



A Program of ASTM International

Test Monitoring Center

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ASTM D02.B2 Semi-Annual Report Heavy Duty Reference Oil Testing

October 2014

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Heavy Duty Testing

Executive Summary

} Reference Oils

- 1005
 - Reblend of 1005-4 received and expected to be ready before new year

} 1P Liners lack oil control

- New date code liners lose oil control mid test. Acceptable part supply is nearly exhausted

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Calibrated Labs and Stands*

Test	Labs	Stands
1K	3	3
1N	4	9
1M-PC	0	0
1P	3	3
1R	0	0
C13	2	2
ISB	3	6
ISM	5	8
EOAT	1	1
RFWT	1	1
T-8/E	2	2
T-11	4	7
T-12	4	9
T-12A	4	10

*As of 09/30/2014

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1 K Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	2
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	0
Total		2

1 K Failed Tests

Failed Parameter	Number of Tests
SEV ACW	0
MILD CLW, SEV PB	0
MILD CLW, SEV PB	0
MILD CLW, SEV PB, SEV TRWL	0
Total	0

1 K Lost Tests*

Status	Cause	#
Invalid	No lost tests	
Total		0

*Invalid and aborted tests

1 K Test Severity

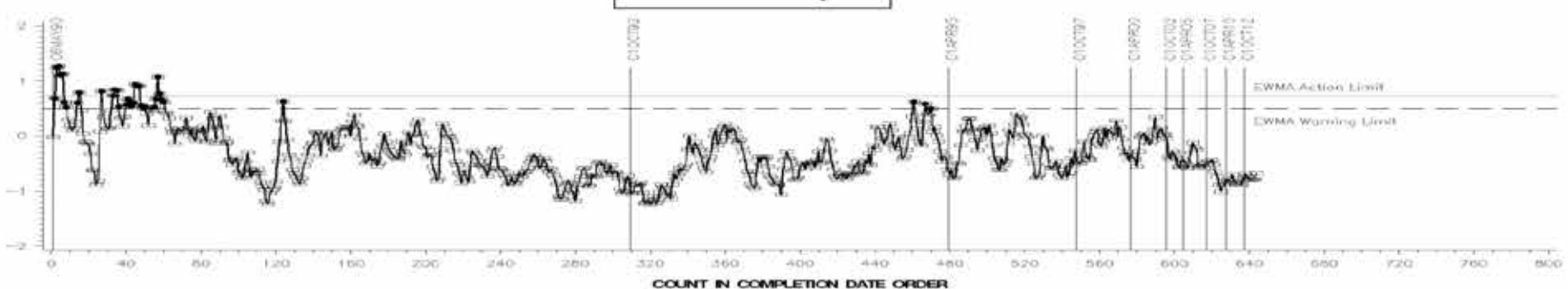
- } WDK, TLHC, ETOC are in control.
- } WDK and TLHC
 - Within Chart Limits but near warning limit.
 - Long-term mild trend continuing
- } TGF and BSOC in Warning Limit in the mild direction
 - Long-term mild trend continuing

Top Groove Fill

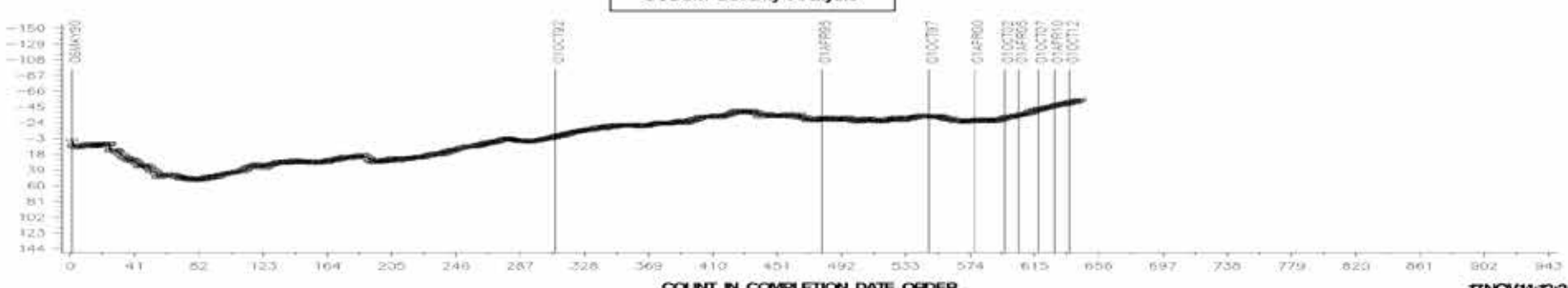
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



