



Test Monitoring Center

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

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

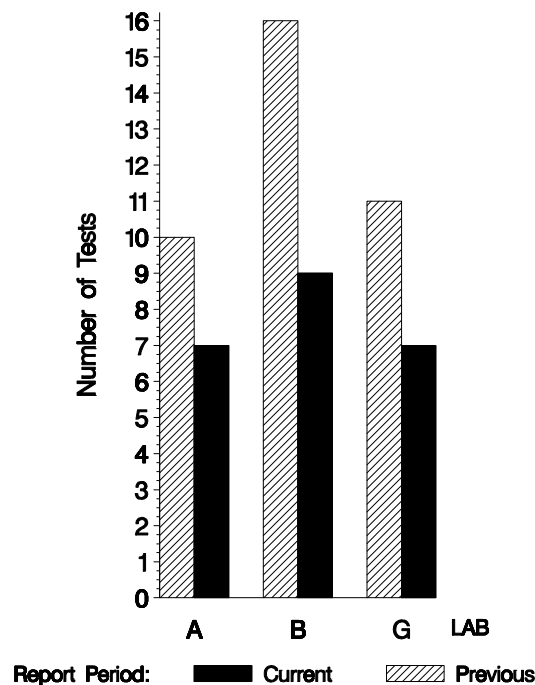
MEMORANDUM: 10-024
DATE: May 27, 2010
TO: Becky Grinfield,
Chairman, Engine Oil Elastomer Compatibility Surveillance Panel
FROM: Michael T. Kasimirsky *Michael T. Kasimirsky*
SUBJECT: EOEC Testing from October 1, 2009 through March 31, 2010

A total of 111 EOEC tests were reported to the Test Monitoring Center during the period from October 1, 2009 through March 31, 2010. Following is a summary of testing activity this period.

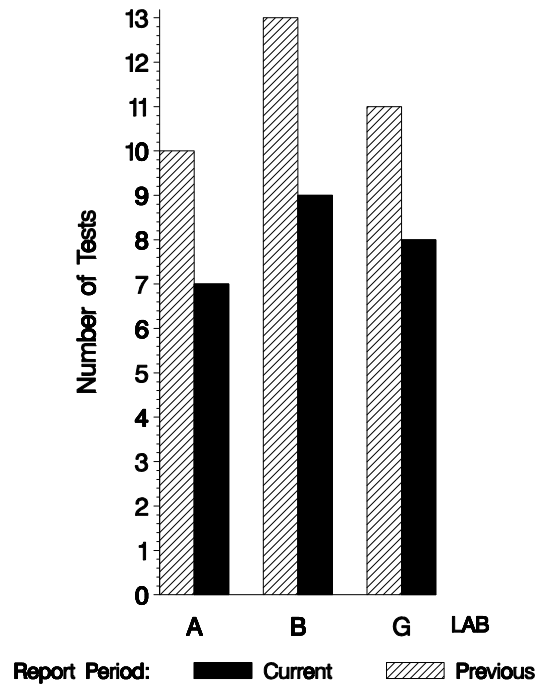
	Reporting Data
Number of Labs	3

Tests reported this period were distributed as shown below:

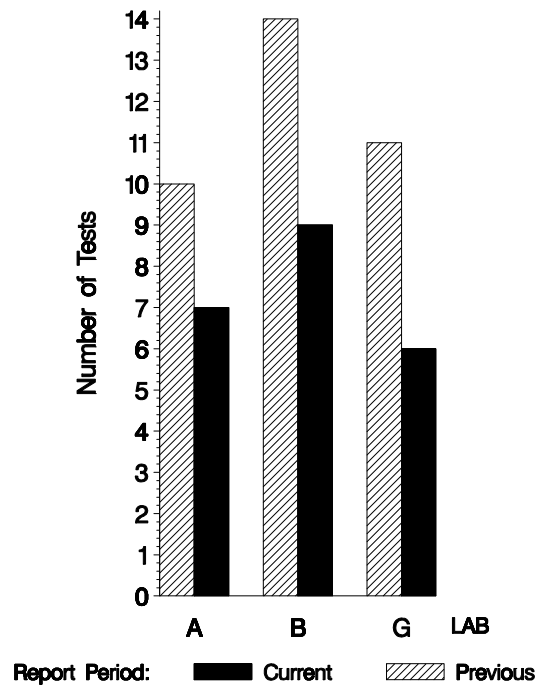
NUMBER OF FLUROELASTOMER TESTS REPORTED BY LAB AND REPORT PERIOD



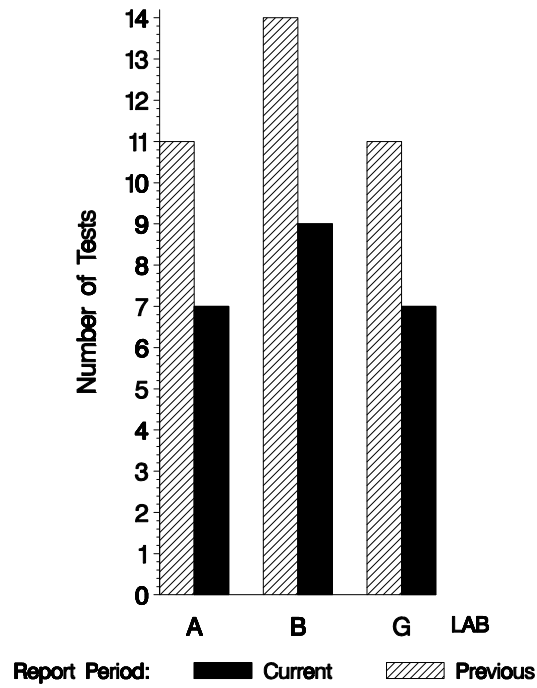
NUMBER OF NITRILE TESTS REPORTED BY LAB AND REPORT PERIOD



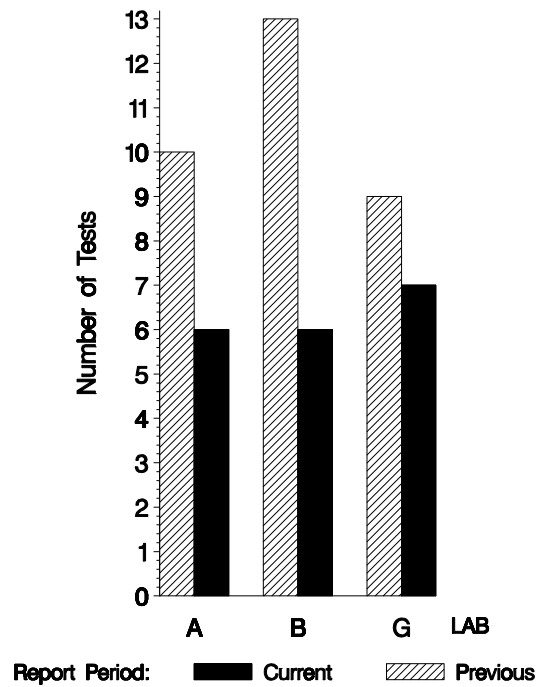
NUMBER OF POLYACRYLATE TESTS REPORTED BY LAB AND REPORT PERIOD



NUMBER OF SILICONE TESTS REPORTED BY LAB AND REPORT PERIOD



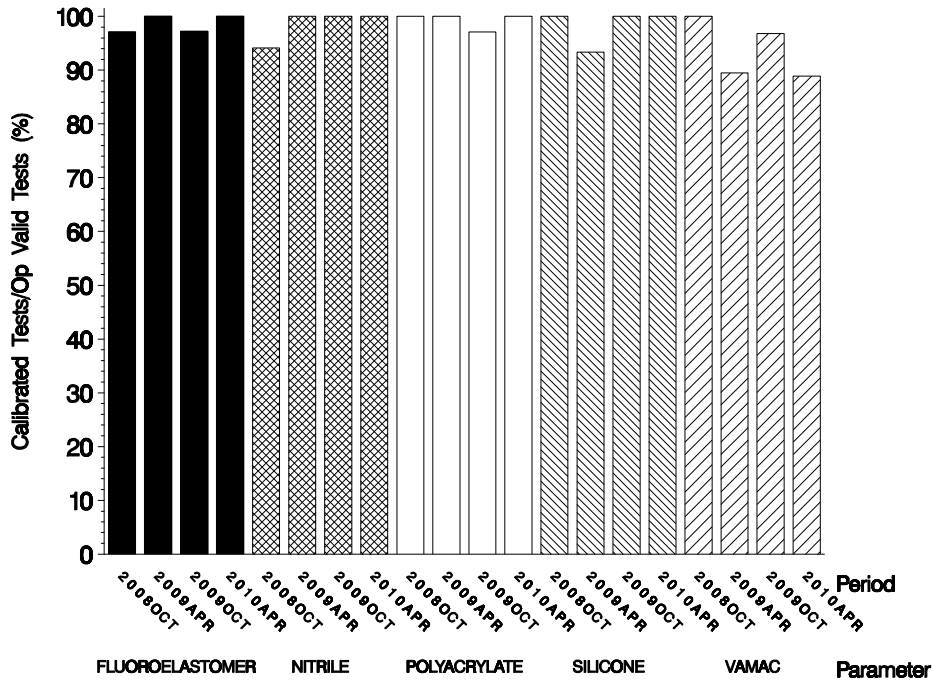
NUMBER OF VAMAC TESTS REPORTED BY LAB AND REPORT PERIOD



Test Distribution by Oil and Validity

							Totals	
		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	Vamac	This Period	Last Period
Accepted for Calibration	AC	23	24	22	23	16	108	166
Rejected	OC	0	0	0	0	3	3	3
Information Run (not for calibration)	NI	0	0	0	0	0	0	0
Operationally Invalid (lab)	LC	0	0	0	0	0	0	5
Operationally Invalid (lab/TMC)	RC	0	0	0	0	0	0	0
Aborted Calibration	XC	0	0	0	0	0	0	0
Total		23	24	22	23	19	111	174

**OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA**



The above chart shows the percentage of accepted operationally valid tests. This period three vamac tests failed to meet the acceptance criteria.

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	7	0	0	7	0	0	7	0	0	7	0	0	6	0	0	34	0
B	0	9	0	0	9	0	0	9	0	0	9	0	0	6	0	0	42	0
G	0	7	0	0	8	0	0	6	0	0	7	0	0	7	0	0	35	0
Total	0	23	0	0	24	0	0	22	0	0	23	0	0	19	0	0	111	0

Lost tests are those that were aborted or operationally invalid.

Causes for Lost Tests

Lab	Cause	Elastomer					Validity			Loss Rate		
		Fluoroelastomer	Nitrile	Polyacrylate	Silicone	VAMAC	LC	RC	XC	Lost	Starts	%
		-	No lost tests this period									
	Lost	0	0	0	0	0	0	0	0	0	0	0
	Starts	23	24	22	23	19	111	111	111			
	%	0%	0%	0%	0%	0%	0%	0%	0%			

Average Δ 's by Lab						
Elastomer	Lab	n	VOLCYI	HARDYI	TENSYI	ELONYI
Fluoroelastomer	A	7	-1.081	0.058	-0.463	-0.813
	B	9	-0.488	0.520	-0.330	-0.584
	G	7	1.689	-0.981	1.315	0.477
	Industry	23	-0.006	-0.077	0.130	-0.331
Nitrile	A	7	2.143	0.429	-1.115	-0.327
	B	9	1.874	0.312	-0.445	0.199
	G	8	1.963	-0.237	1.145	-0.173
	Industry	24	1.982	0.163	-0.110	-0.078
Polyacrylate	A	7	1.596	-0.034	0.343	0.489
	B	9	1.959	-0.334	0.668	0.859
	G	6	1.537	0.098	0.777	1.115
	Industry	22	1.728	-0.121	0.594	0.811
Silicone	A	7	0.247	0.170	-0.488	-0.059
	B	9	0.983	0.229	-1.343	0.519
	G	7	1.007	1.182	-0.836	-0.079
	Industry	23	0.767	0.501	-0.929	0.161
VAMAC	A	5	1.174	-1.379	1.957	0.336
	B	6	1.524	-2.011	1.652	-0.176
	G	7	2.183	-1.860	1.979	0.849
	Industry	18	1.683	-1.777	1.864	0.364

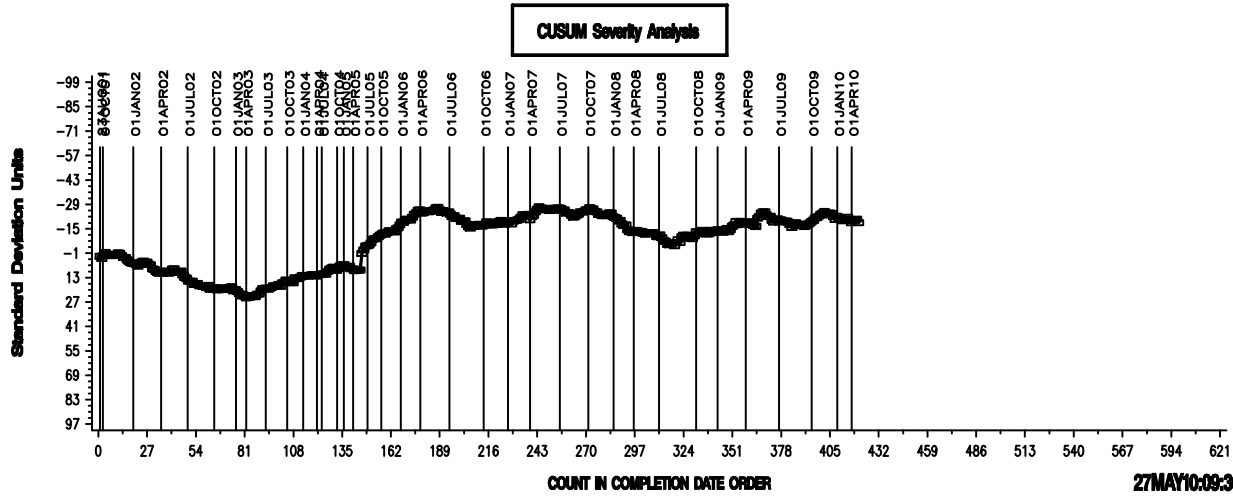
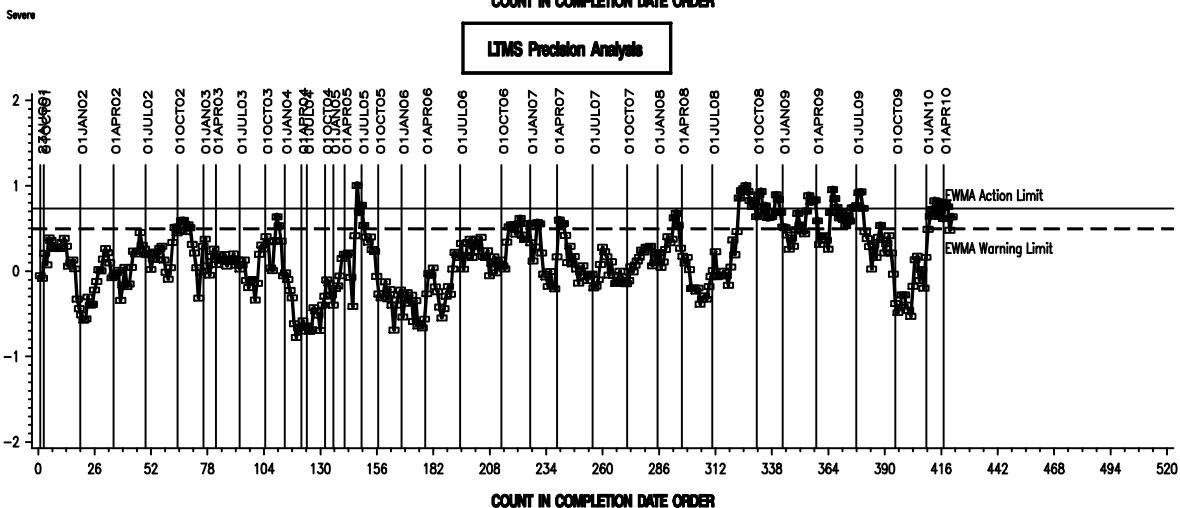
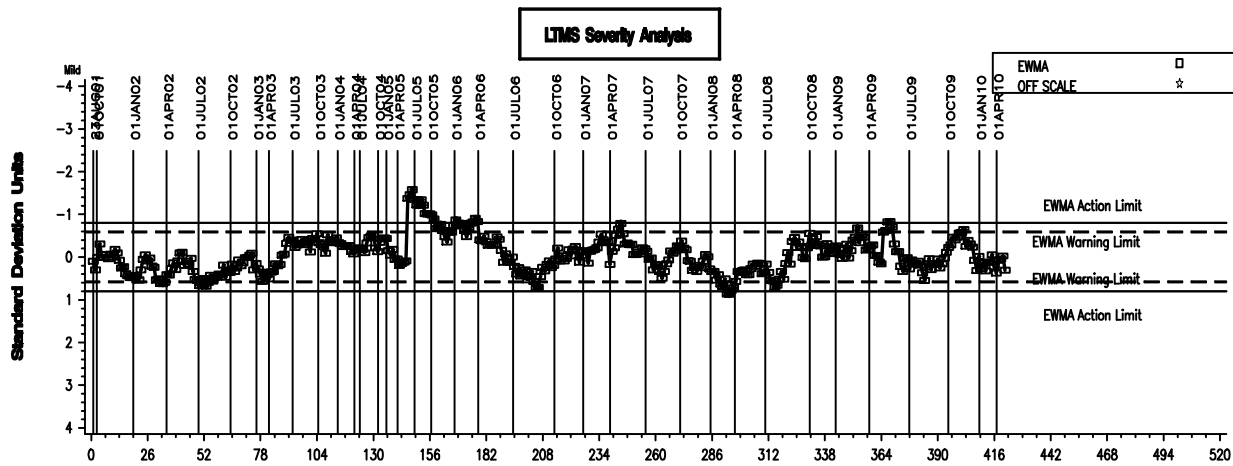
Individual test results can be viewed at the links shown in the following table:

<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/

LTMS CONTROL CHARTS

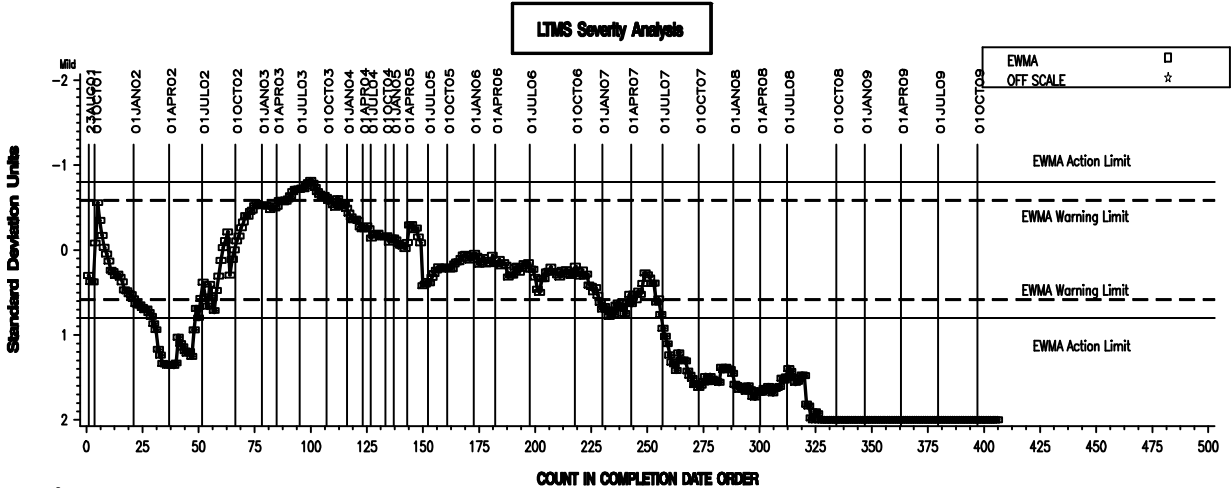
EOEC - FLUROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

FLUROELASTOMER VOLUME CHANGE AVG.

