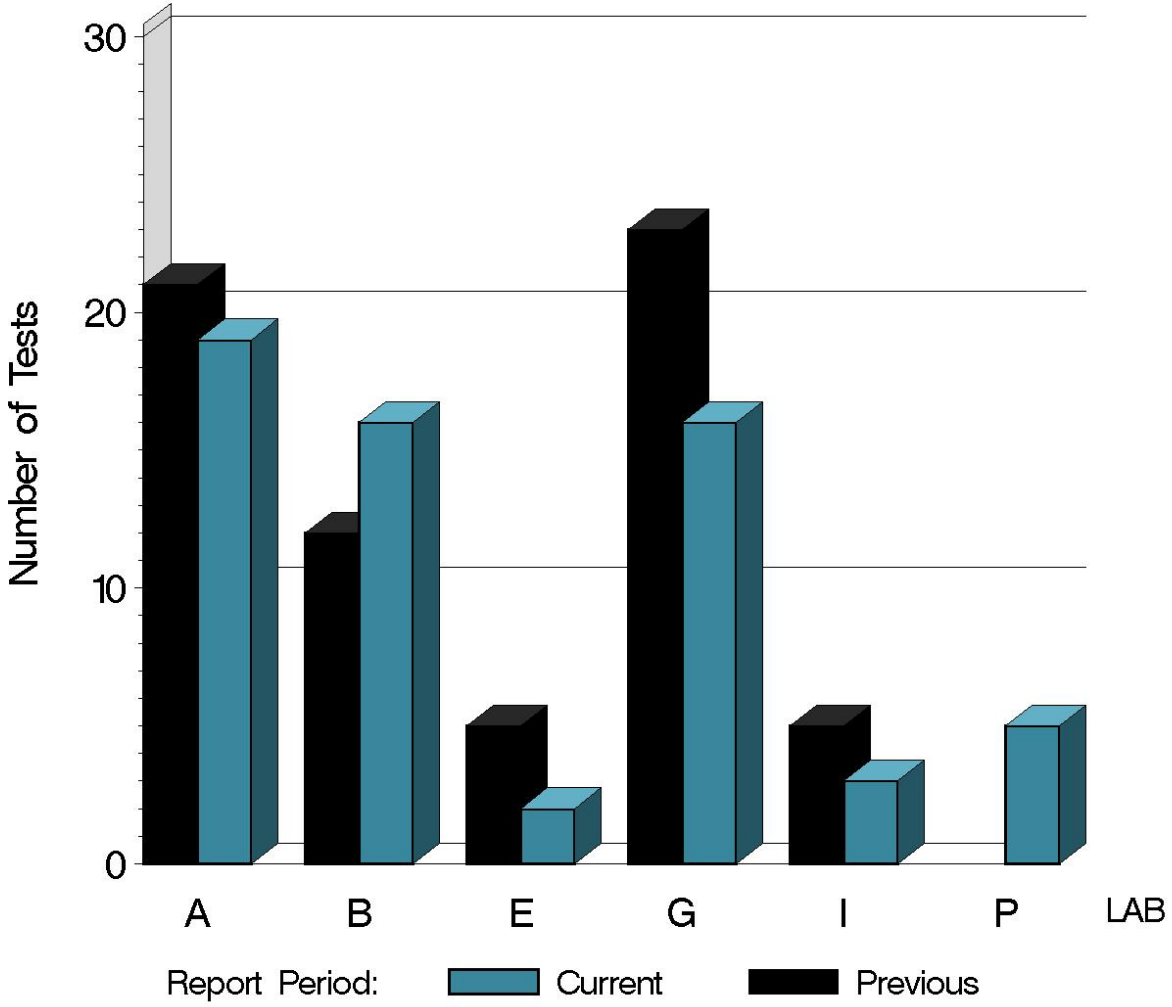
EOEC (D 7216)