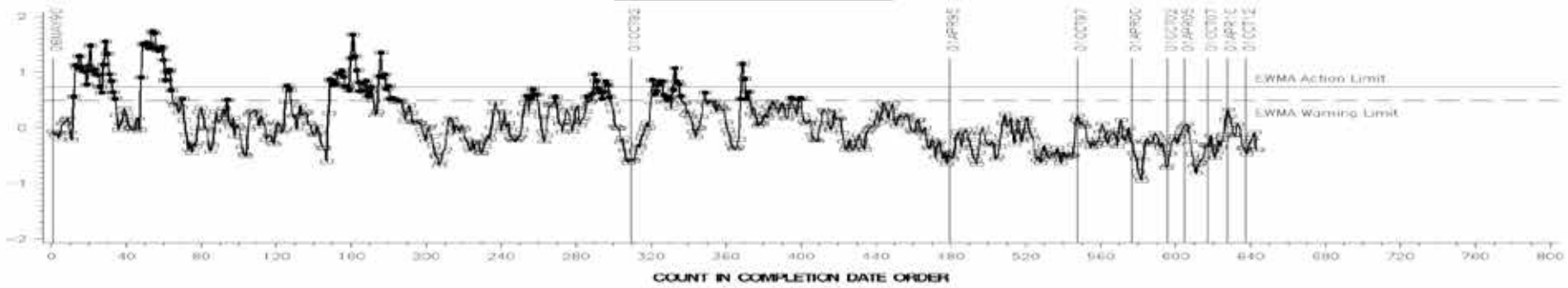
17/NOV/12:24

Weighted Total Demerits

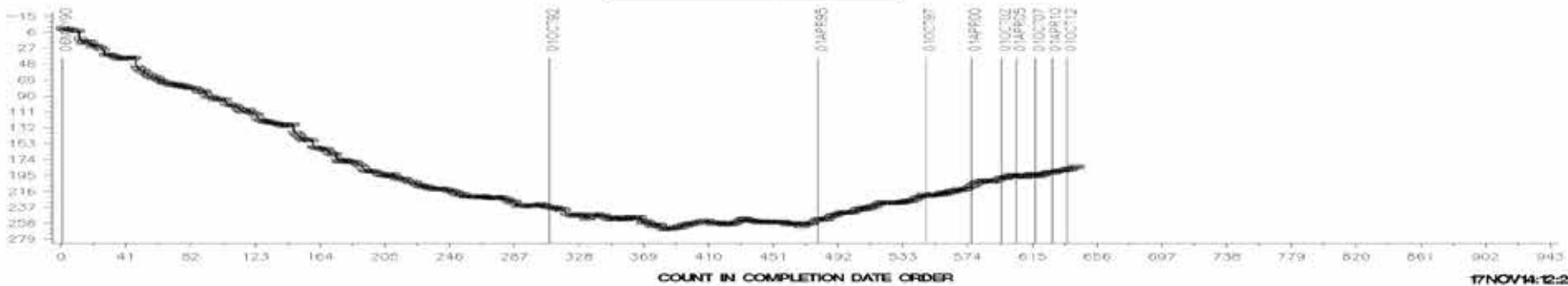
LTMS Severity Analysis



LTMS Precision Analysis



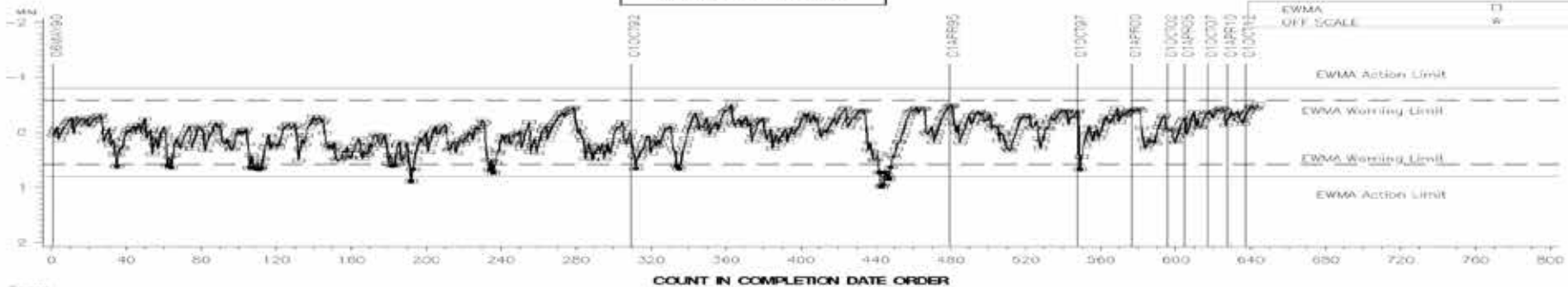