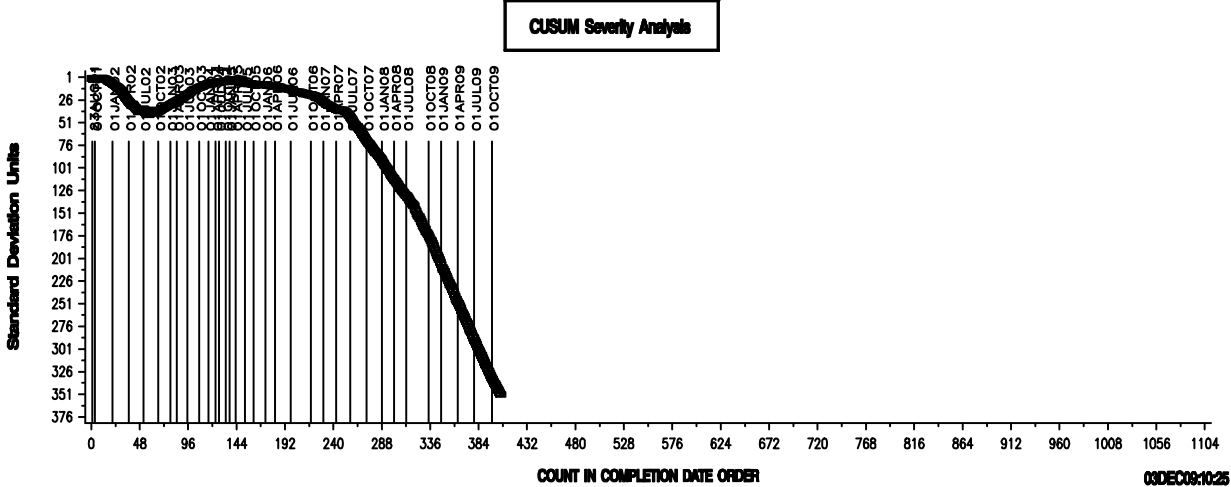
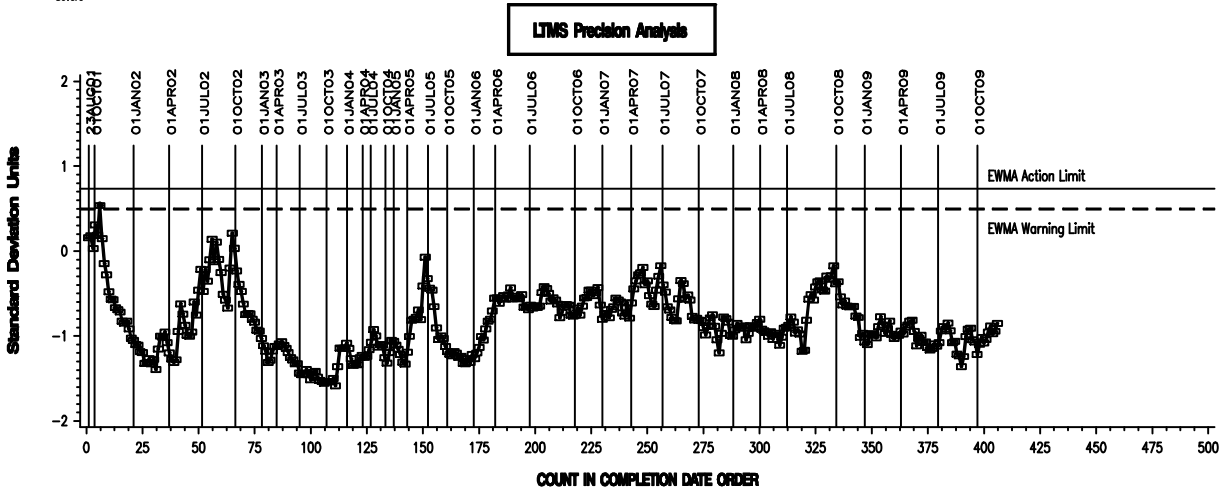


EOEC - NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE VOLUME CHANGE AVERAGE

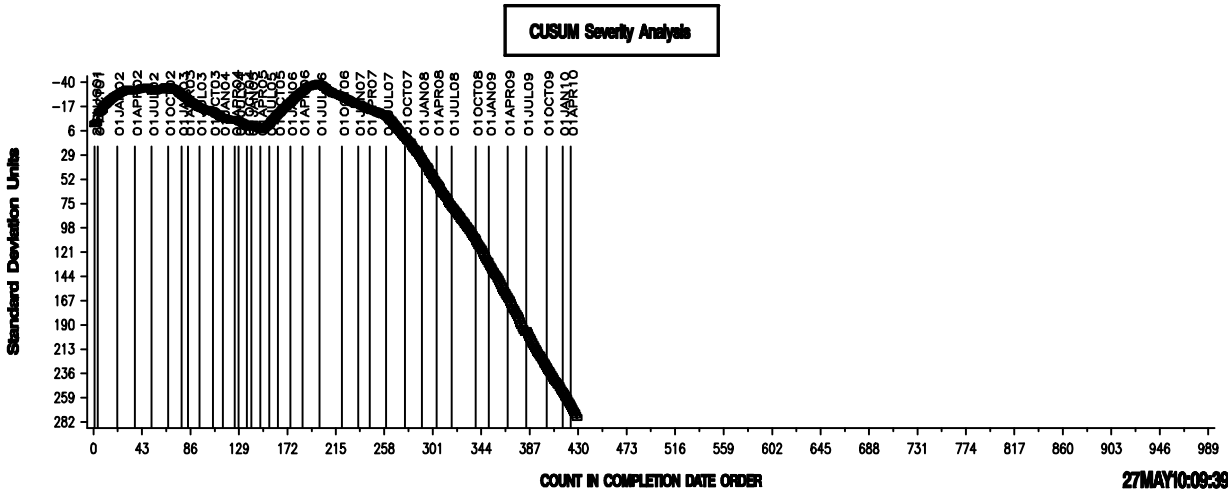
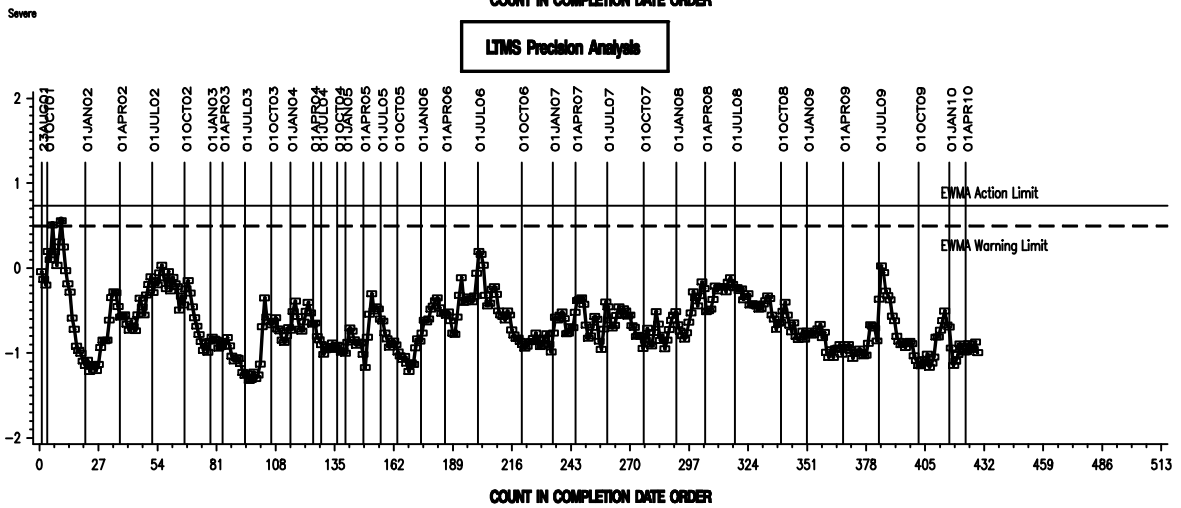
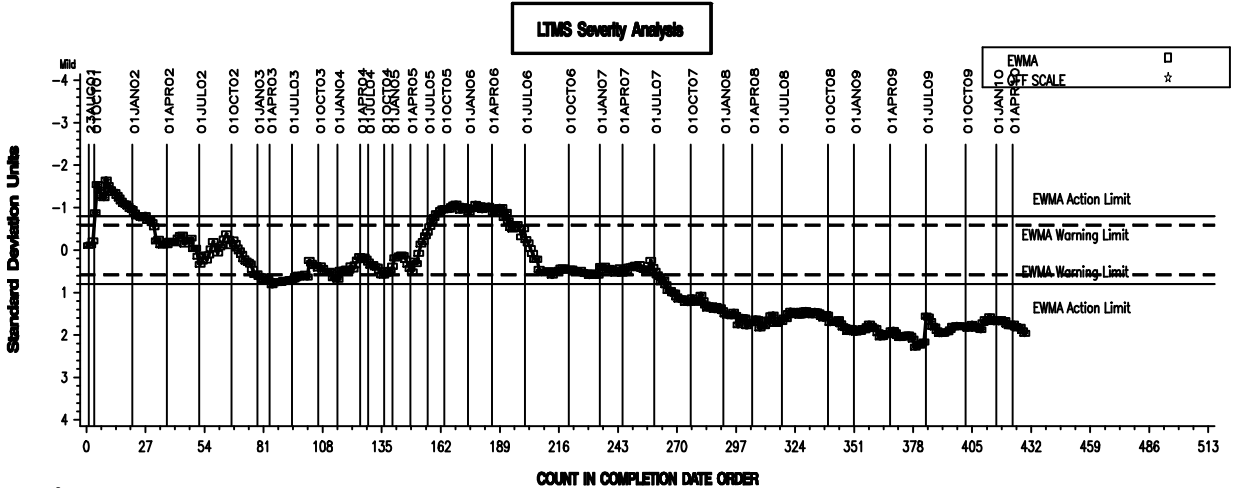


Severe



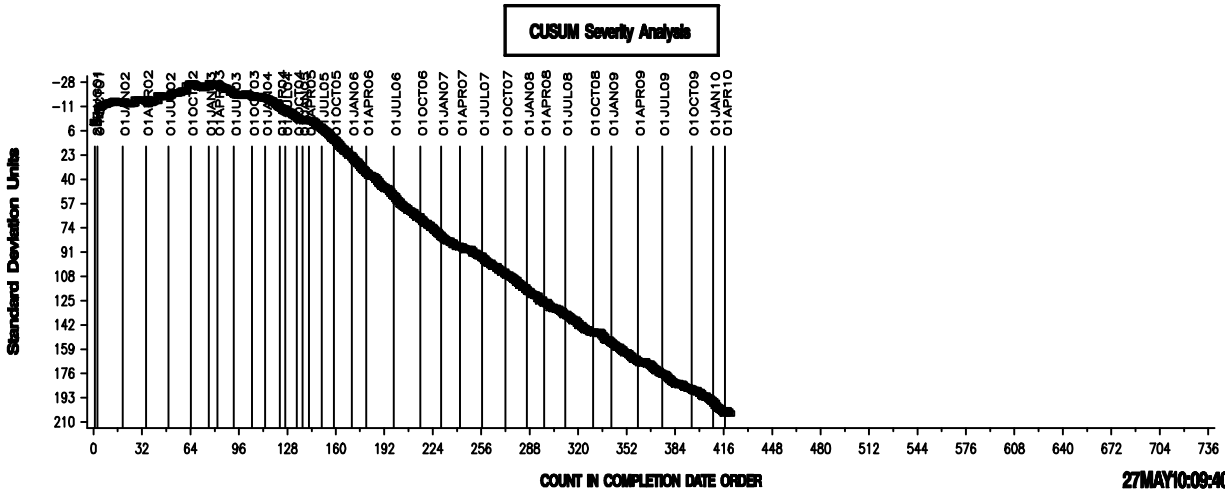
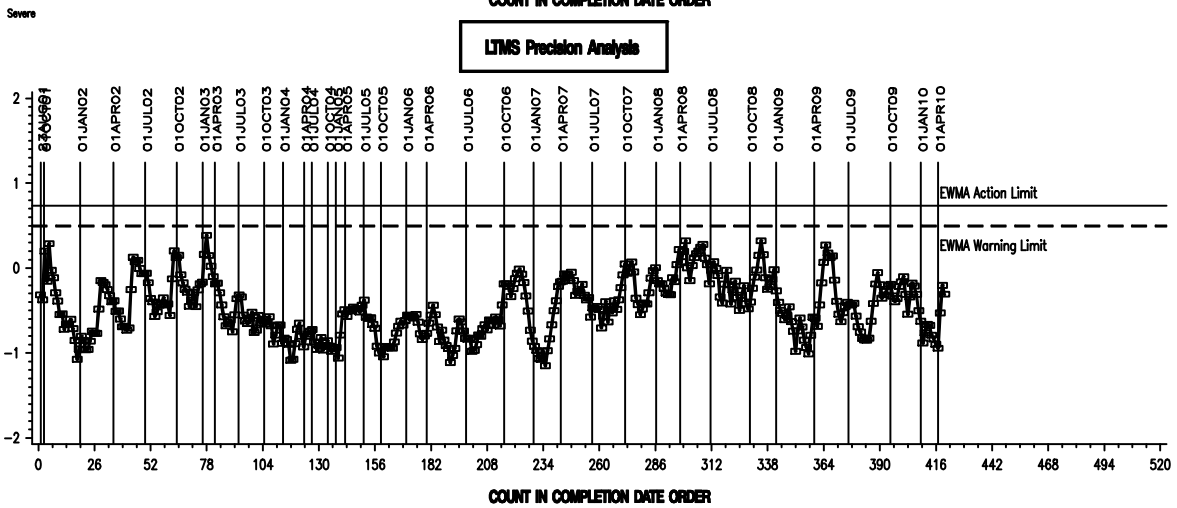
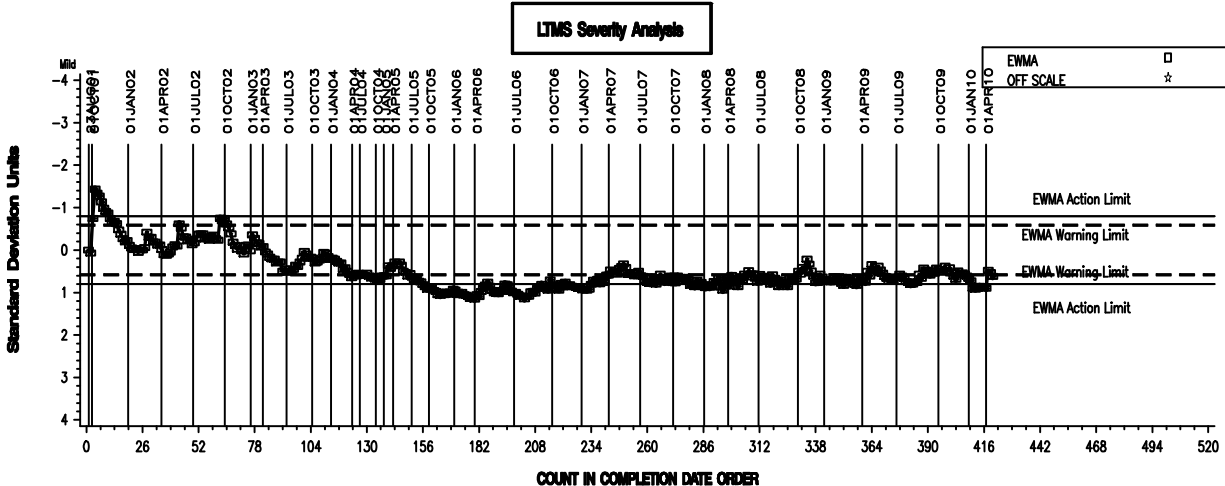
EOEC - POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE POLYACRYLATE VOLUME CHANGE AVERAGE



