



Test Monitoring Center

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

MEMORANDUM: 19-018

DATE: April 22, 2019

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

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

SUBJECT: EOEC Testing from October 1, 2018 through March 31, 2019

A total of 310 EOEC tests were reported from 6 labs to the Test Monitoring Center during the period from October 1, 2018 through March 31, 2019.

Please find attached a summary of testing activity this period.

MTK/mtk/mem19-018.mtk.doc

cc: Frank Farber

Jeff Clark

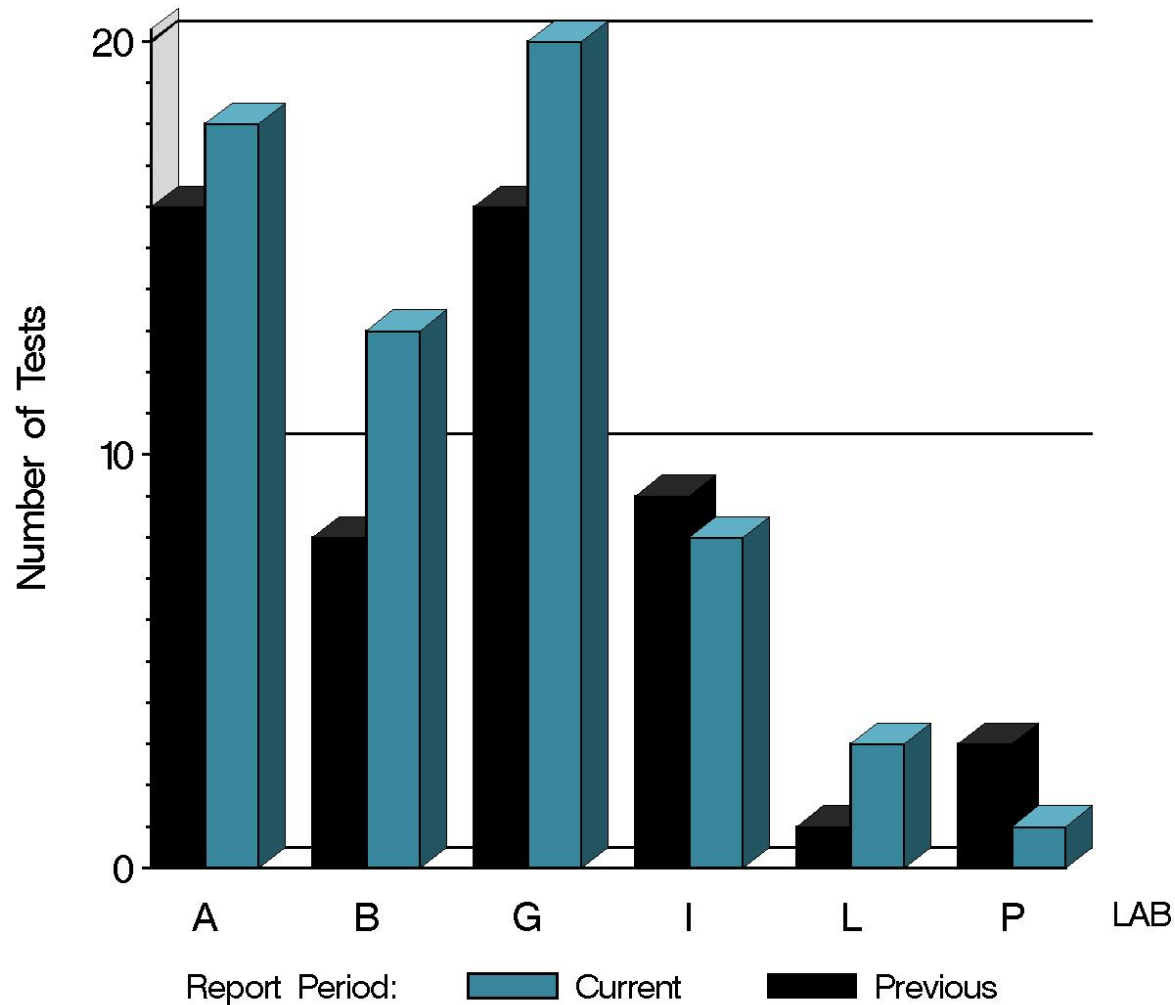
EOEC Surveillance Panel

<http://www.astmtmc.cmu.edu/docs/bench/eoec/semiannualreports/eoec-04-2019.pdf>

Distribution: email

EOEC (D 7216)