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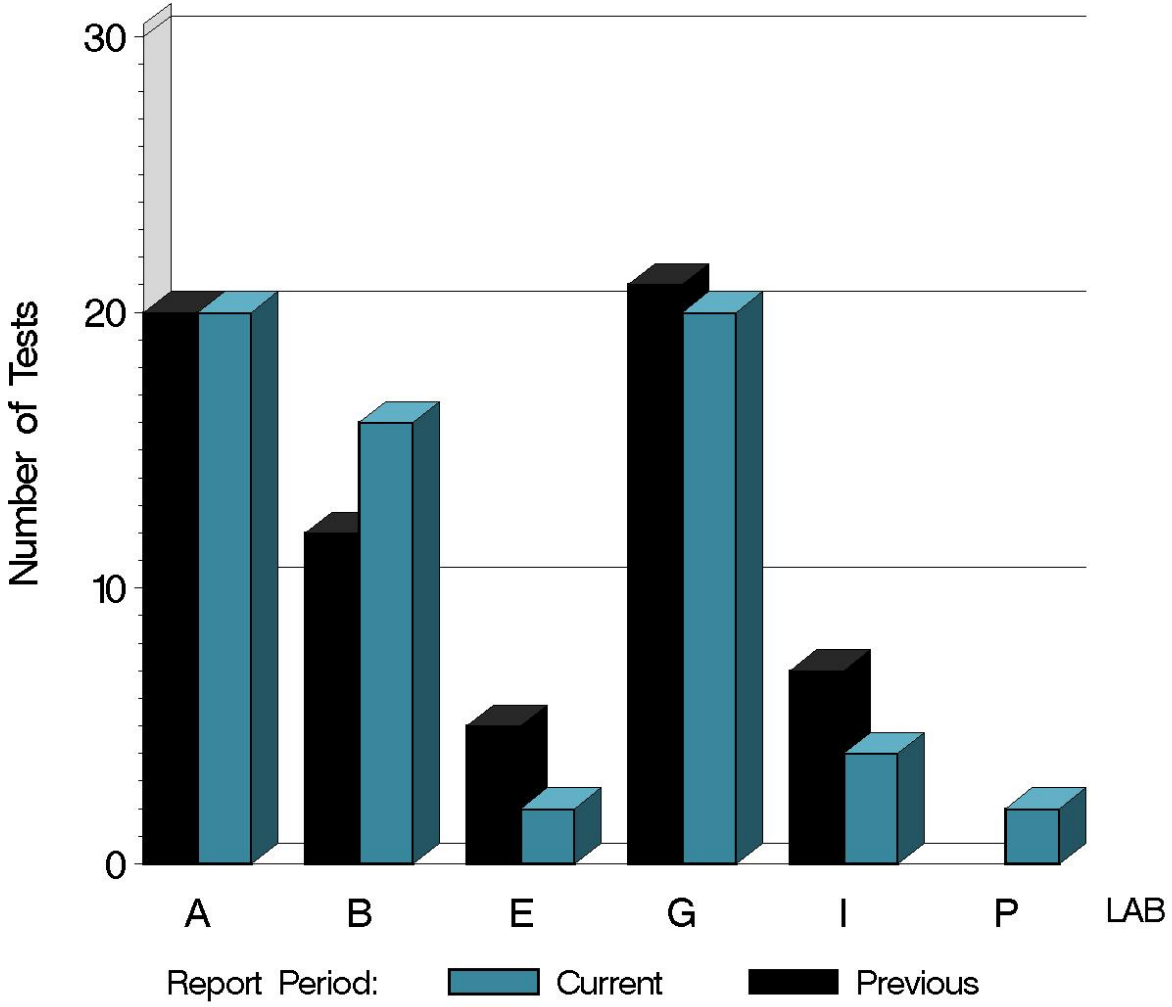
EOEC (D 7216)