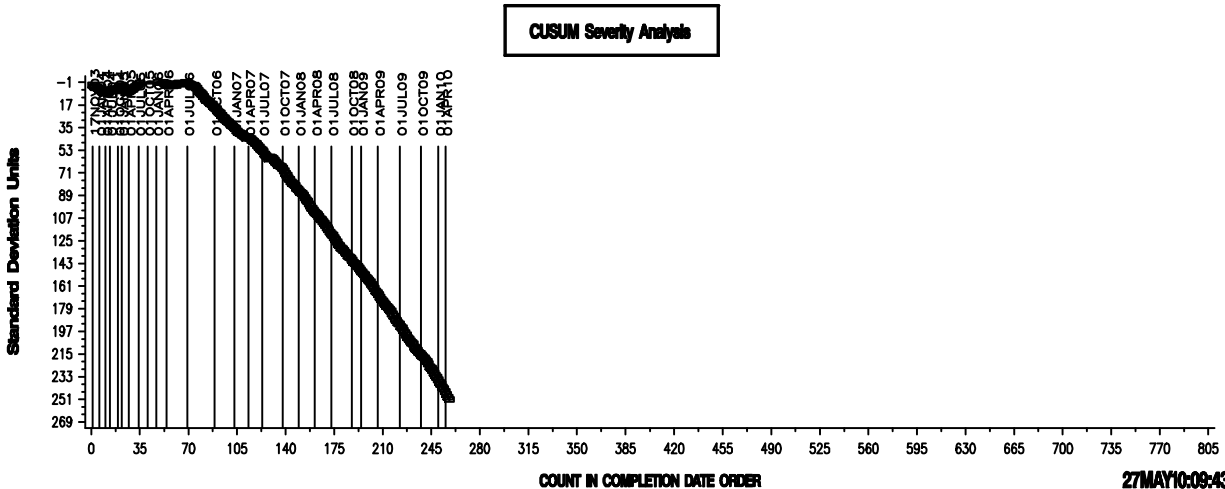
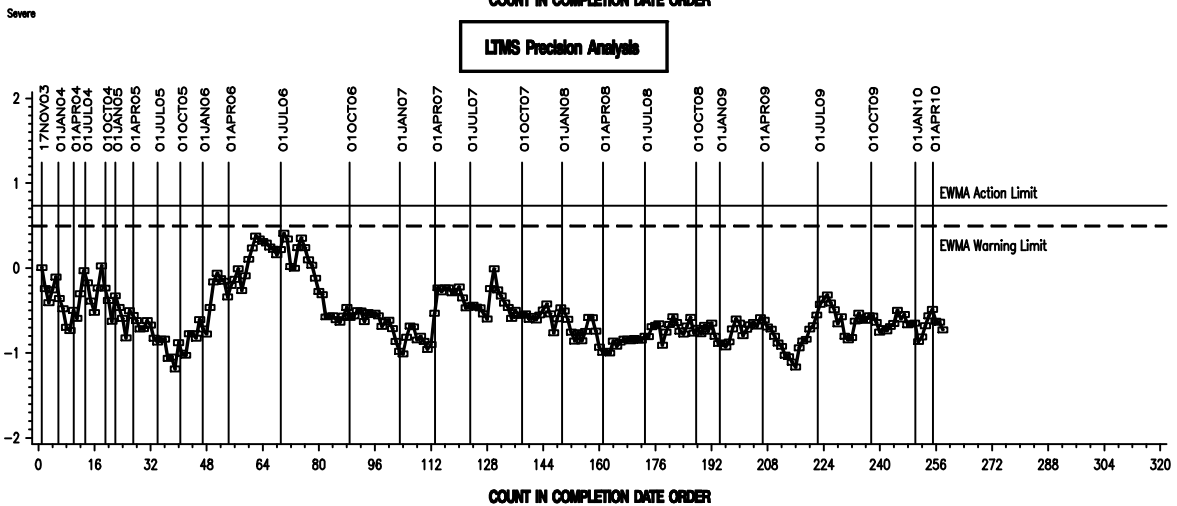
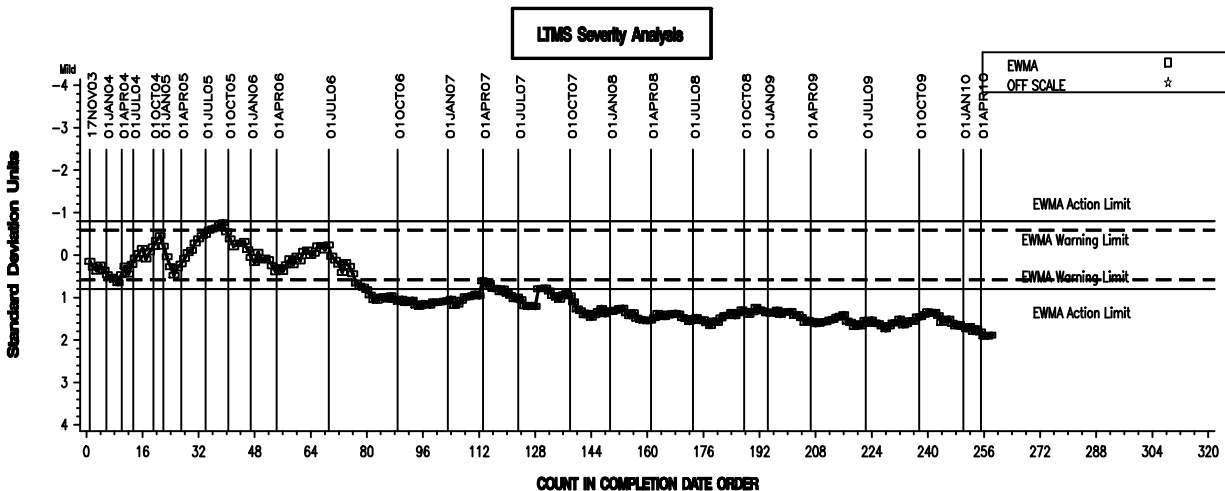
EOEC - SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON VOLUME CHANGE AVERAGE



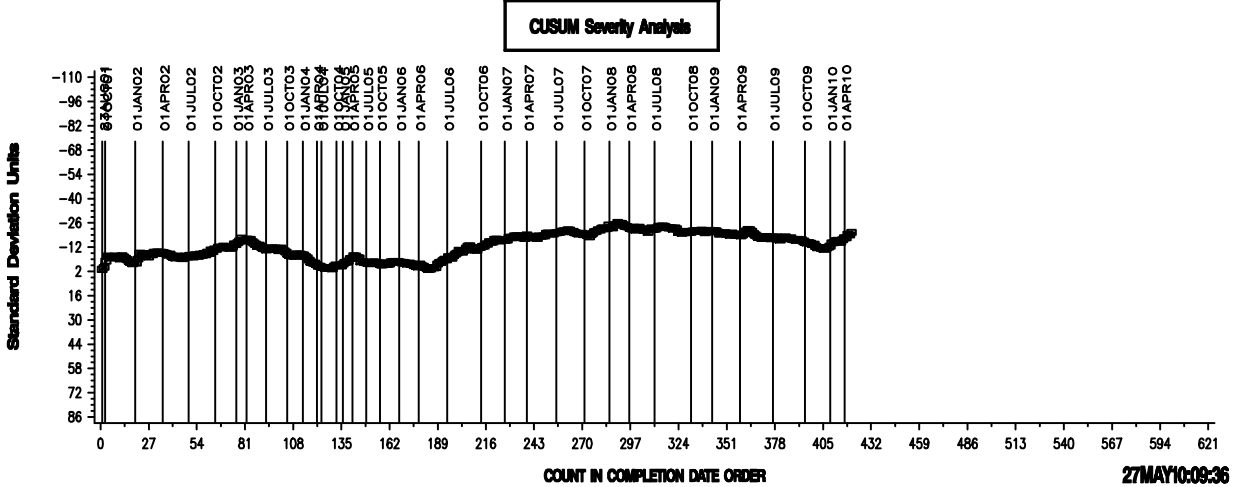
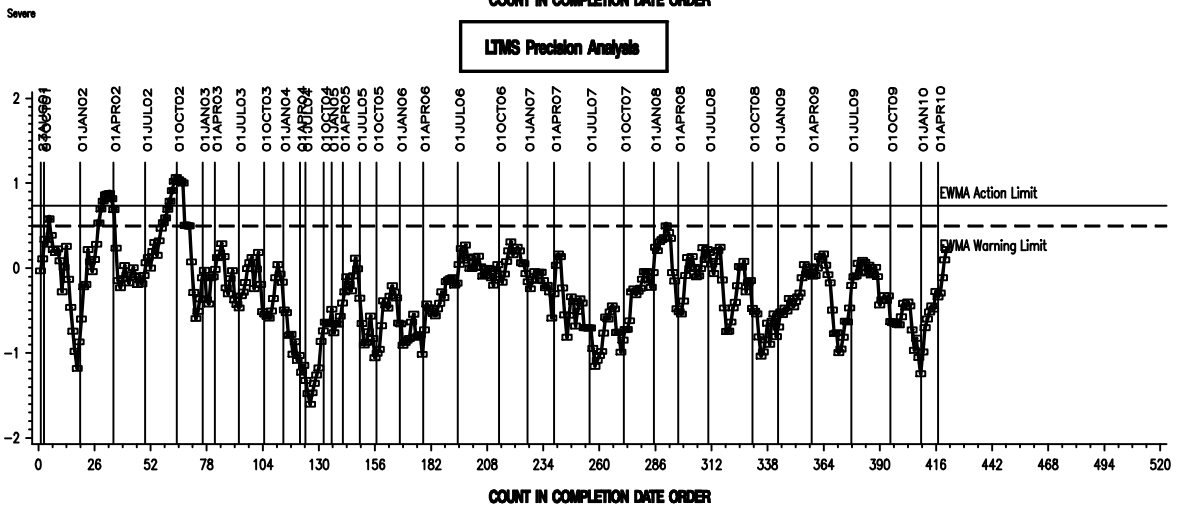
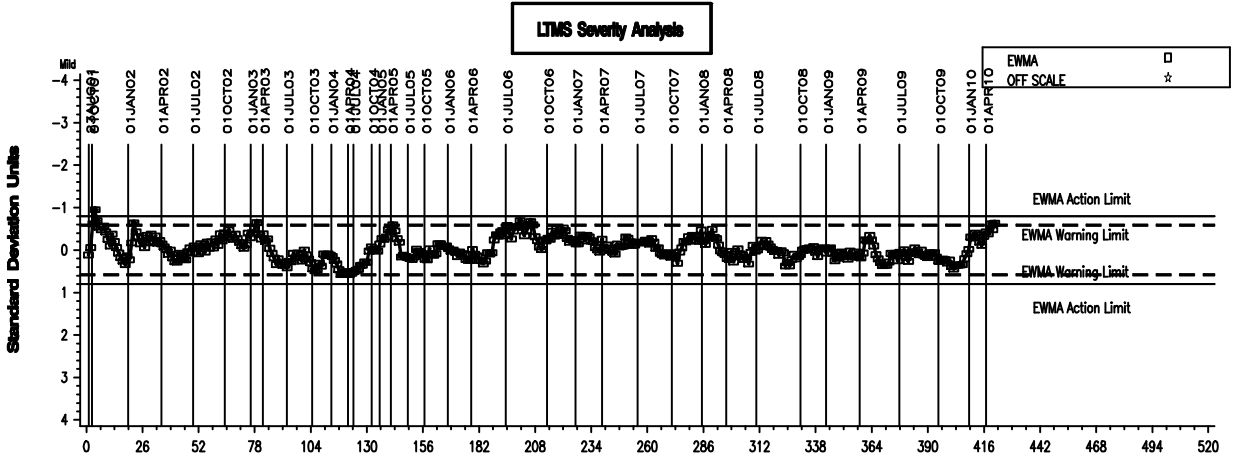
EOEC - VAMAC INDUSTRY OPERATIONALLY VALID DATA

REFERENCE VAMAC G VOLUME CHANGE AVERAGE



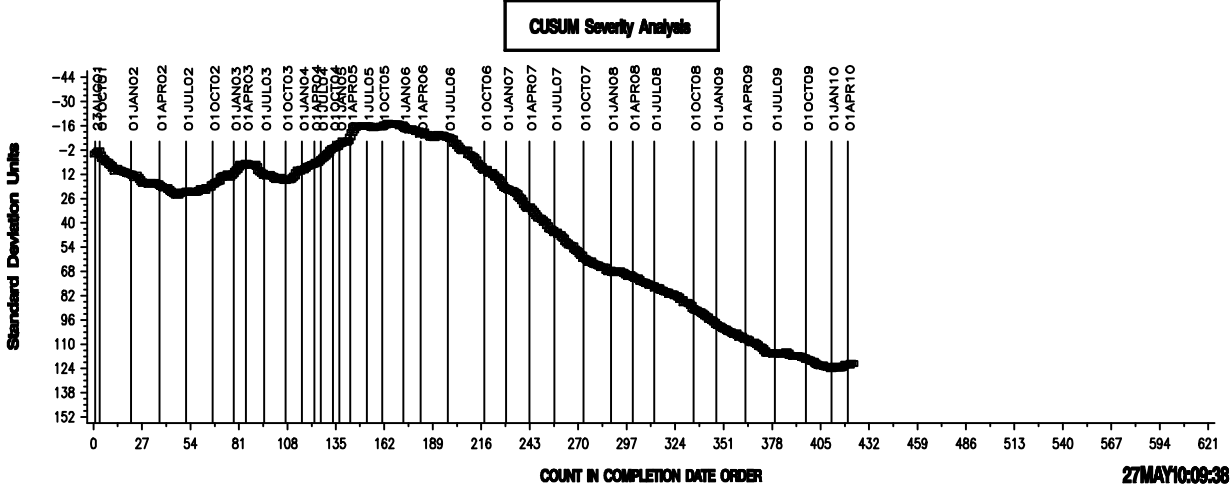
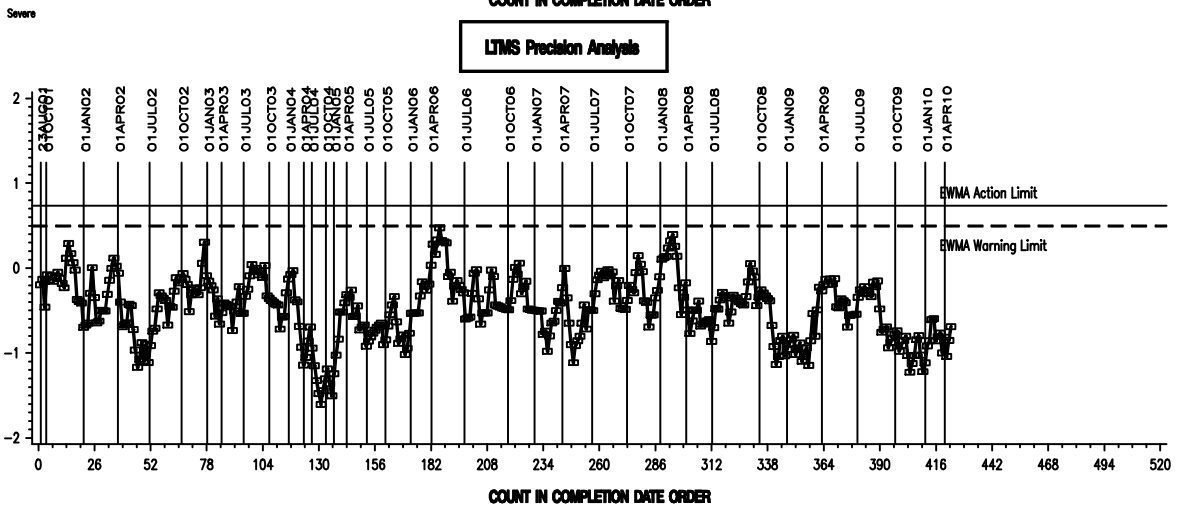
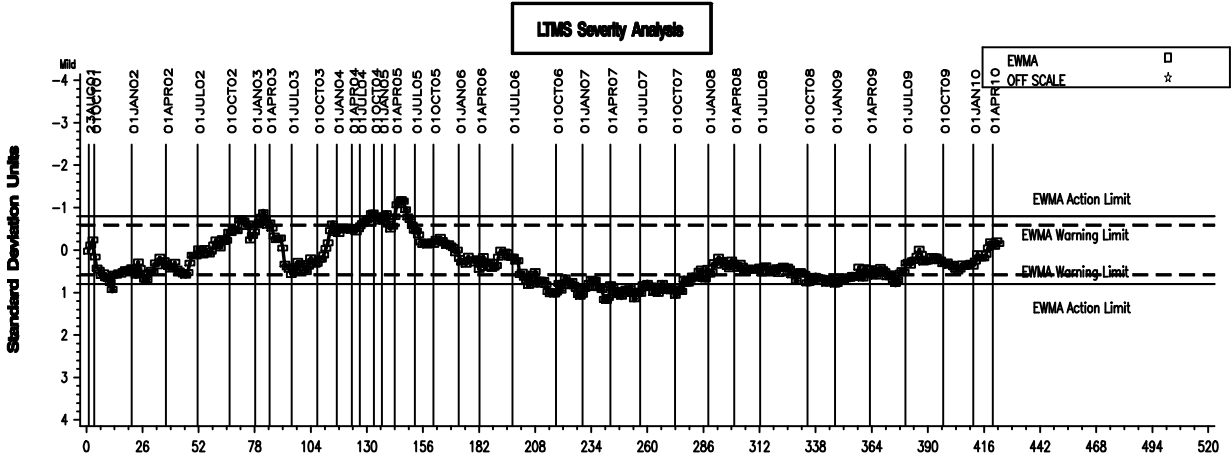
EOEC – FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