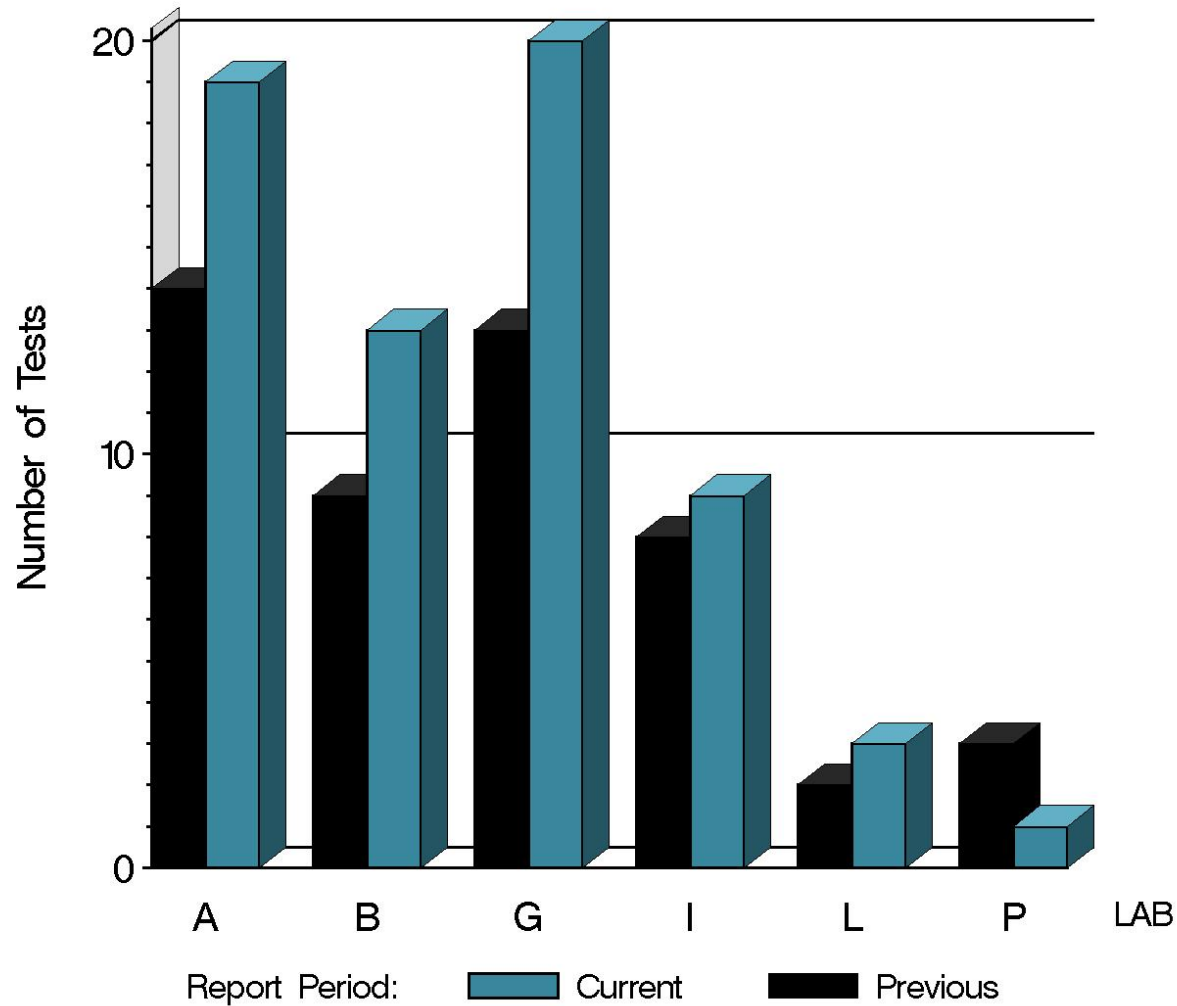
NUMBER OF FLUOROELASTOMER TESTS
REPORTED BY LAB AND REPORT PERIOD



10:31:22 19APR2019

EOEC (D 7216)