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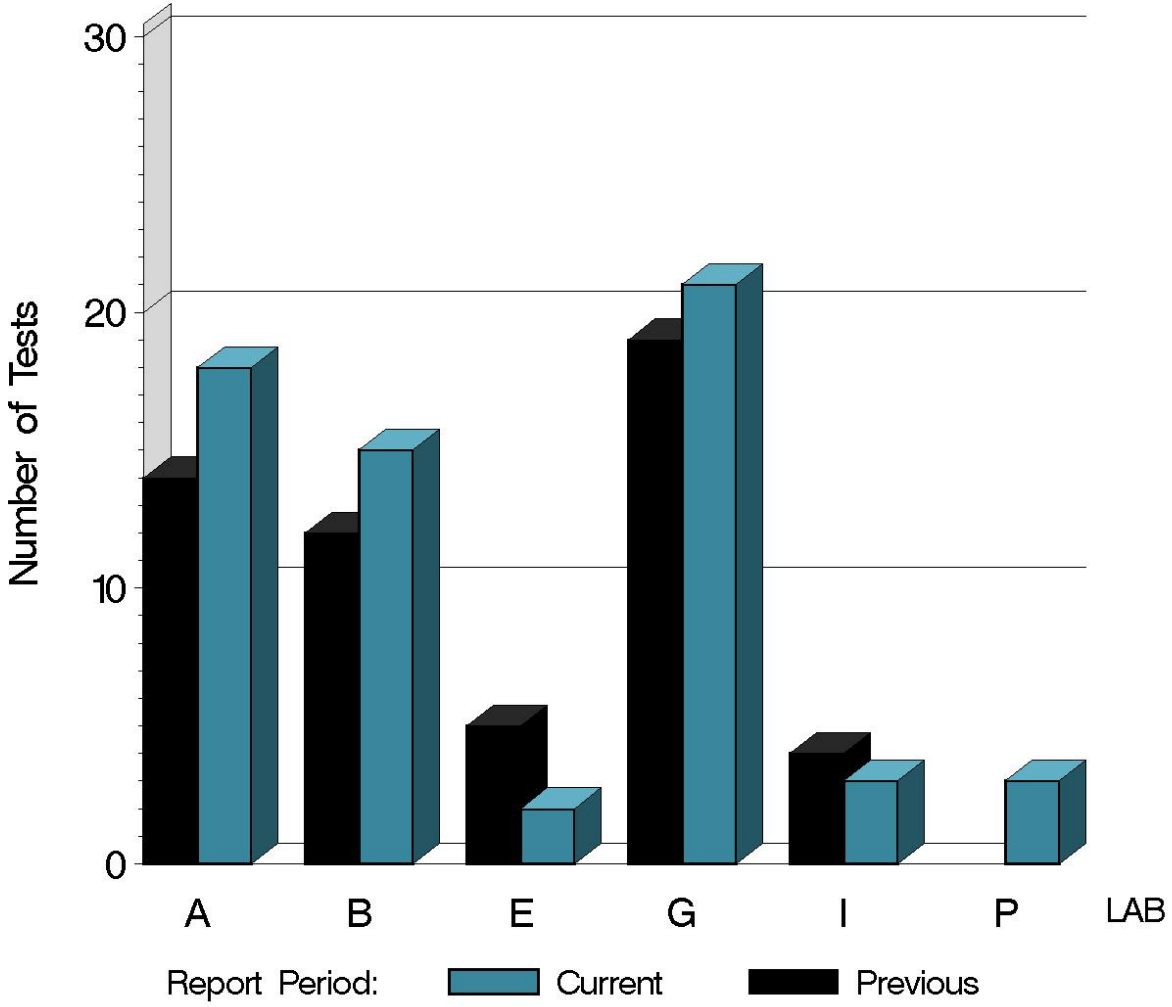
EOEC (D 7216)