FLUOROELASTOMER POINTS HARDNESS CHANGE



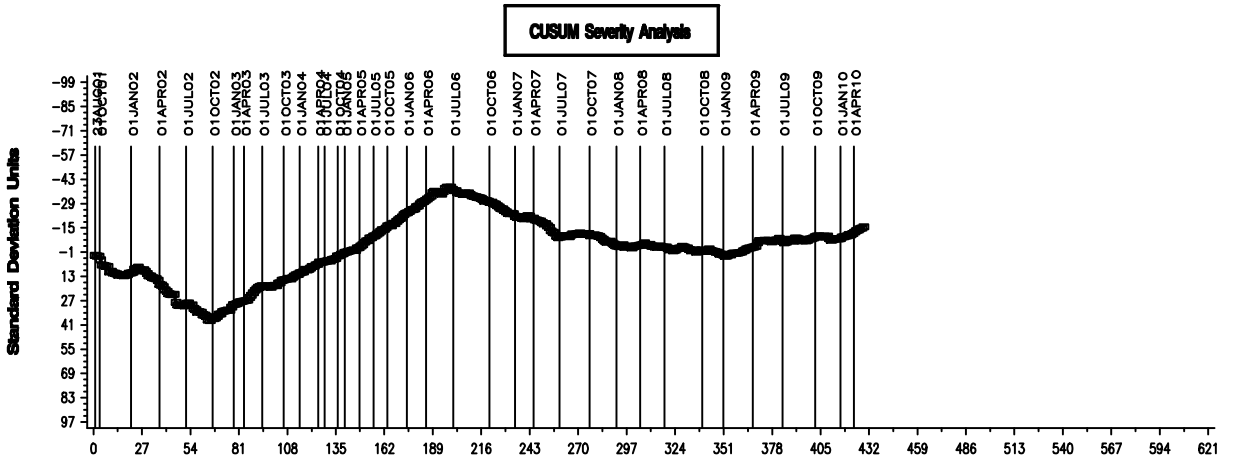
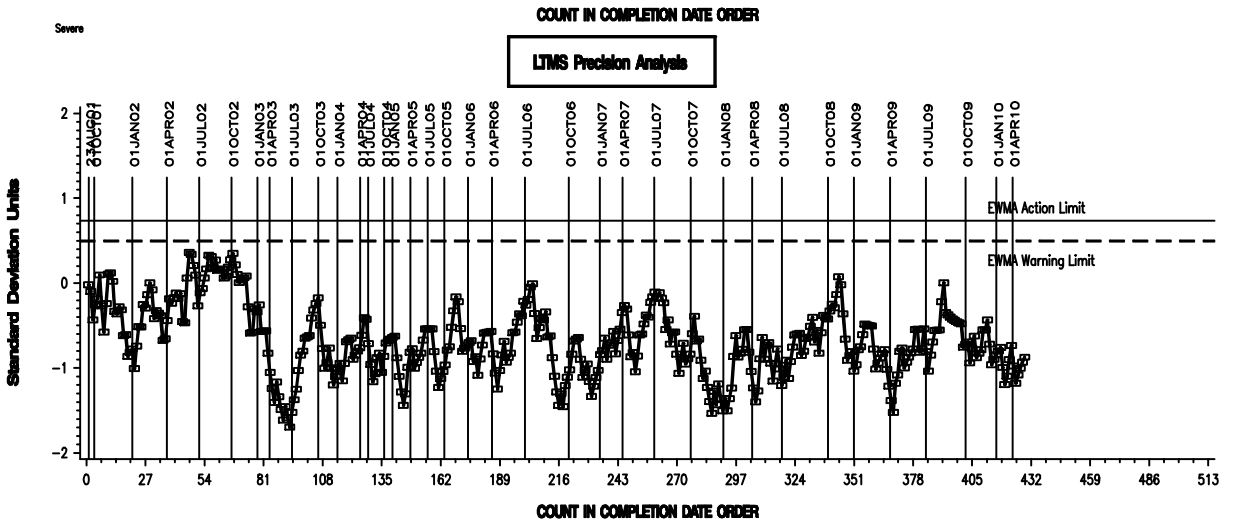
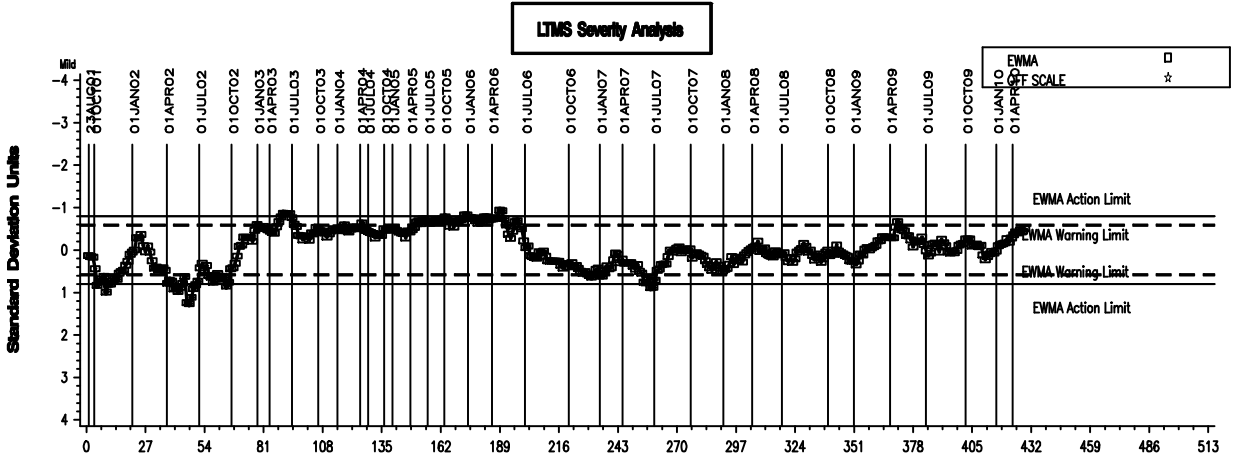
EOEC - NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE POINTS HARDNESS CHANGE AVERAGE



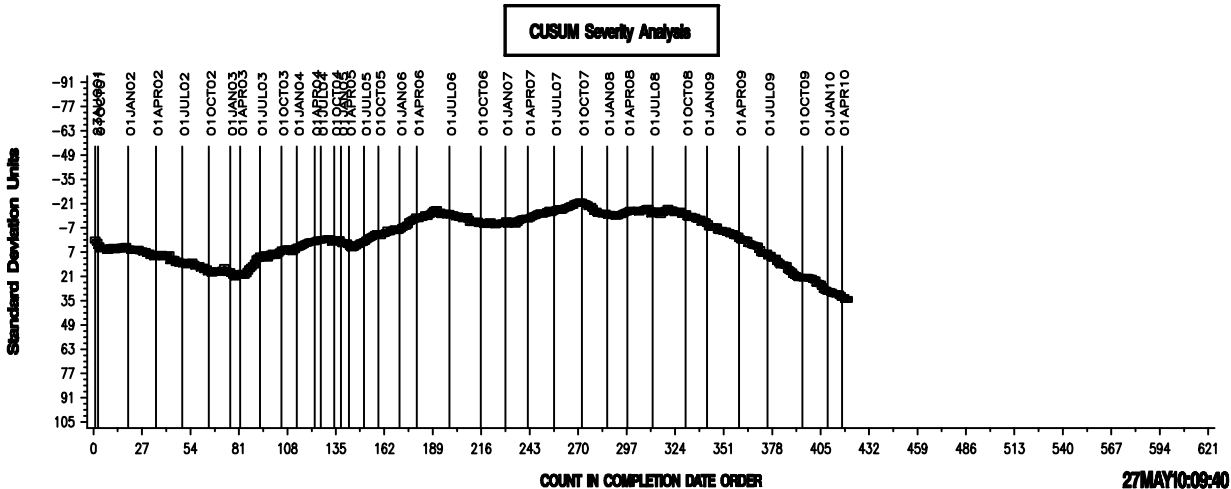
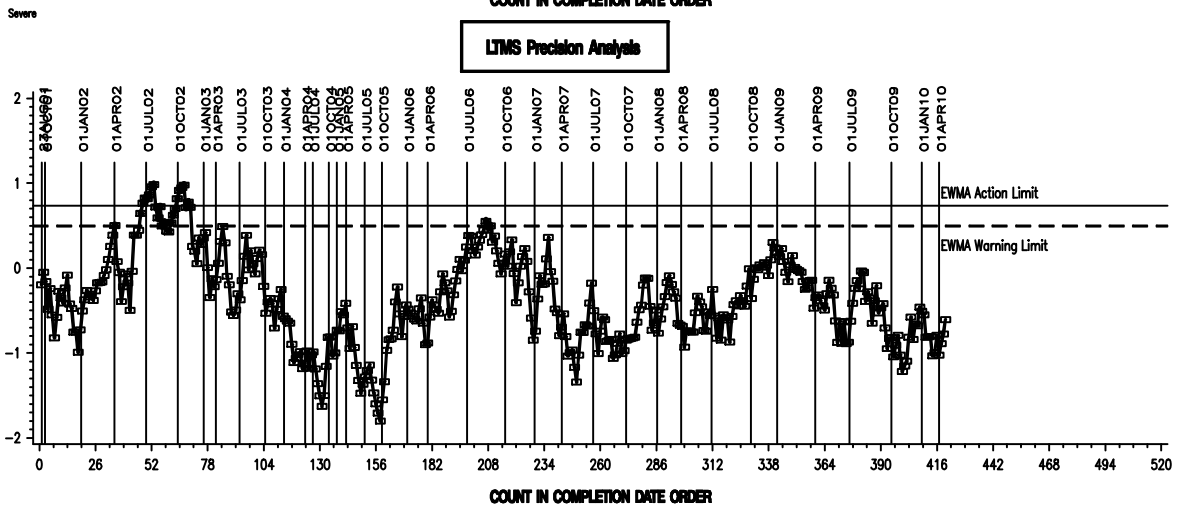
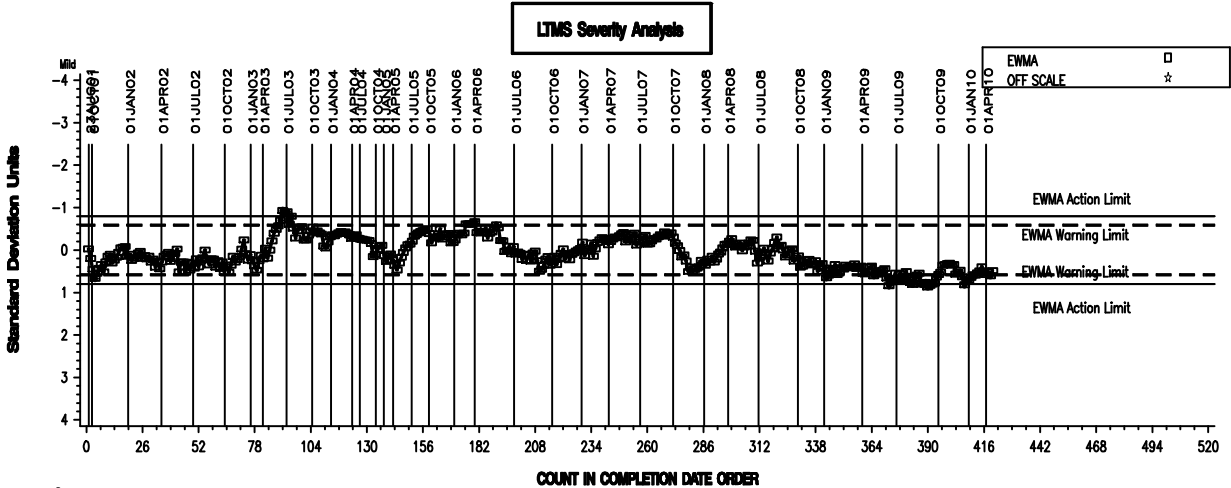
EOEC - POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE POLYACRYLATE POINTS HARDNESS CHANGE AVER



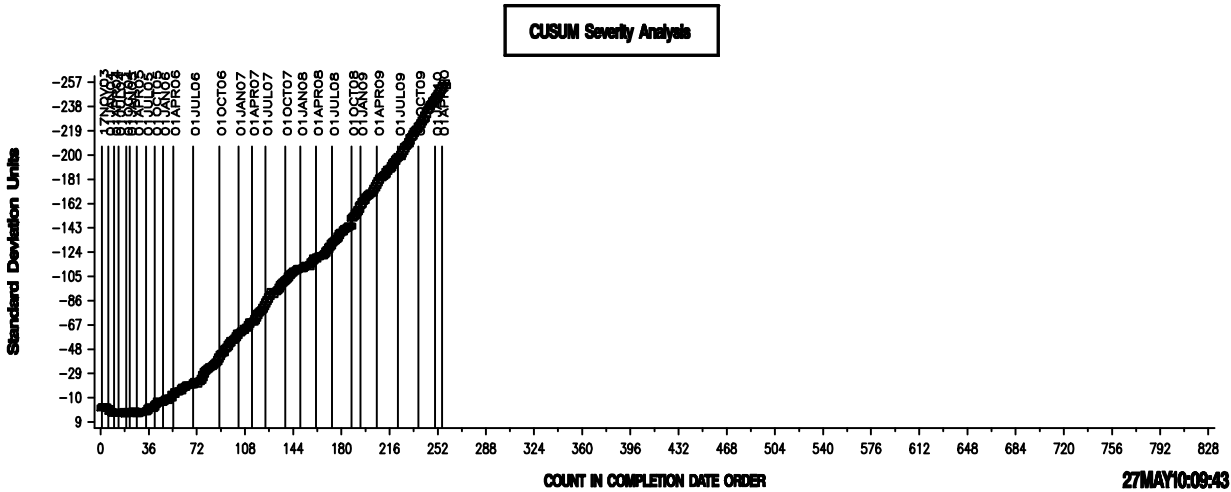
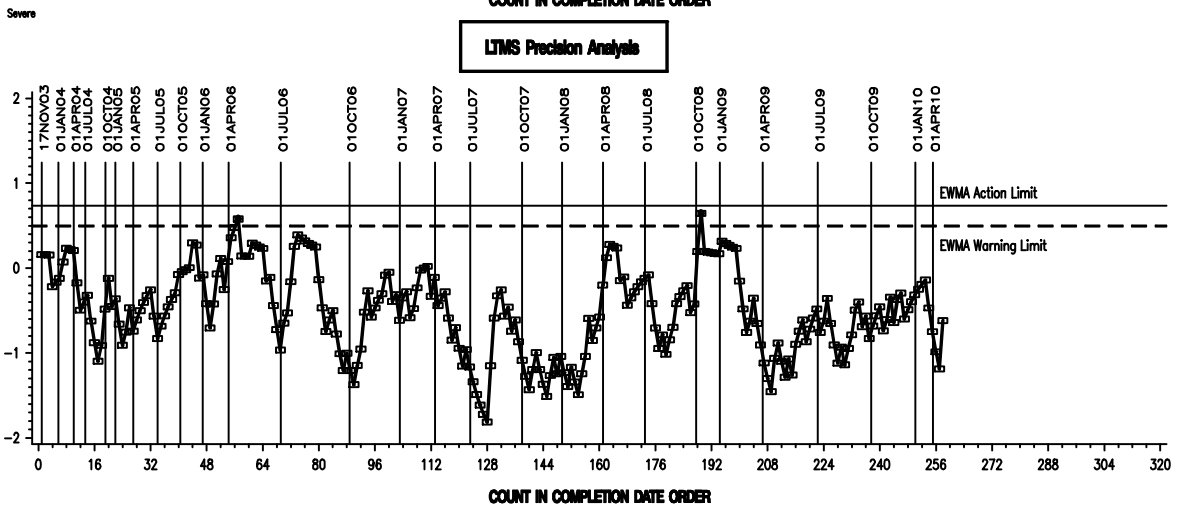
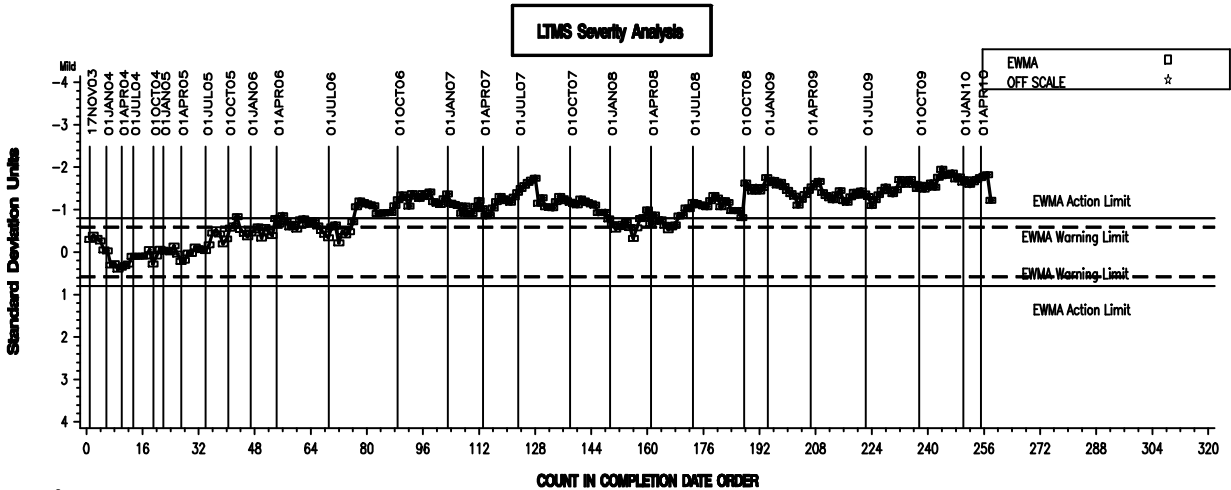
EOEC - SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON POINTS HARDNESS CHANGE AVERAGE