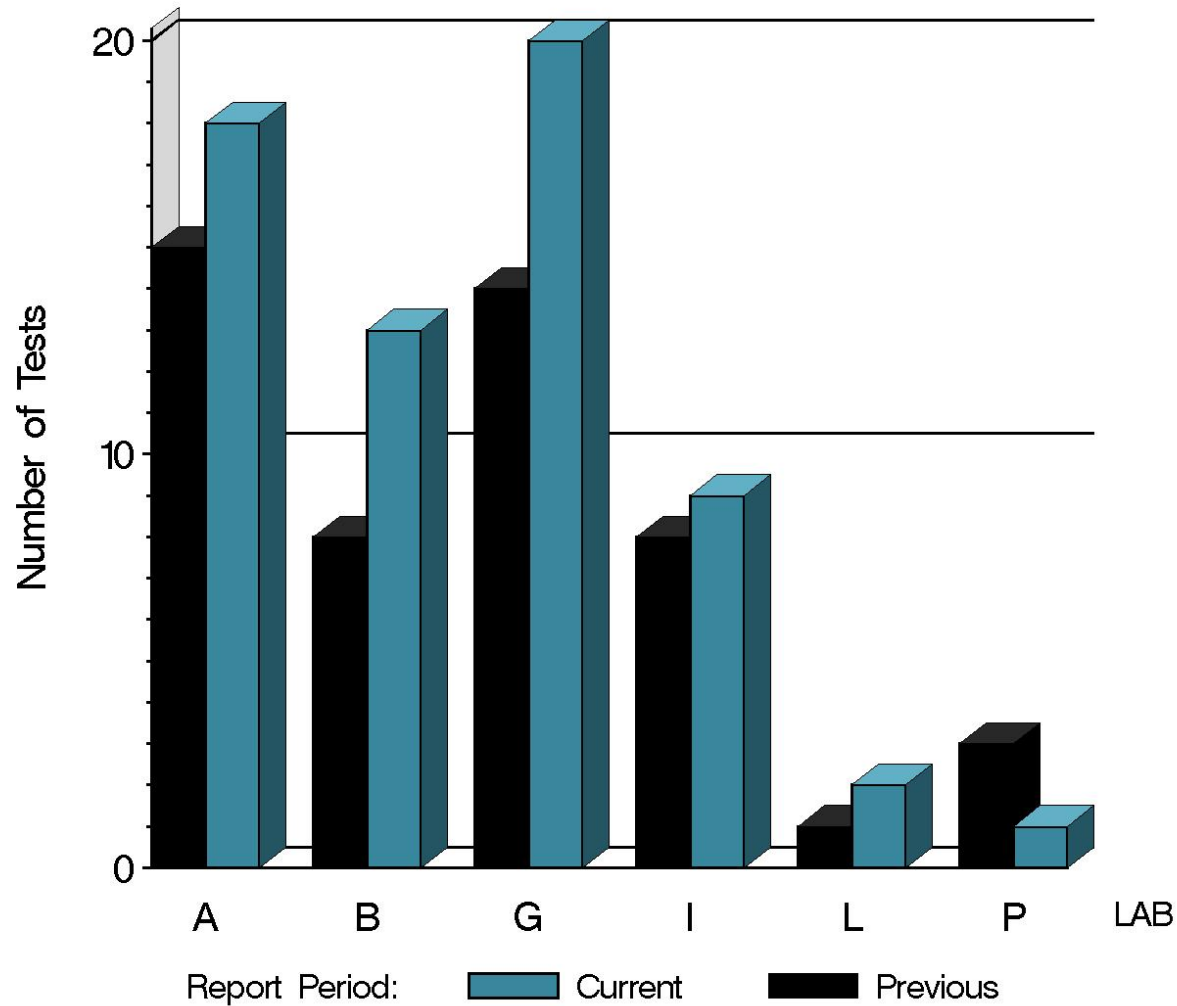
NUMBER OF NITRILE TESTS REPORTED BY LAB AND REPORT PERIOD



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EOEC (D 7216)