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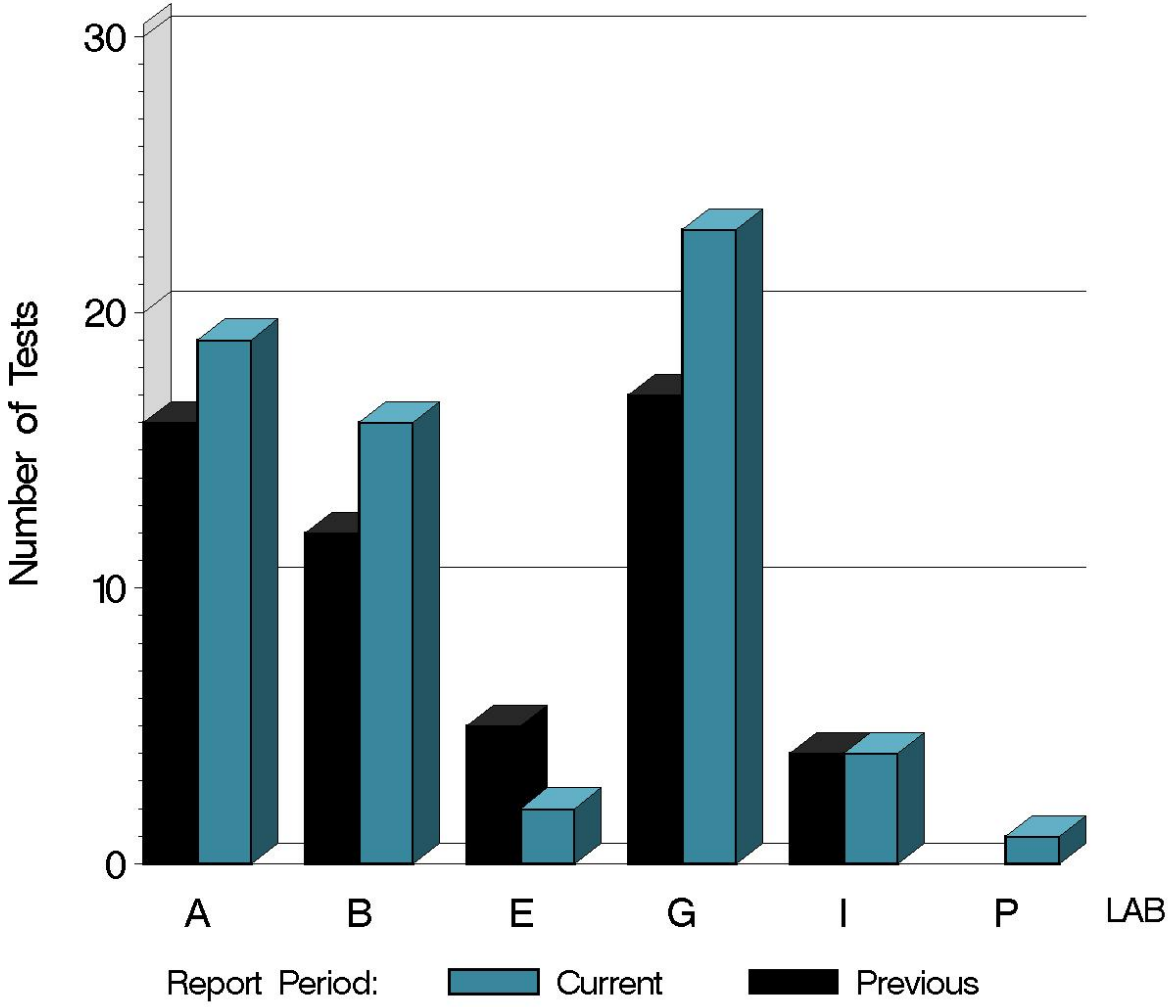
EOEC (D 7216)