CUSUM Severity Analysis



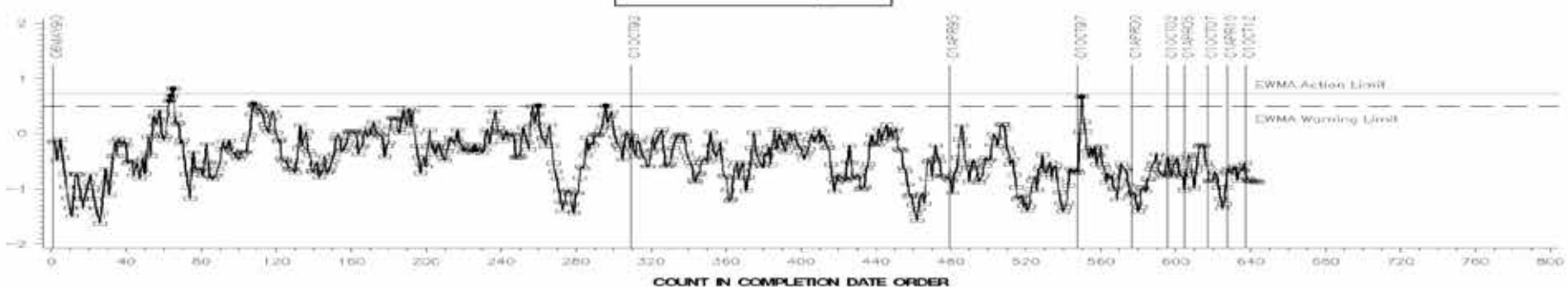
17/NOV/14:12:24

FINAL TRANSFORMED TOP LAND HEAVY CARBON

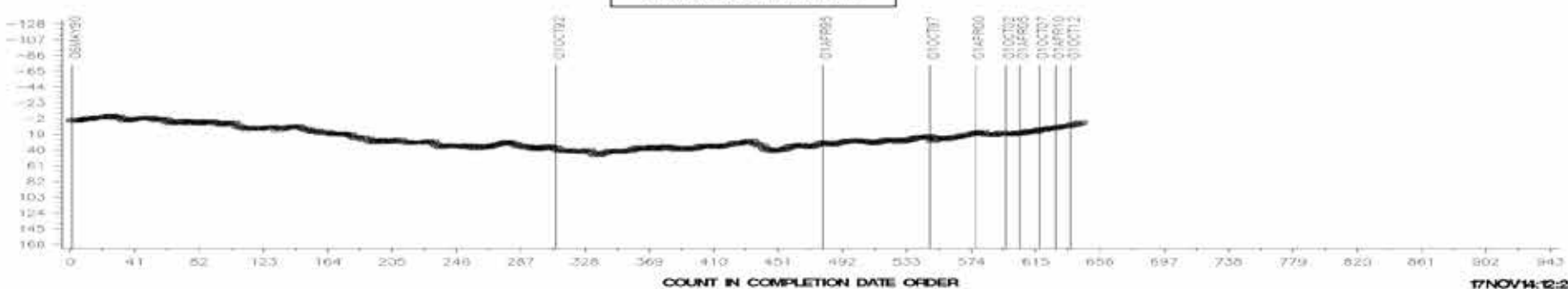
LTMS Severity Analysis