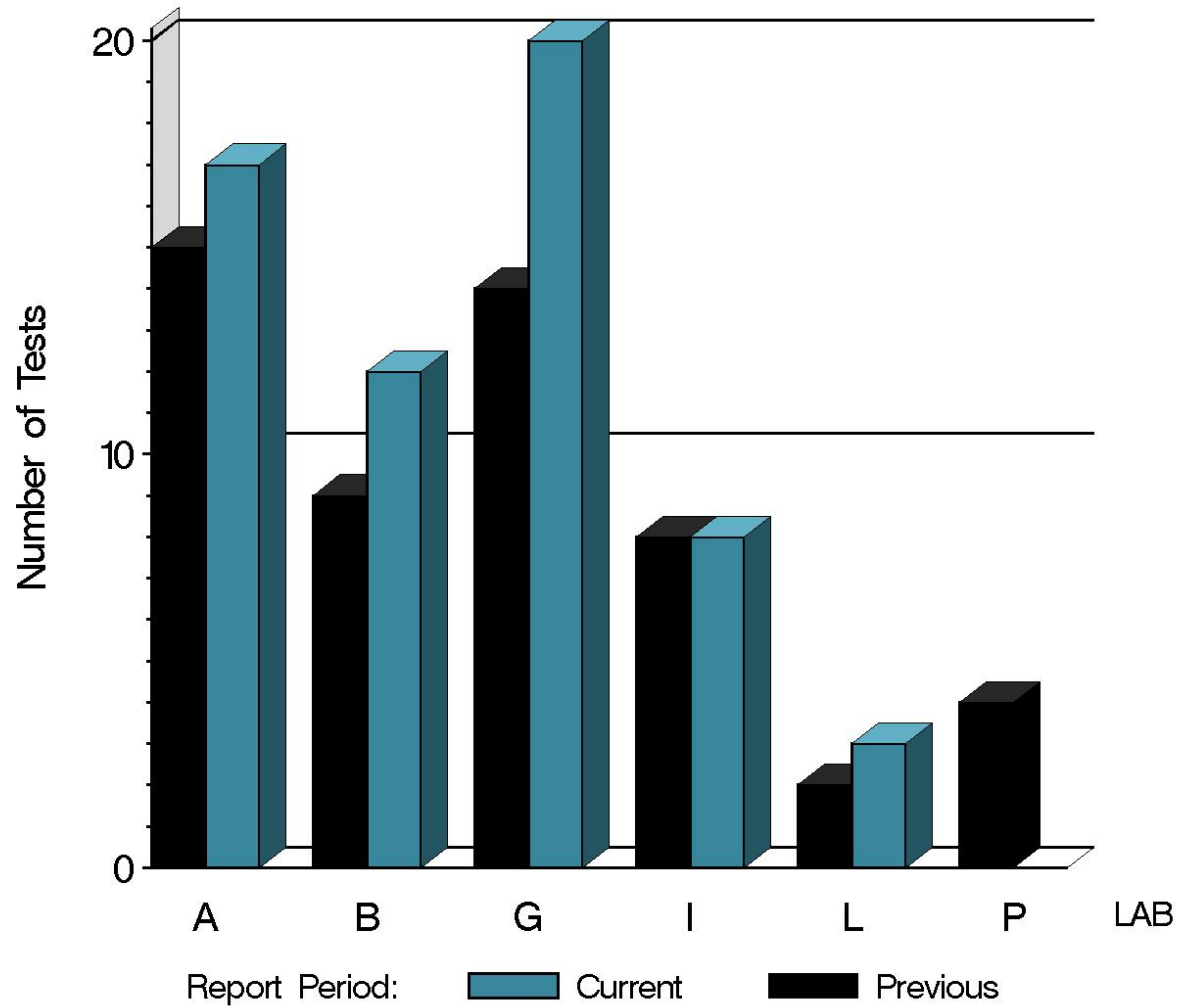
NUMBER OF POLYACRYLATE TESTS REPORTED BY LAB AND REPORT PERIOD



10:31:22 19APR2019

EOEC (D 7216)