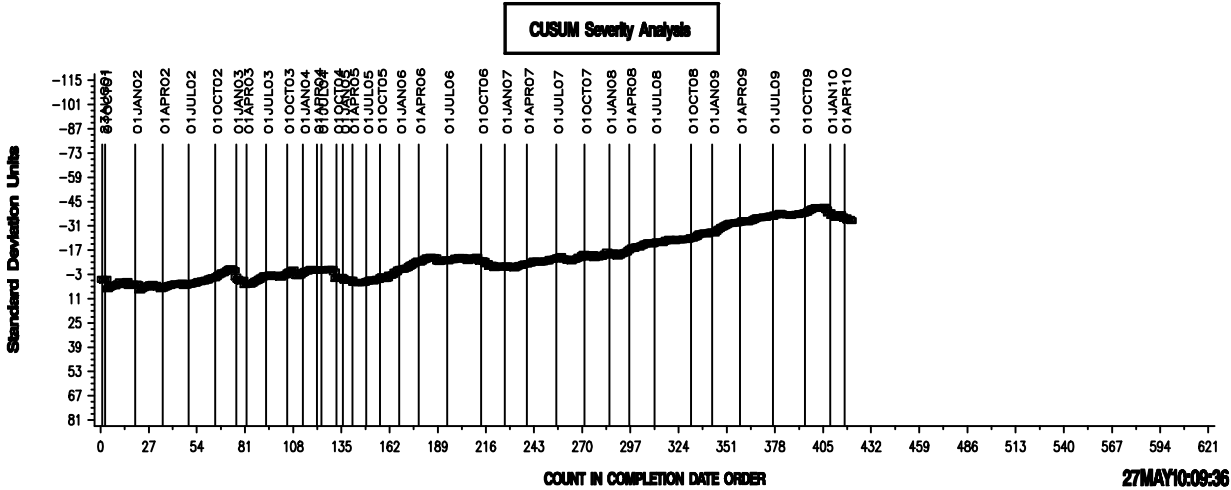
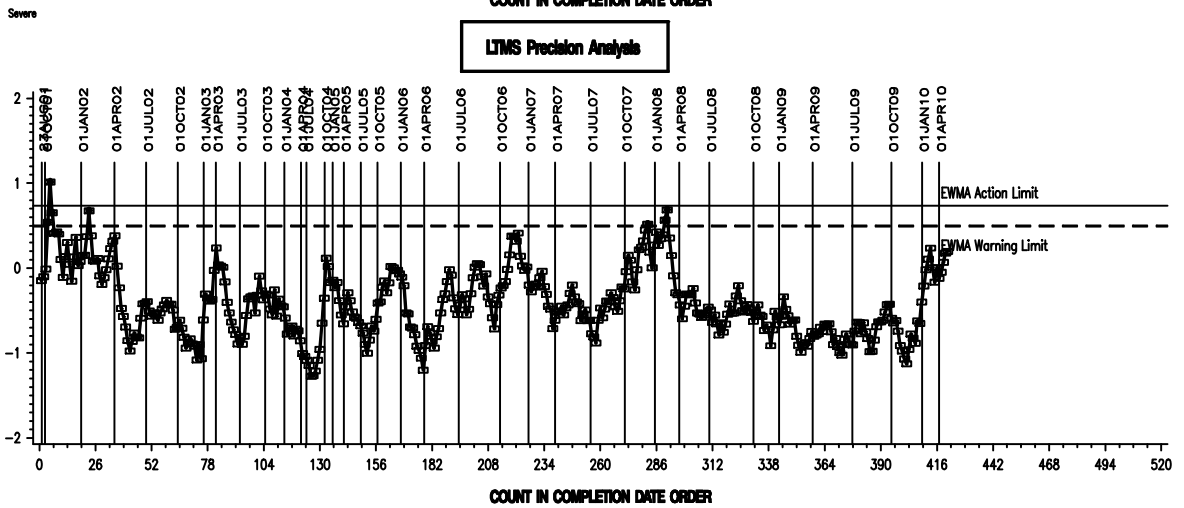
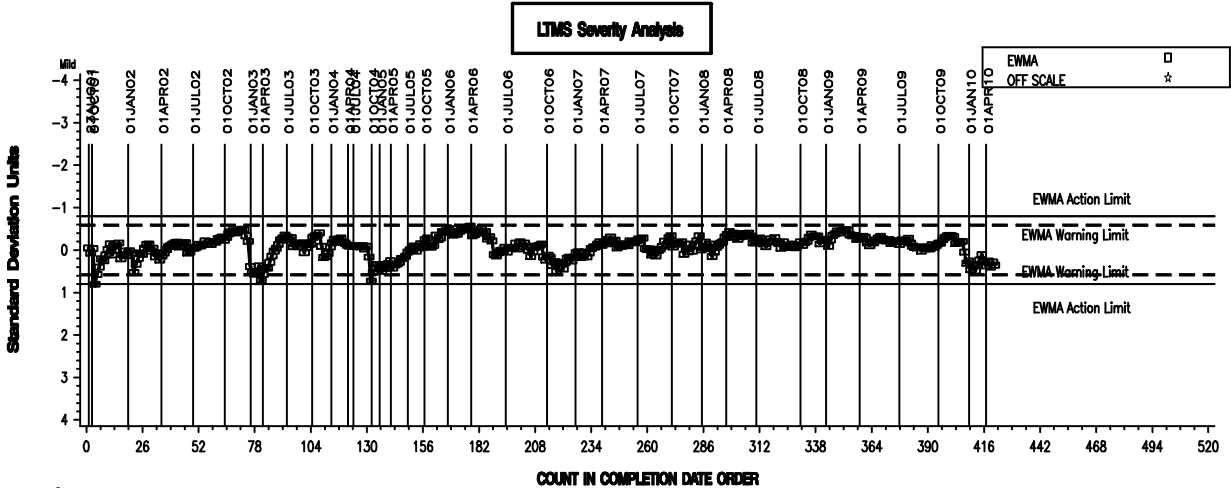
EOEC – VAMAC INDUSTRY OPERATIONALLY VALID DATA

REFERENCE VAMAC G POINTS HARDNESS CHANGE AVERAGE



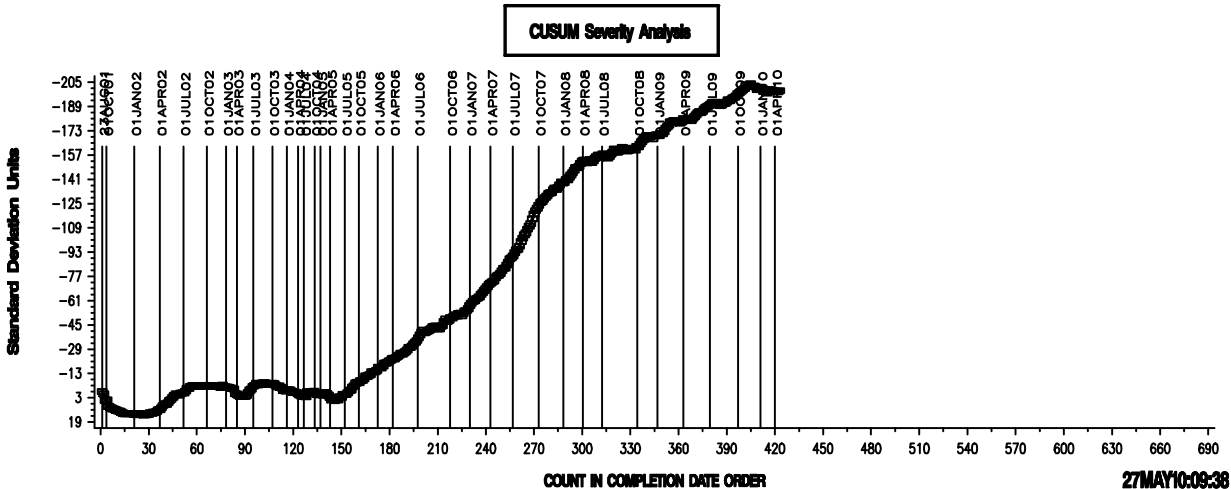
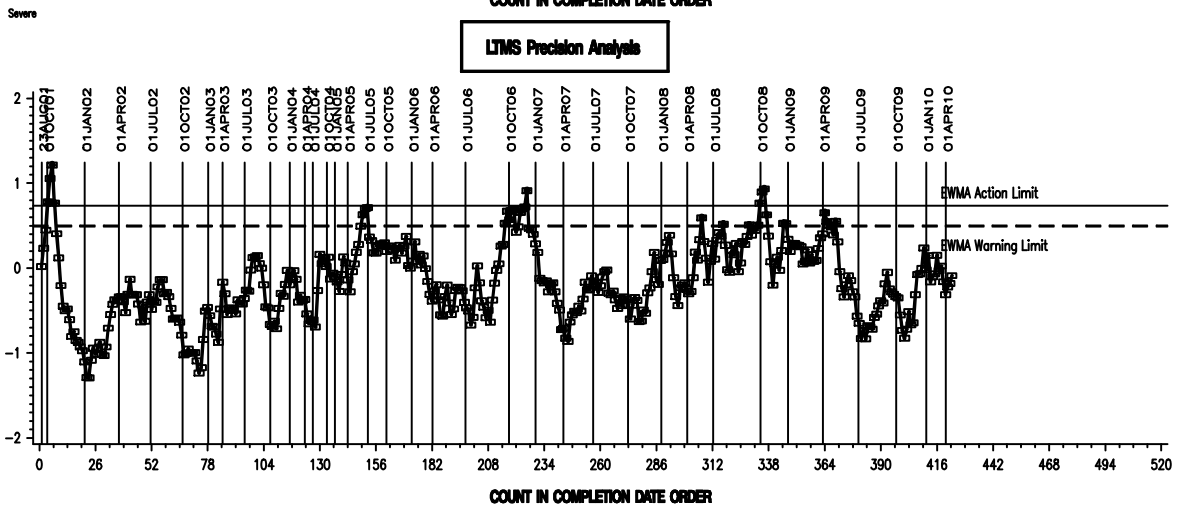
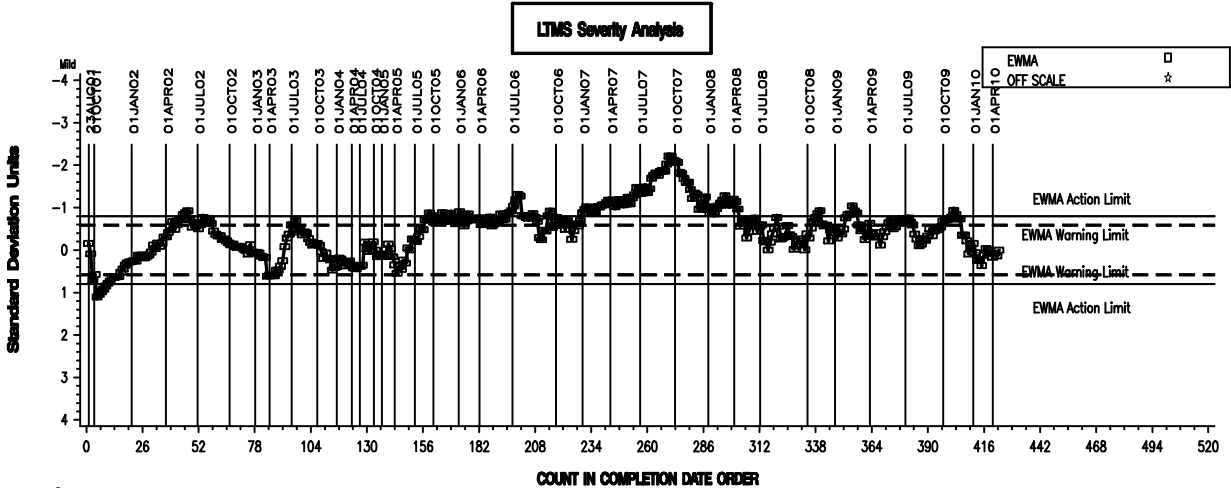
EOEC – FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

FLUOROELASTOMER TENSILE STRENGTH CHANGE



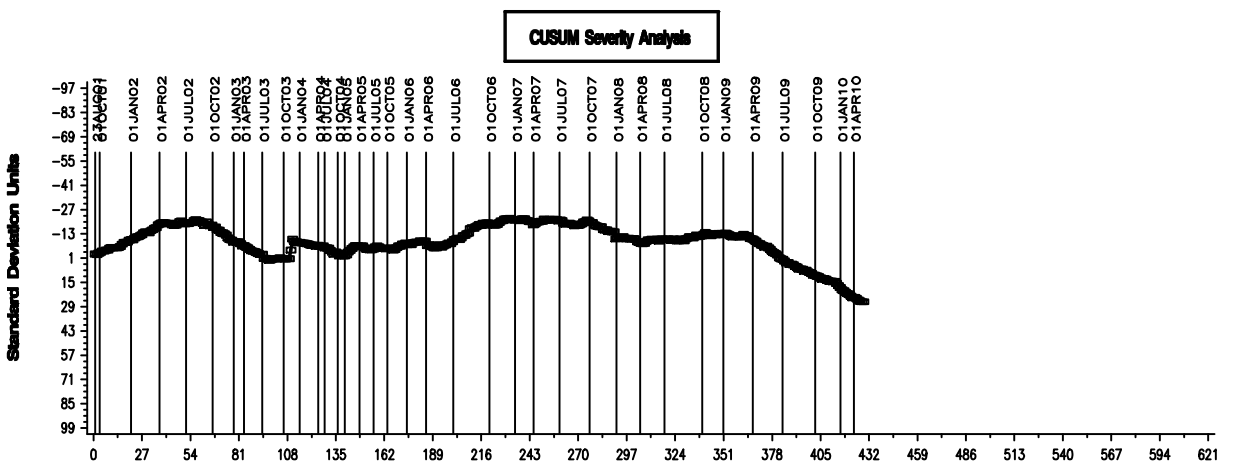
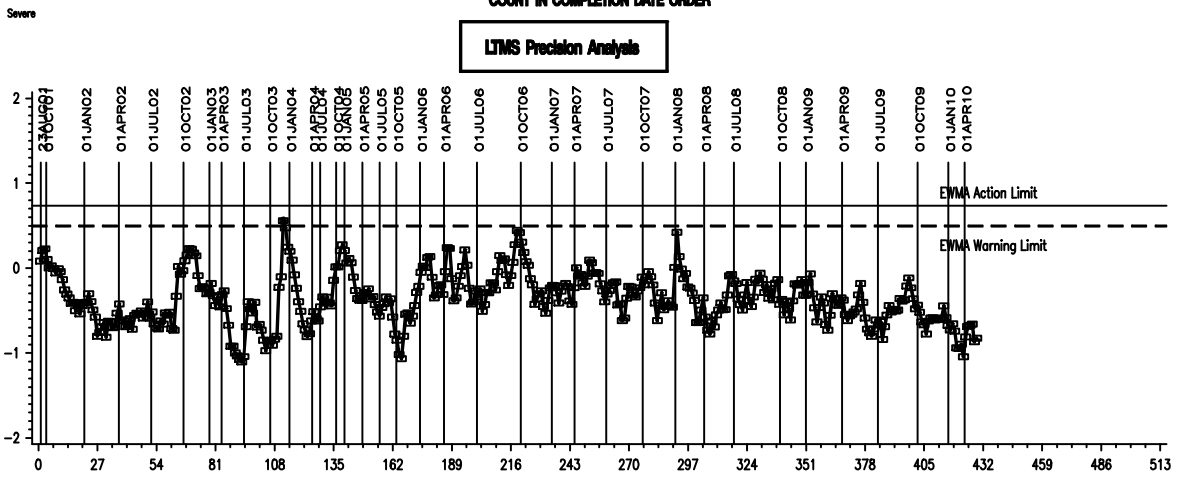
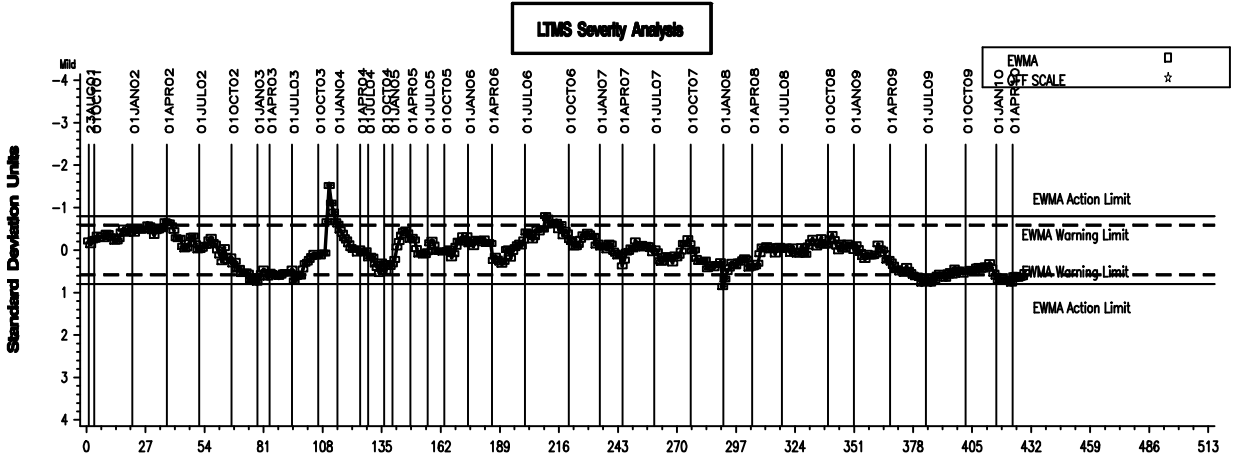
EOEC - NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE TENSILE STRENGTH CHANGE AVERAGE