LTMS Precision Analysis



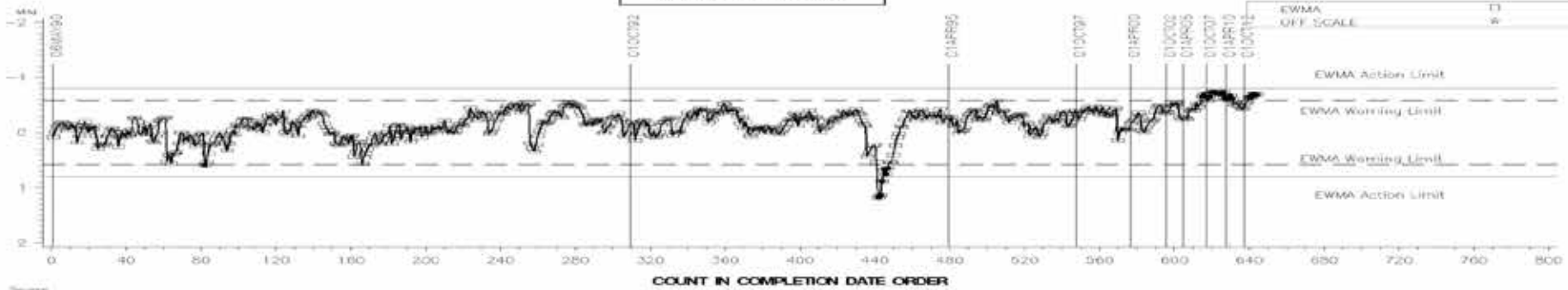
CUSUM Severity Analysis



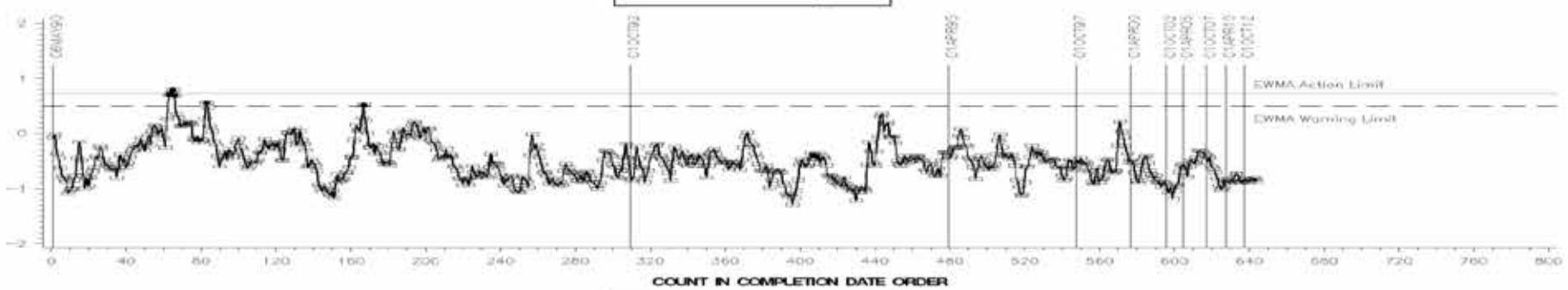
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BSOC