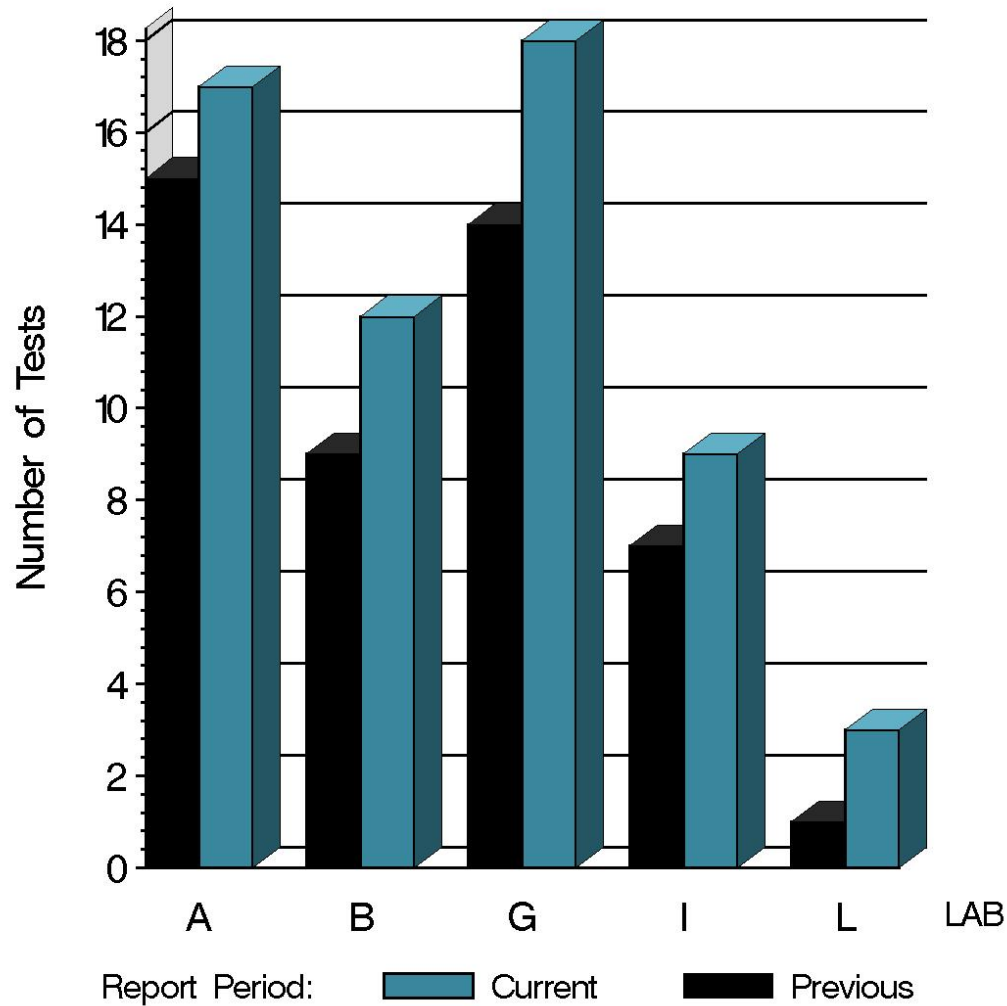
NUMBER OF SILICONE TESTS REPORTED BY LAB AND REPORT PERIOD



10:31:22 19APR2019

EOEC (D 7216)