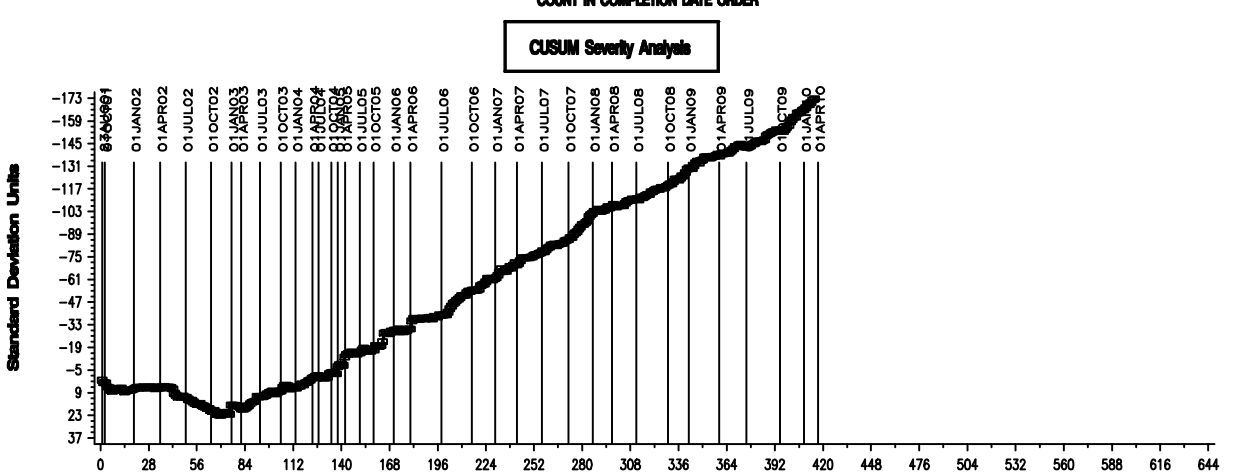
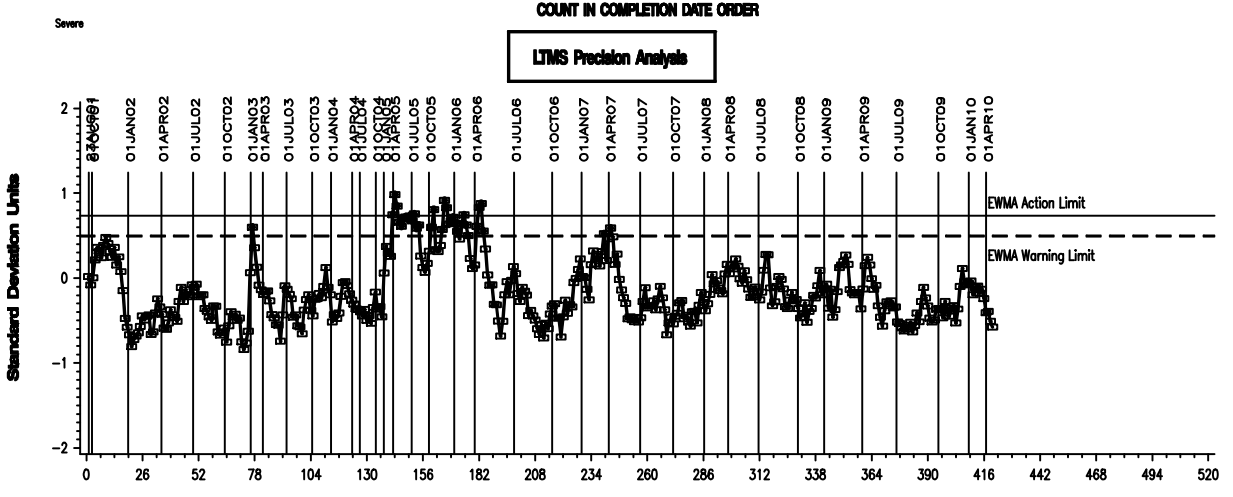
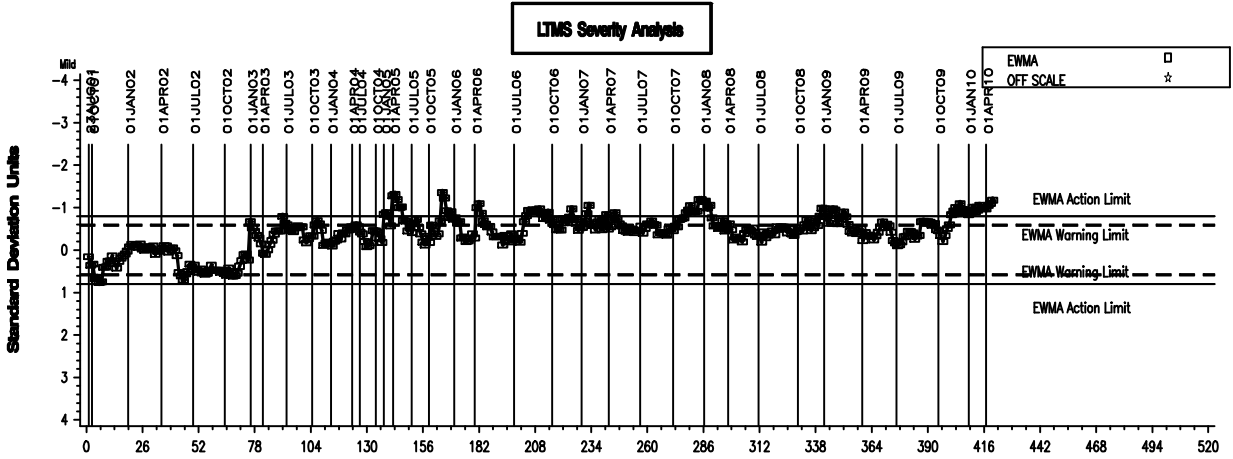
EOEC - POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE POLYACRYLATE TENSILE STRENGTH CHANGE AVE



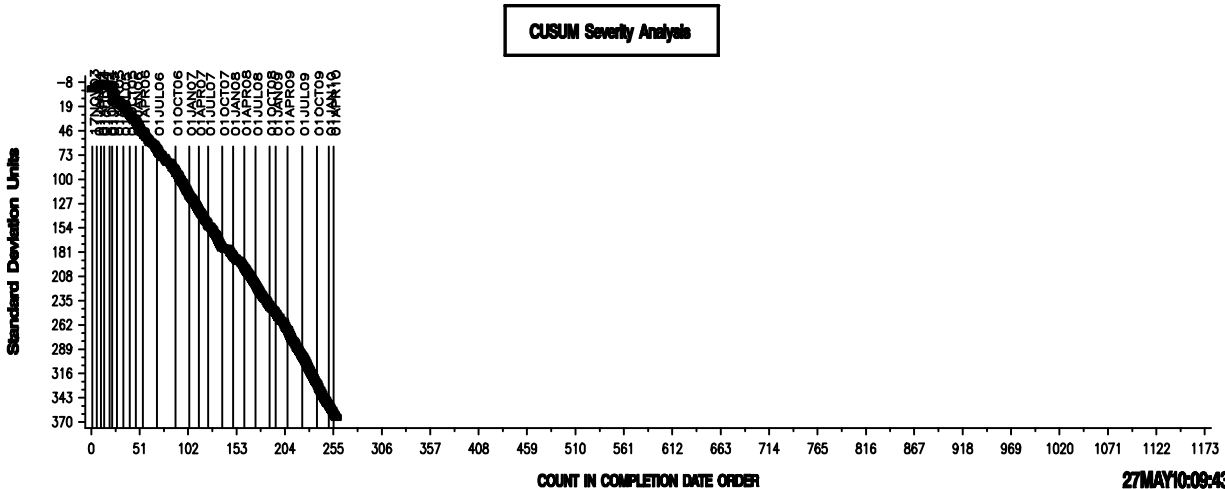
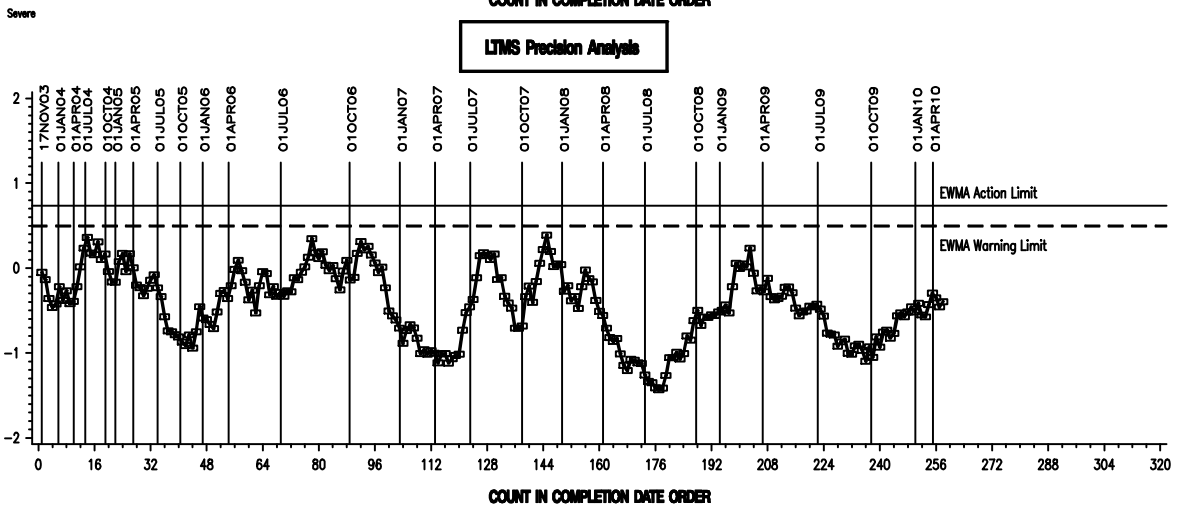
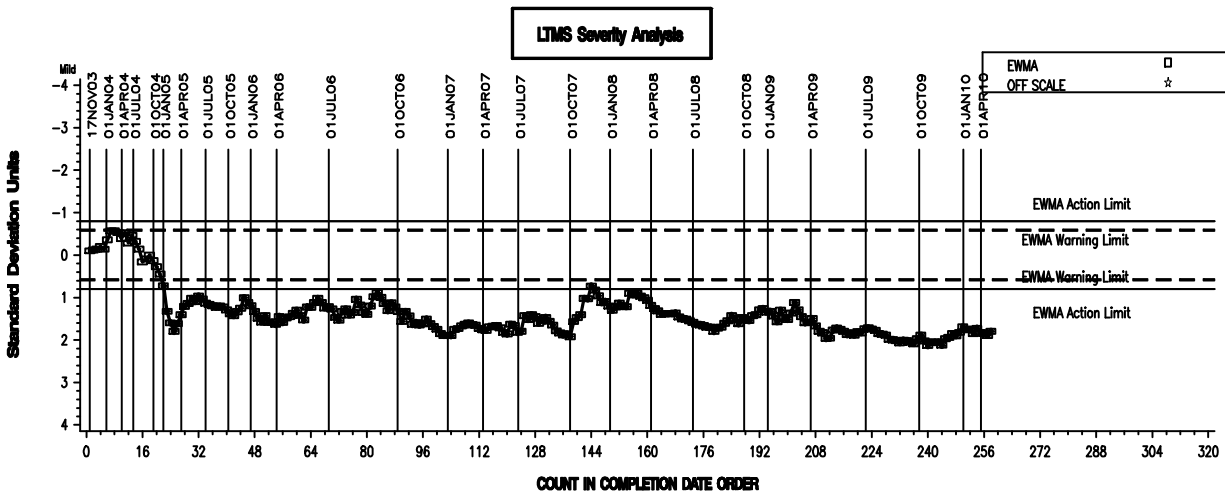
EOEC - SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON TENSILE STRENGTH CHANGE AVERAGE



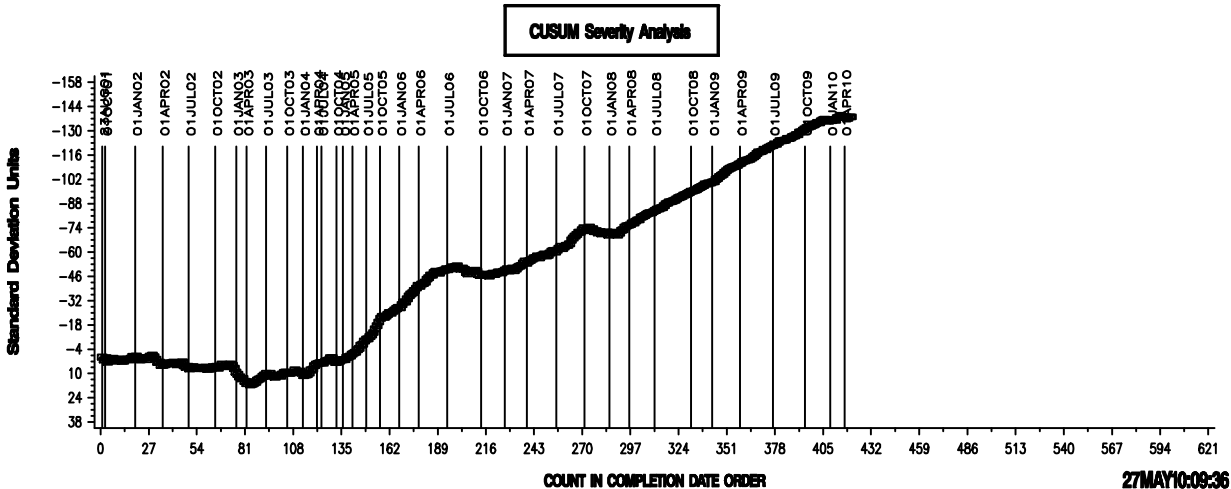
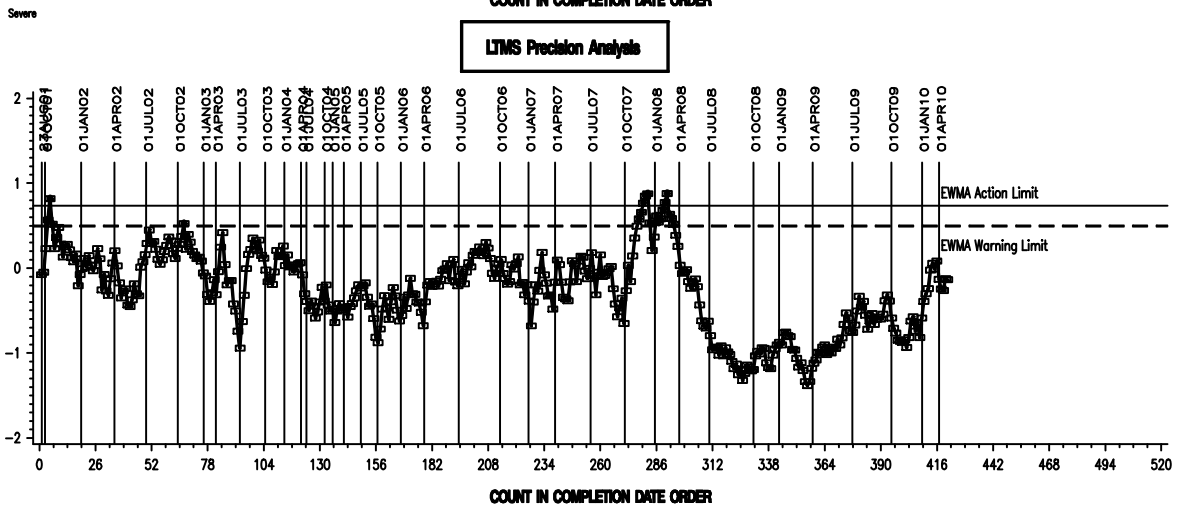
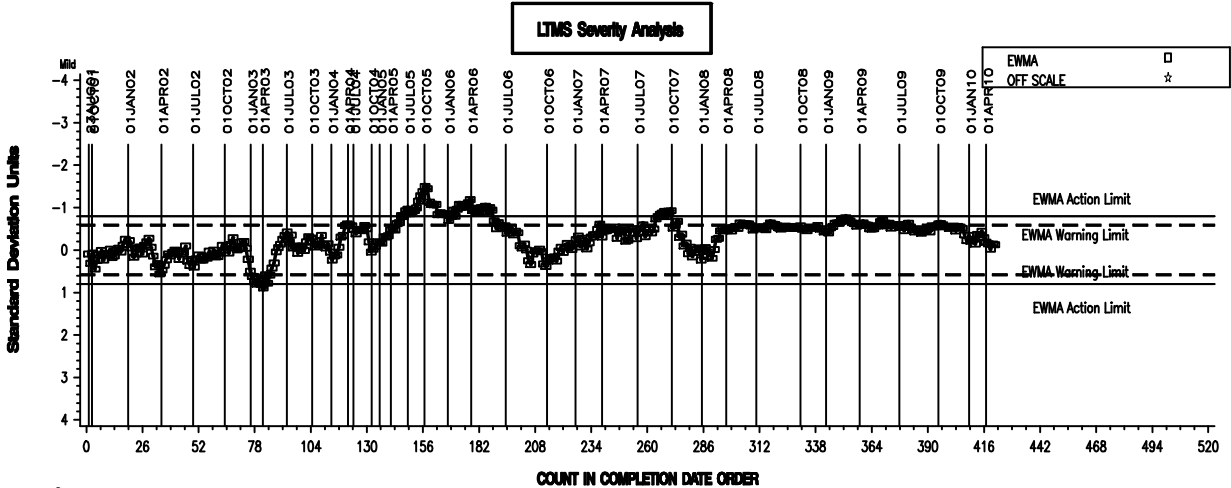
EOEC - VAMAC INDUSTRY OPERATIONALLY VALID DATA