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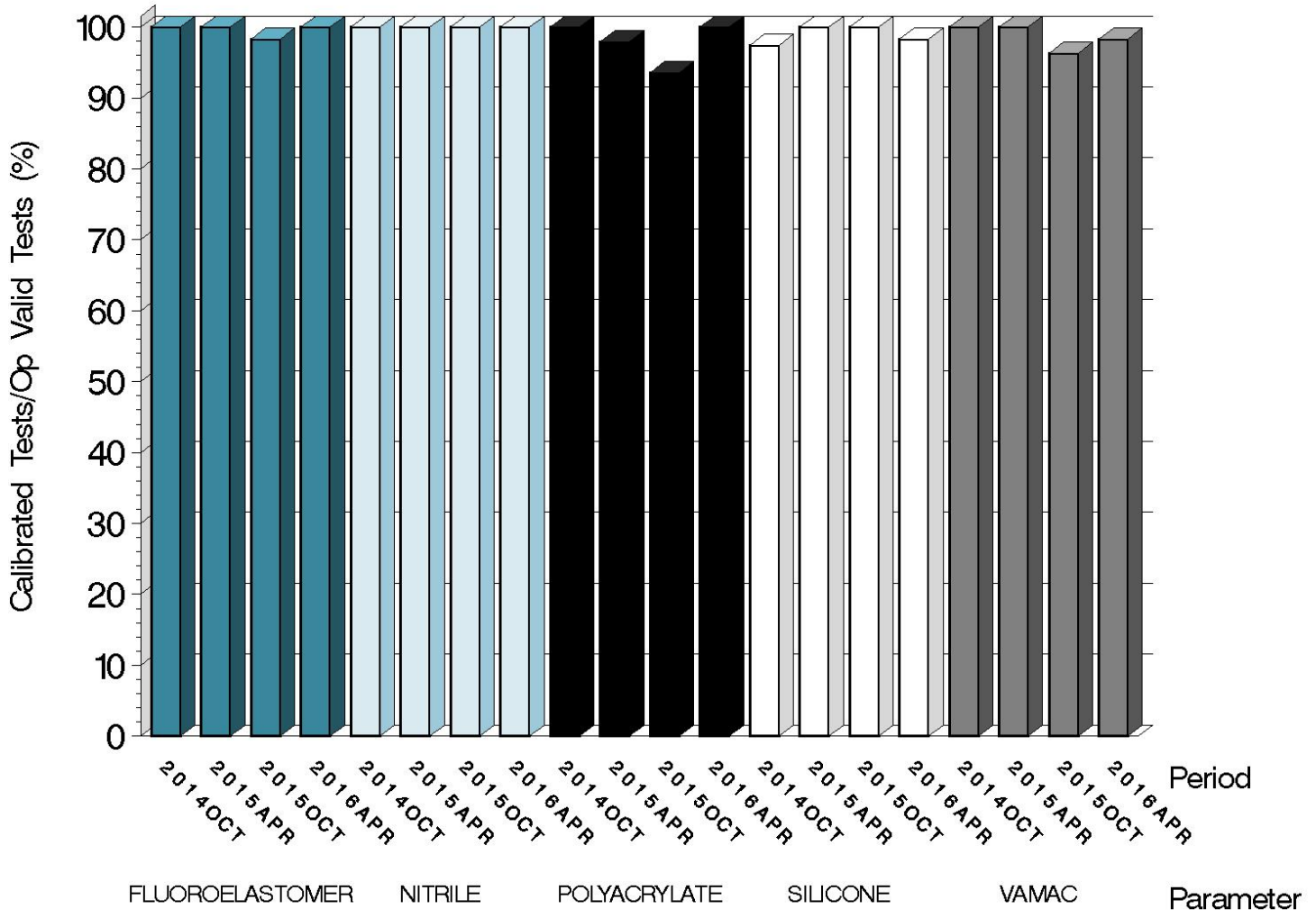
EOEC (D 7216)