NUMBER OF VAMAC TESTS
REPORTED BY LAB AND REPORT PERIOD



10:31:22 19APR2019

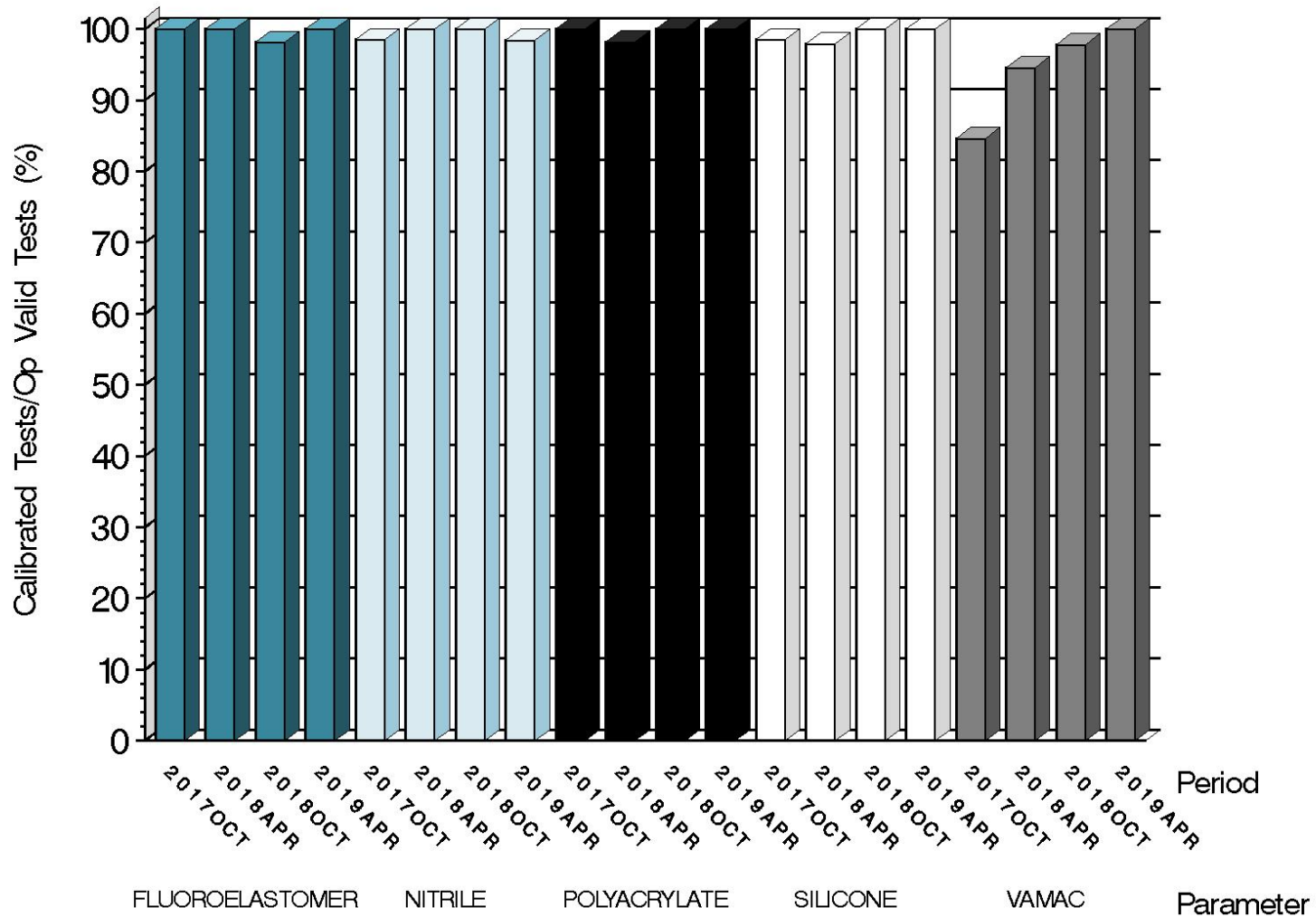
EOEC (D 7216)

Test Distribution by Oil and Validity

		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	63	64	62	59	59	307	246
Rejected	OC	0	1	0	0	0	1	2
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	1	0	0	1	0
Operationally Invalid (lab/TMC)	RC	0	0	0	1	0	1	0
Aborted Calibration	XC	0	0	0	0	0	0	1
Total		63	65	63	60	59	310	249