REFERENCE VAMAC G TENSILE STRENGTH CHANGE AVERAGE



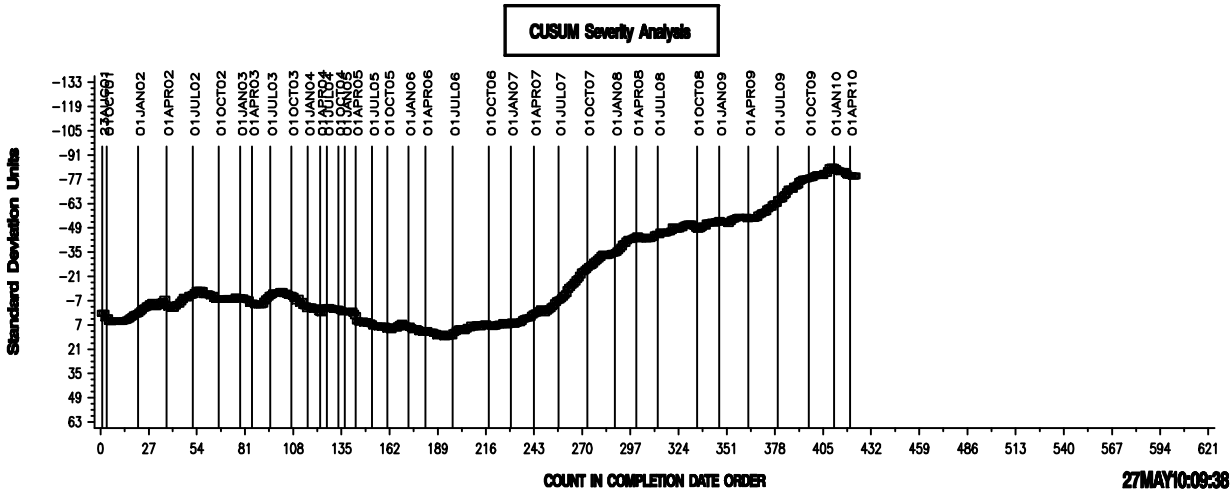
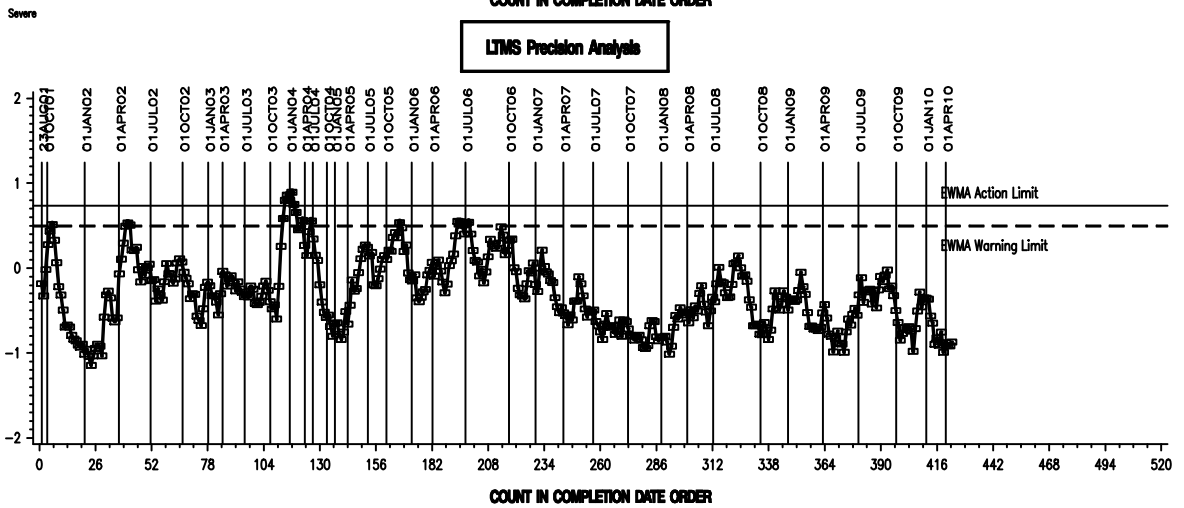
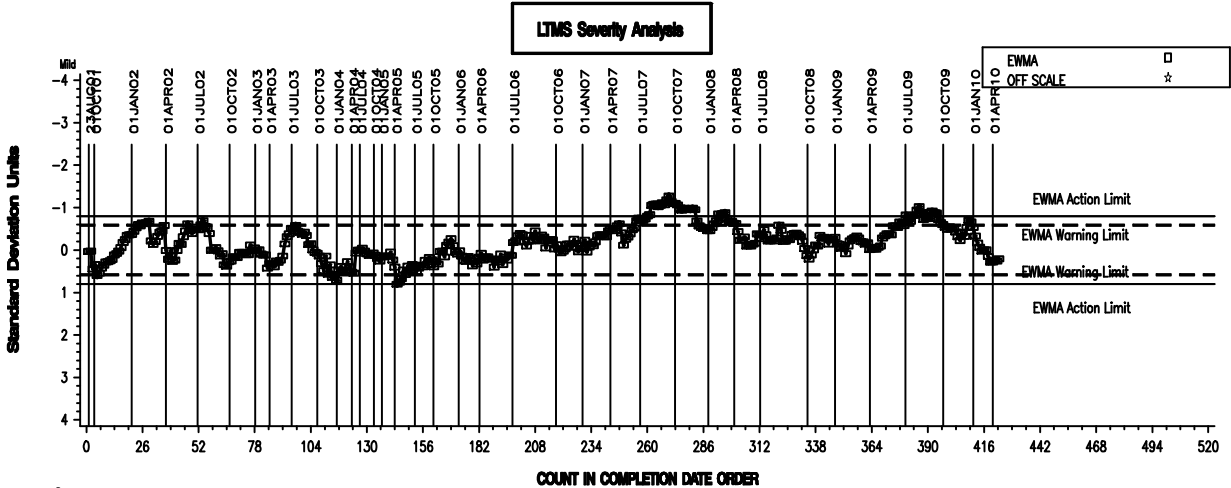
EOEC – FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

FLUOROELASTOMER ELONGATION CHANGE AVG.



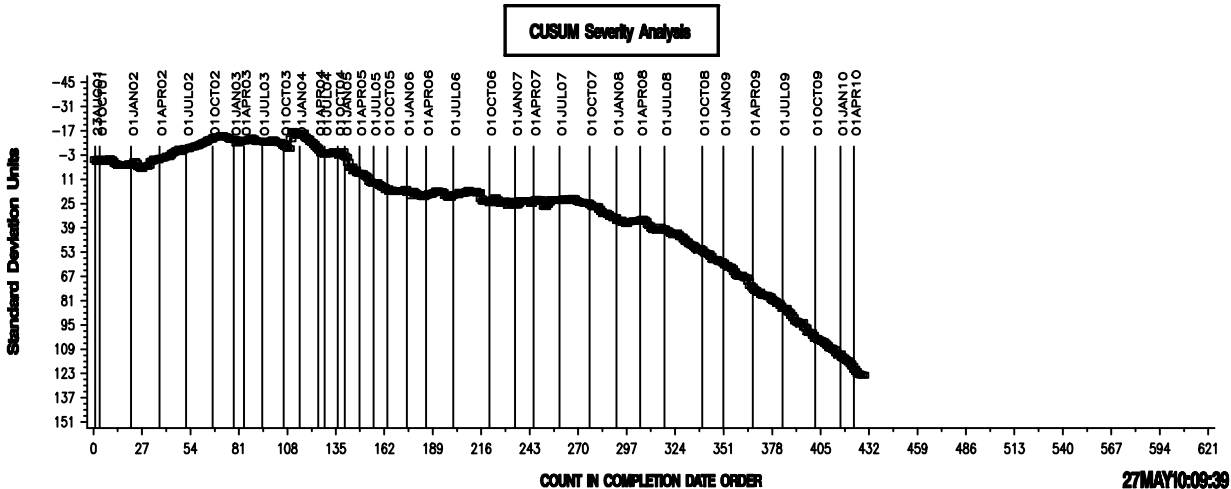
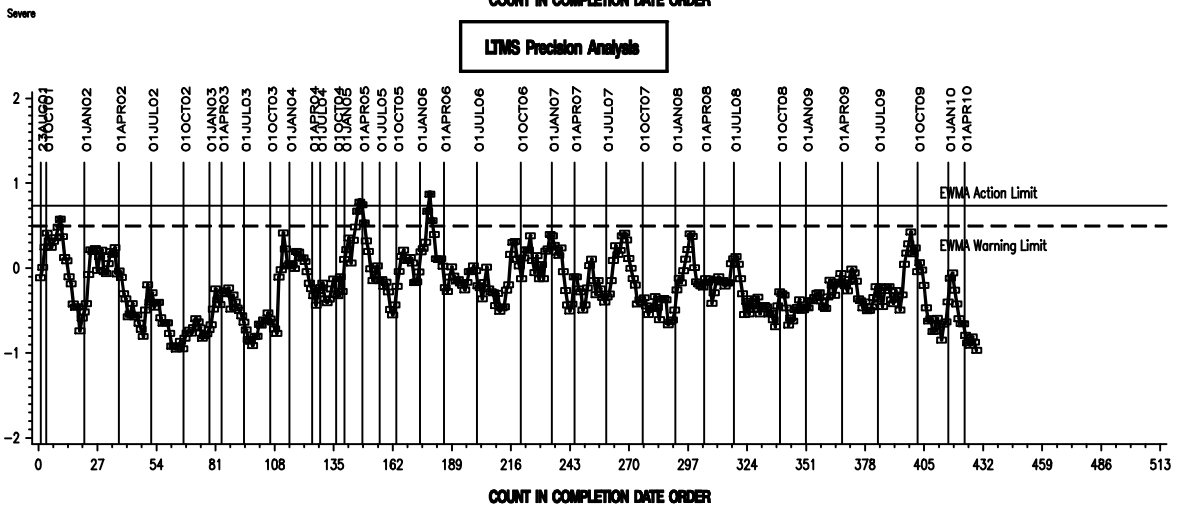
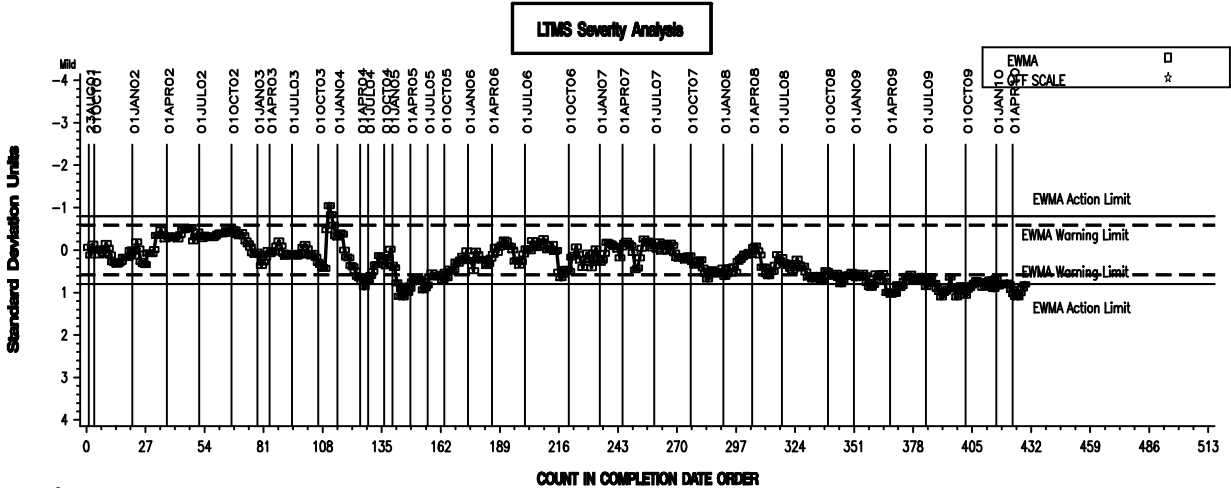
EOEC - NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE ELONGATION CHANGE AVERAGE



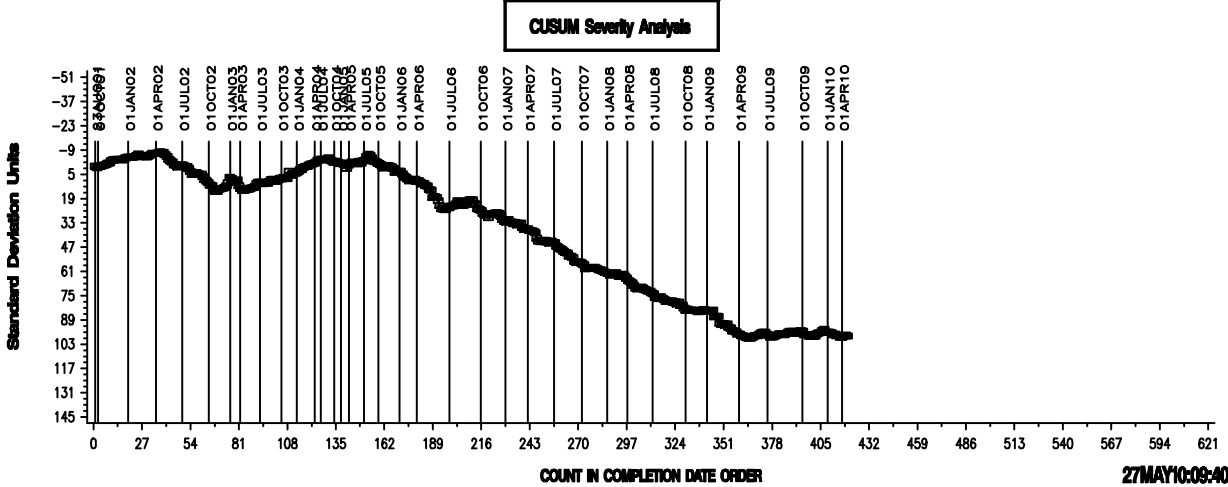
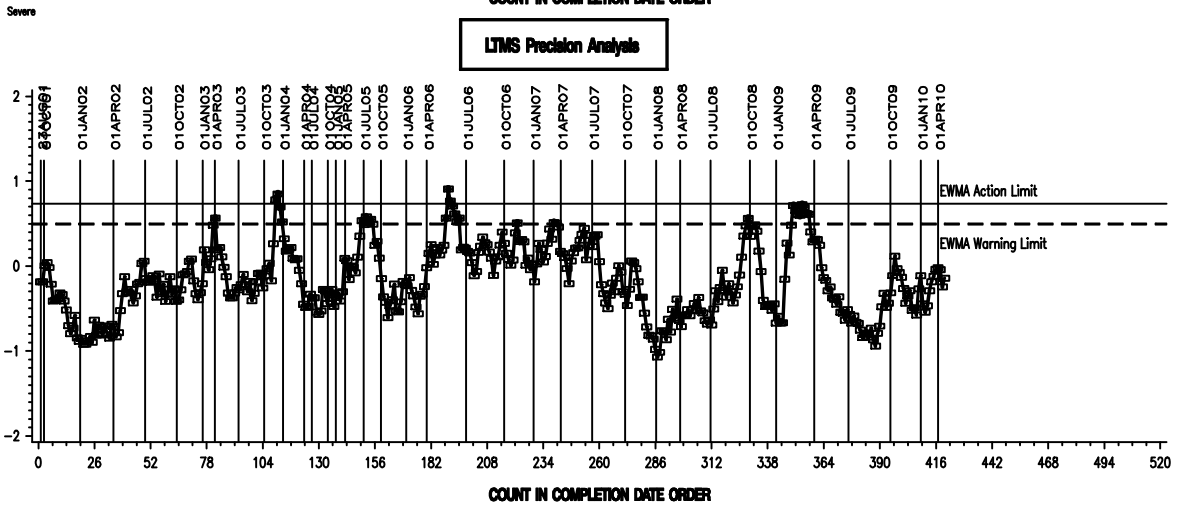
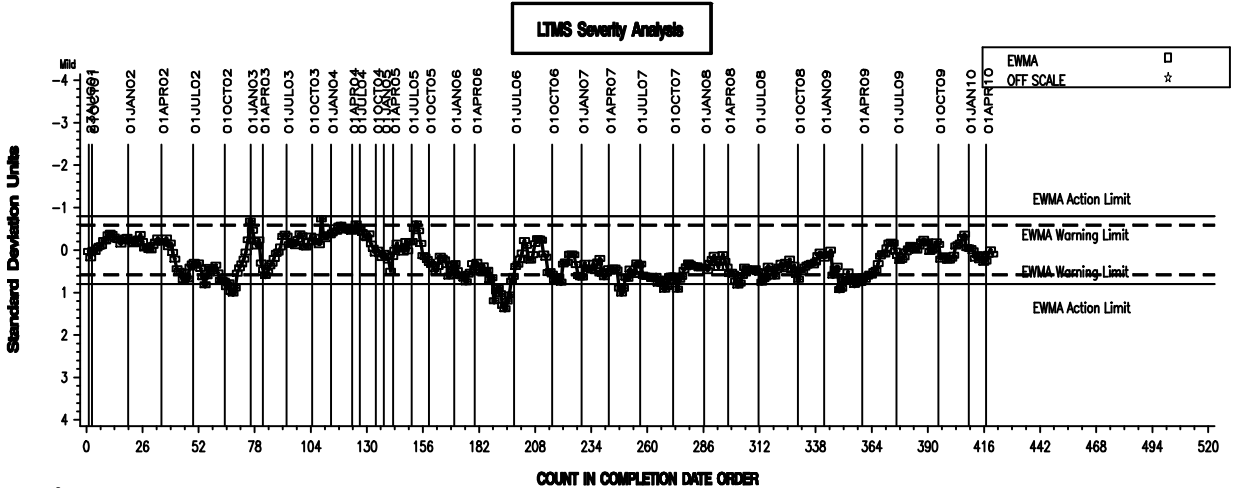
EOEC - POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE POLYACRYLATE ELONGATION CHANGE AVERAGE