Test Distribution by Oil and Validity

		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	54	55	57	57	58	281	289
Rejected	OC	0	0	0	1	1	2	7
Information Run	NI	6	6	6	4	6	28	0
Operationally Invalid (lab)	LC	0	0	1	0	0	1	3
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0	0	0
Aborted Calibration	XC	0	0	0	0	0	0	1
Total		60	61	64	62	65	312	300

EOEC (D 7216)



Test Monitoring Center
http://astmtmc.cmu.edu

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EOEC (D 7216)

LOST TESTS PER START BY LAB AND ELASTOMER TYPE

	Fluoroelastomer			Nitrile			Polyacrylate			Silicone			Vamac			Total		
Lab	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%	Lost	Starts	%
A	0	18	0	0	19	0	1	20	5	0	18	0	0	19	0	1	94	1.1
B	0	16	0	0	16	0	0	16	0	0	15	0	0	16	0	0	79	0
E	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0	0	10	0
G	0	18	0	0	16	0	0	20	0	0	21	0	0	23	0	0	98	0
I	0	3	0	0	3	0	0	4	0	0	3	0	0	4	0	0	17	0
P	0	3	0	0	5	0	0	2	0	0	3	0	0	1	0	0	14	0
Total	0	60	0	0	61	0	1	64	1.6	0	62	0	0	65	0	1	312	0.3

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	0	1	0	0	1	0	0	1	94	0.3
		Lost	0	0	1	0	0	1	0	0			
		Starts	60	61	64	62	65	312	312	312			
		%	0	0	1.6	0	0	0.3	0	0			

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	16	-0.541	0.830	-0.465	-1.300
	B	14	0.265	0.026	-0.211	-0.725
	E	2	-1.149	-0.818	-0.031	-1.567
	G	16	-0.249	-0.648	-0.080	-0.644
	I	3	0.743	0.167	0.146	-0.468
	P	3	-0.923	1.227	-0.957	-1.436
	Industry	54	-0.218	0.108	-0.262	-0.928
Nitrile	A	17	1.413	1.483	-1.022	-0.634
	B	14	1.884	0.913	-0.345	-0.006
	E	2	1.470	0.186	-1.968	-0.964
	G	14	1.065	0.671	-0.489	-0.282
	I	3	1.528	0.751	-1.041	-0.745
	P	5	1.612	1.768	-0.888	-0.378
	Industry	55	1.471	1.070	-0.738	-0.380
Polyacrylate	A	17	1.500	0.251	-0.193	0.391
	B	14	2.263	-0.709	-0.364	0.554
	E	2	1.184	0.283	-0.547	0.269
	G	18	1.565	1.240	-0.185	0.541
	I	4	2.266	-0.272	-0.932	0.349
	P	2	1.684	0.006	-1.093	0.170
	Industry	57	1.757	0.283	-0.328	0.463
Silicone	A	16	0.138	-0.888	1.342	-0.664
	B	14	0.389	-0.455	0.798	0.669
	E	2	0.537	0.735	-0.634	-0.807
	G	20	1.454	-0.417	-0.482	-0.767
	I	3	-0.478	-0.082	-1.407	-0.685
	P	3	0.138	-0.245	-1.263	-0.194
	Industry	58	0.634	-0.490	0.237	-0.359
VAMAC	A	17	-0.255	-2.326	-0.241	0.067
	B	14	0.491	-2.069	0.131	0.122
	E	2	-0.826	-1.768	-0.022	0.305
	G	21	0.906	-1.668	-0.215	-0.197
	I	4	0.617	-2.032	-0.679	-0.576
	P	1	-1.134	-0.716	-2.853	-0.728
	Industry	59	0.360	-1.965	-0.210	-0.063

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

Links to Individual Test Result Data	
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/

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

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INFORMATION LETTERS

- No EOEC Information Letters were issued this period.

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STATUS OF REFERENCE OIL SUPPLY

		@ TMC	
Oil	Samples @ Labs	Samples (750 mL)	Gallons
1006-1	191	0	0
1006-2	149	13,459	2667
Total	340	13,459	2667

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.