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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	18	0	0	19	0	0	18	0	0	17	0	0	17	0	0	89	0
B	0	13	0	0	13	0	0	13	0	0	12	0	0	12	0	0	63	0
E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	0	20	0	0	20	0	1	20	5.0	1	20	5.0	0	18	0	2	98	2.0
I	0	8	0	0	9	0	0	9	0	0	8	0	0	9	0	0	43	0
L	0	3	0	0	3	0	0	2	0	0	3	0	0	3	0	0	14	0
P	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0
V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	63	0	0	65	0	1	63	1.6	1	60	1.7	0	59	0	2	310	0.6

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CAUSES FOR LOST TESTS

Lab	Cause	Elastomer					Validity			Loss Rate		
		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	VAMAC	LC	RC	XC	Lost	Starts	%
		G	Wrong Material	0	0	1	0	0	1	0	0	1
	Invalid Material Batch	0	0	0	1	0	0	1	0	1	98	1.0
	Lost	0	0	1	1	0	1	1	0			
	Starts	63	65	63	60	59	310	310	310			
	%	0	0	1.6	1.7	0	0.3	0.3	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	18	-0.439	0.596	-0.102	-0.890
	B	13	-0.998	0.353	0.159	-0.507
	E	-	-	-	-	-
	G	20	-0.182	-0.114	0.079	-0.494
	I	8	0.059	-0.136	0.494	-0.321
	L	3	-0.090	-0.288	-0.339	-1.128
	P	1	-1.554	0.773	-0.340	-0.491
	Industry	63	-0.411	0.188	0.070	-0.618
Nitrile	A	19	1.886	0.960	-0.137	-0.304
	B	13	2.043	0.925	0.041	-0.771
	E	-	-	-	-	-
	G	20	1.745	1.006	-1.115	-0.644
	I	9	2.040	0.877	-1.053	-0.424
	L	3	1.853	0.186	-0.696	-0.177
	P	1	2.048	0.751	-0.986	-0.482
	Industry	65	1.896	0.917	-0.568	-0.516
Polyacrylate	A	18	1.815	-0.087	-0.275	0.798
	B	13	1.895	-0.828	0.225	1.147
	E	-	-	-	-	-
	G	19	2.030	0.810	0.349	0.646
	I	9	1.756	-0.087	-0.147	0.471
	L	2	1.678	-0.272	-0.590	0.376
	P	1	2.158	0.839	0.206	0.578
	Industry	62	1.890	0.041	0.037	0.760

EOEC (D 7216)

Average Δ/s by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Silicone	A	17	0.327	-1.024	0.600	0.300
	B	12	0.275	-0.858	-0.216	-0.677
	E	-	-	-	-	-
	G	19	2.250	-0.477	-0.339	-0.868
	I	8	-0.965	0.306	0.077	0.009
	L	3	-0.258	1.389	1.265	1.265
	P	-	-	-	-	-
	V	-	-	-	-	-
	Industry	59	0.731	-0.511	0.094	-0.265
VAMAC	A	17	0.429	-2.140	0.393	0.273
	B	12	0.462	-2.207	0.268	-0.687
	E	-	-	-	-	-
	G	18	1.175	-2.002	-0.669	-0.754
	I	9	0.142	-1.418	-0.225	-1.272
	L	3	0.161	0.688	-0.981	0.169
	P	-	-	-	-	-
	V	-	-	-	-	-
	Industry	59	0.606	-1.858	-0.121	-0.476

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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>

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INFORMATION LETTERS

EOEC Information Letter 19-1, Sequence No. 10, dated March 26, 2019.

- Light Duty Polyacrylate Elastomer Correction Factor for Volume Change

EOEC (D 7216)

STATUS OF REFERENCE OIL SUPPLY

Oil	Samples @ Labs	@ TMC	
		Samples (750 mL)	Gallons
1006-1	10	0	0
1006-2	305	3,315	657
Total	315	3,315	657

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.

Reference Oil SL107, will be available soon for testing. This oil is a replacement for reference oil SF105, a.k.a. reference oil 1006 and its reblends.