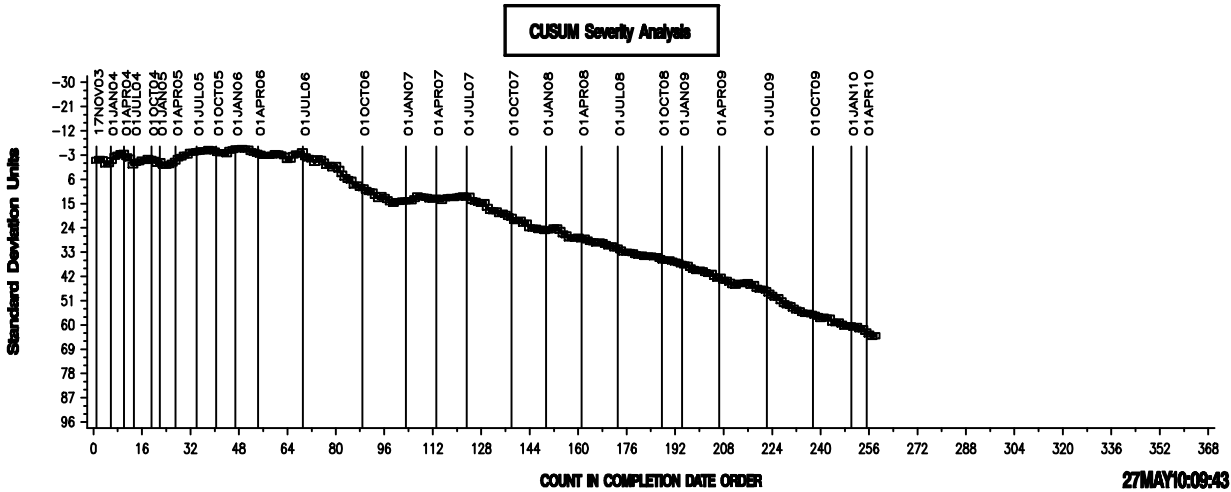
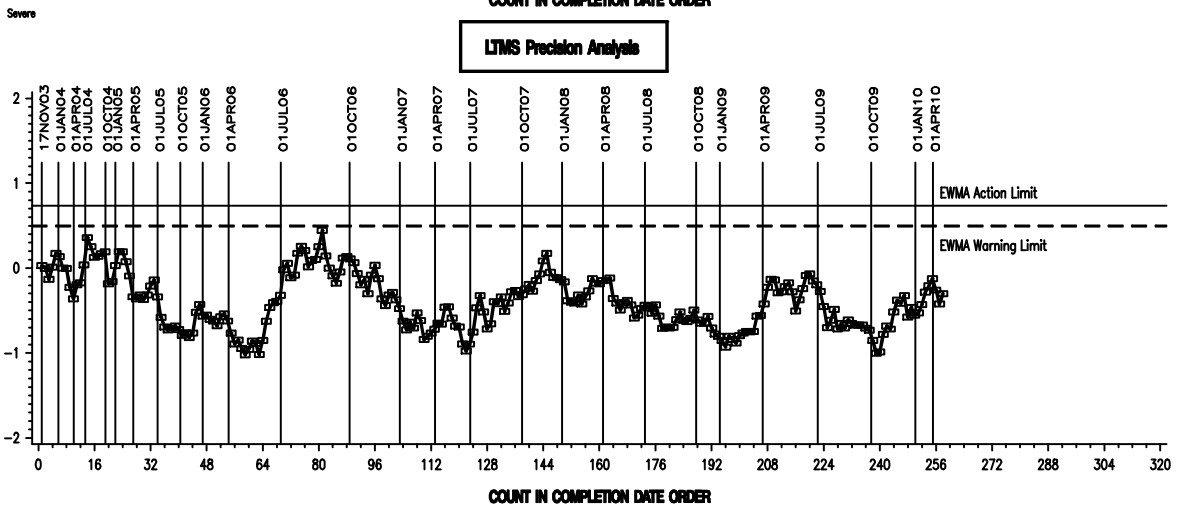
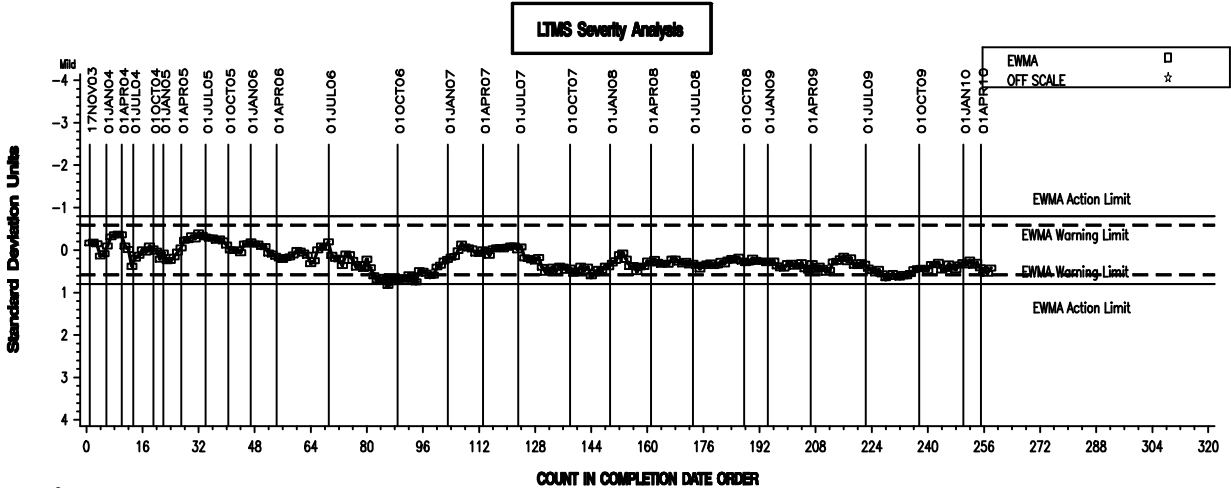
EOEC - SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON ELONGATION CHANGE AVERAGE



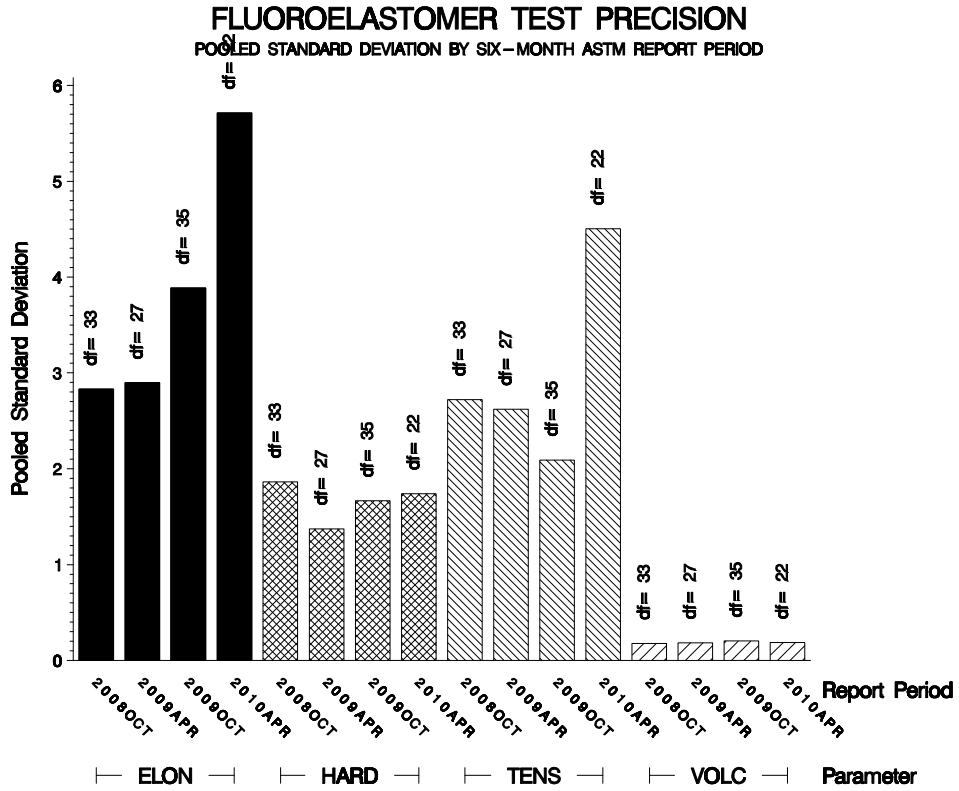
EOEC – VAMAC INDUSTRY OPERATIONALLY VALID DATA

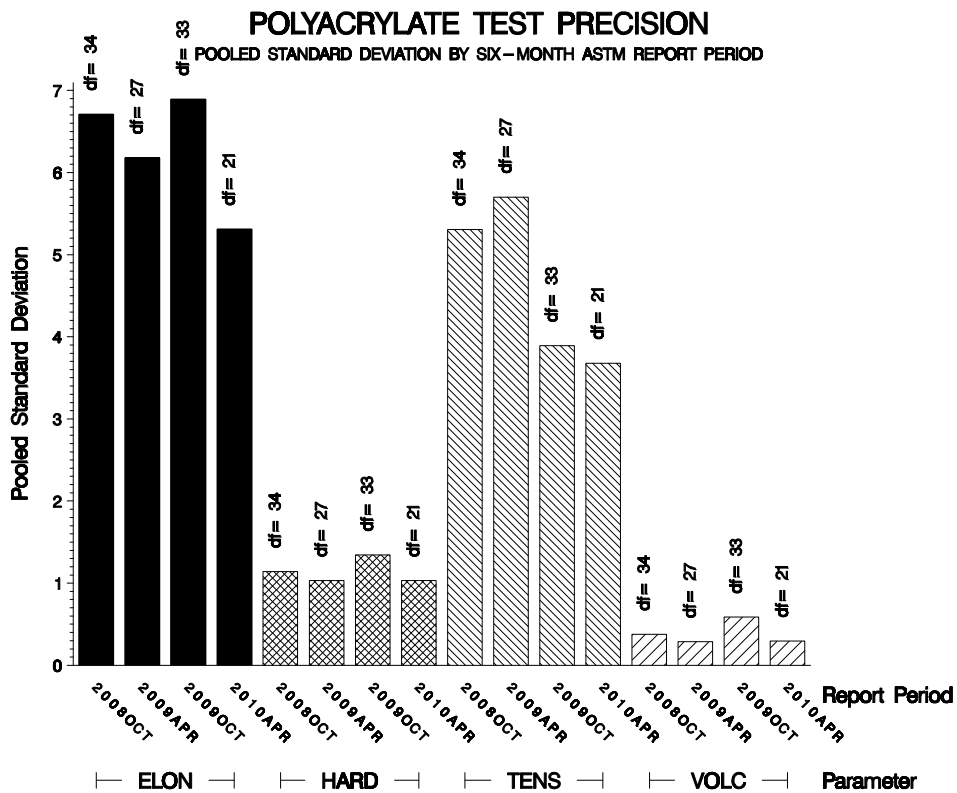
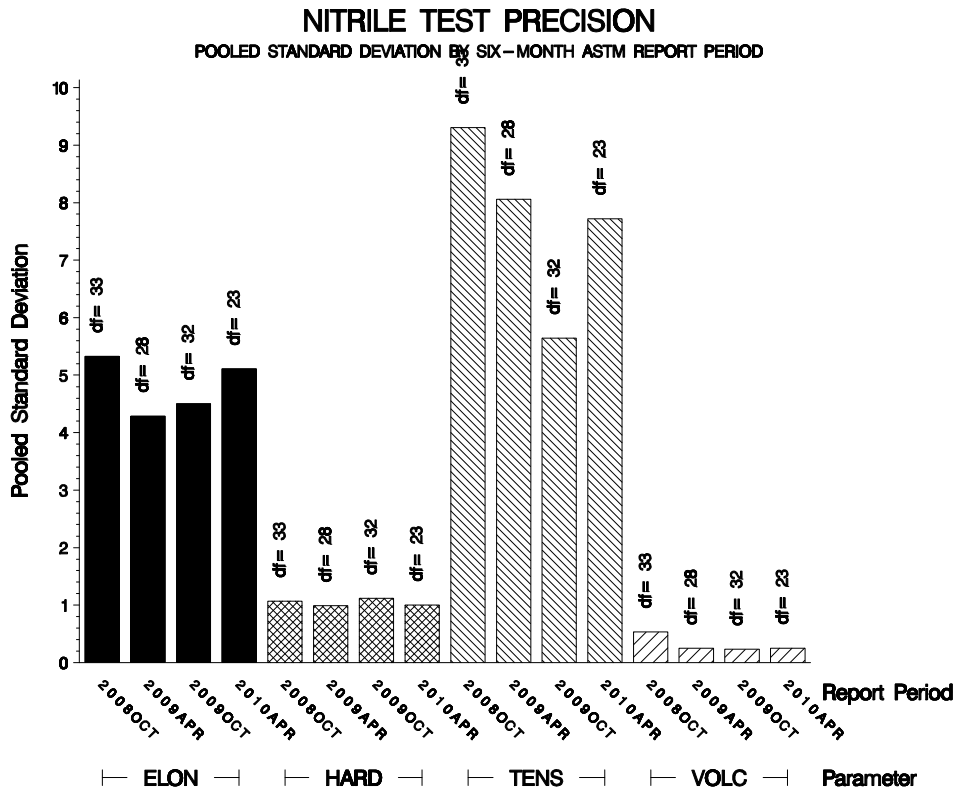
REFERENCE VAMAC G ELONGATION CHANGE AVERAGE

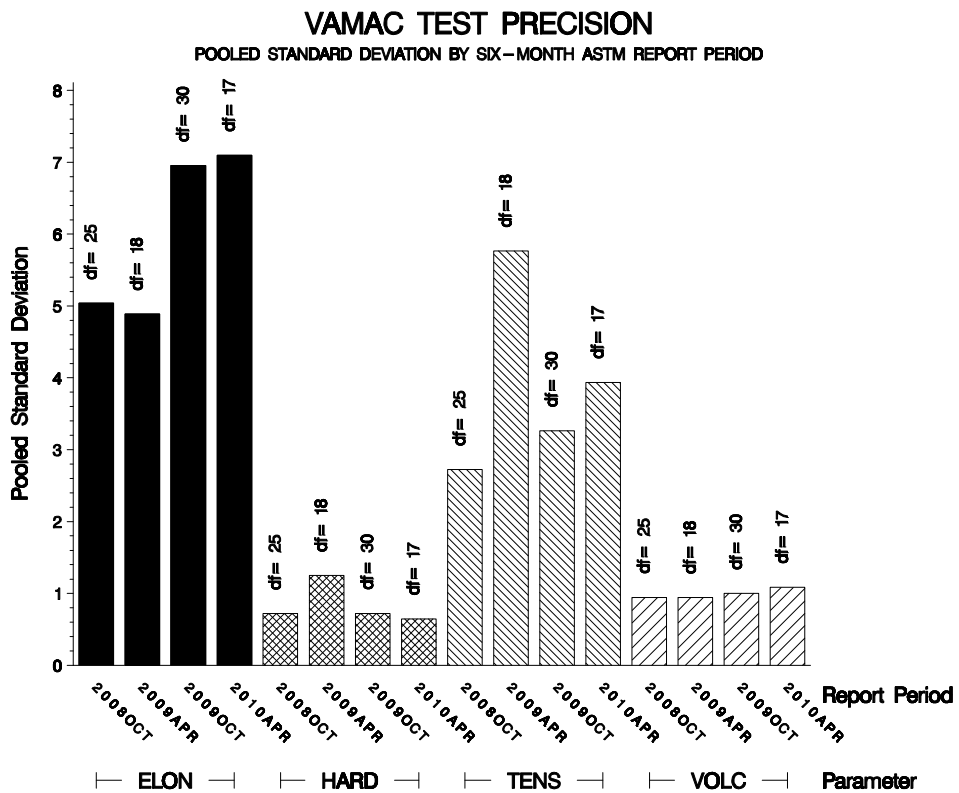
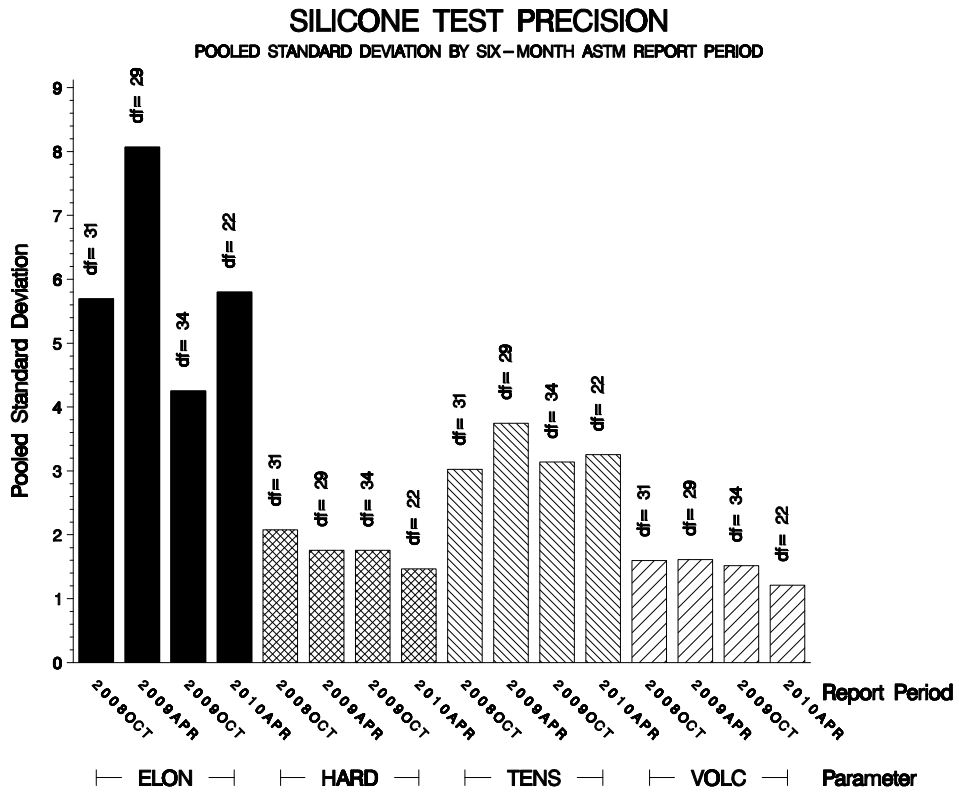


POOLED S:

Shown below are bar charts comparing the pooled s values for the EOEC test parameters over the last four report periods.







STATUS OF REFERENCE OIL SUPPLY:

At the end of this report period, the testing oil supply stood as outlined in the following table:

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
1006-1	100	11402	2260
Total	100	11402	2260

Be aware that this table presumes that all of each of these oils is dedicated to the EOEC test area. This is not the case, as oil 1006-1 is also used in several other test areas.

INFORMATION LETTERS:

No Information Letters were issued this period.

SUMMARY

**Summary of Severity
as Measured by LTMS Control Charting**

Elastomer	VOLC	HARD	TENS	ELON
Fluoroelastomer	Within limits	Within limits	Within limits	Within limits
Nitrile	Severe	Within limits	Within limits	Within limits
Polyacrylate	Severe	Within limits	Severe	Severe
Silicone	Severe	Within limits	Mild	Within limits
VAMAC	Severe	Mild	Severe	Within limits

**Summary of Precision
as Measured by LTMS Control Charting**

Elastomer	VOLC	HARD	TENS	ELON
Fluoroelastomer	Warning	Within limits	Within limits	Within limits
Nitrile	Within limits	Within limits	Within limits	Within limits
Polyacrylate	Within limits	Within limits	Within limits	Within limits
Silicone	Within limits	Within limits	Within limits	Within limits
VAMAC	Within limits	Within limits	Within limits	Within limits

MTK/mtk/astm0410.doc/mem10-024.mtk.doc

c: F. M. Farber
J. A. Clark
EOEC Surveillance Panel
<ftp://ftp.astmtmc.cmu.edu/docs/bench/ldeoc/semiannualreports/ldeoc-04-2010.pdf>

Distribution: email