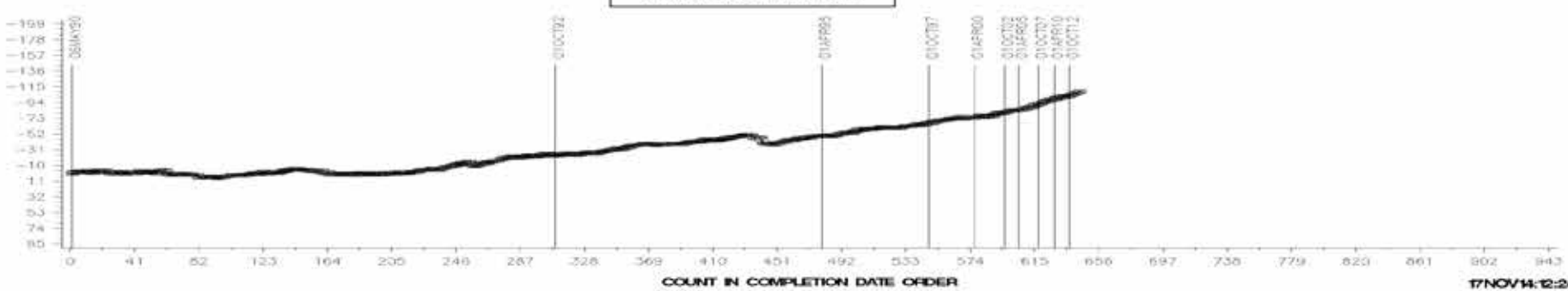
LTMS Severity Analysis



LTMS Precision Analysis



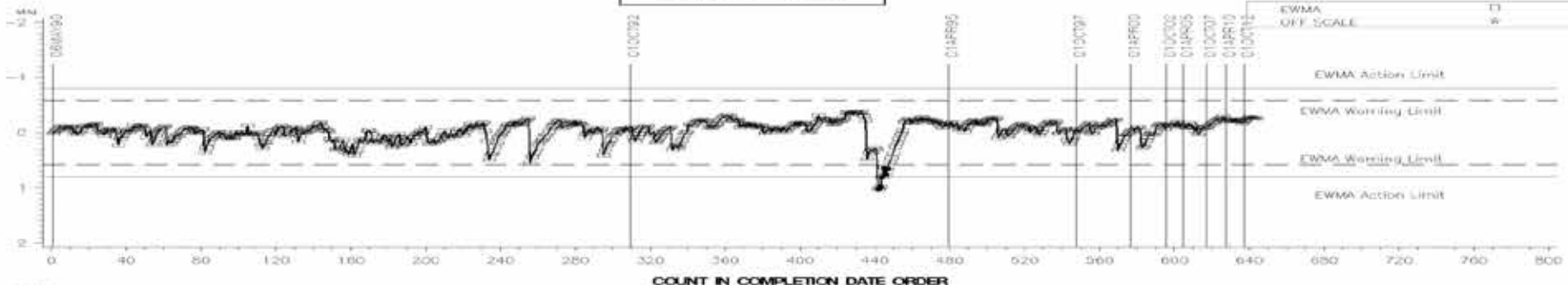
CUSUM Severity Analysis



17 NOV 14 12:24

EOTOC

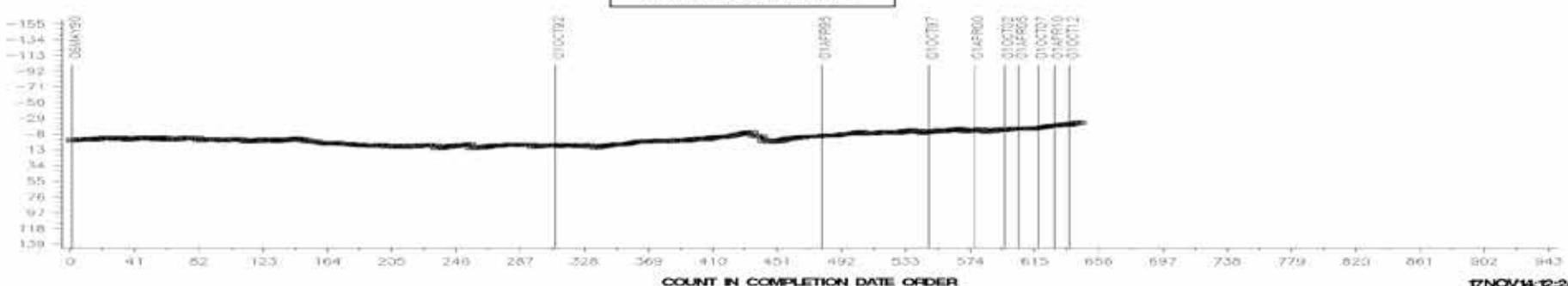
LTMS Severity Analysis



LTMS Precision Analysis

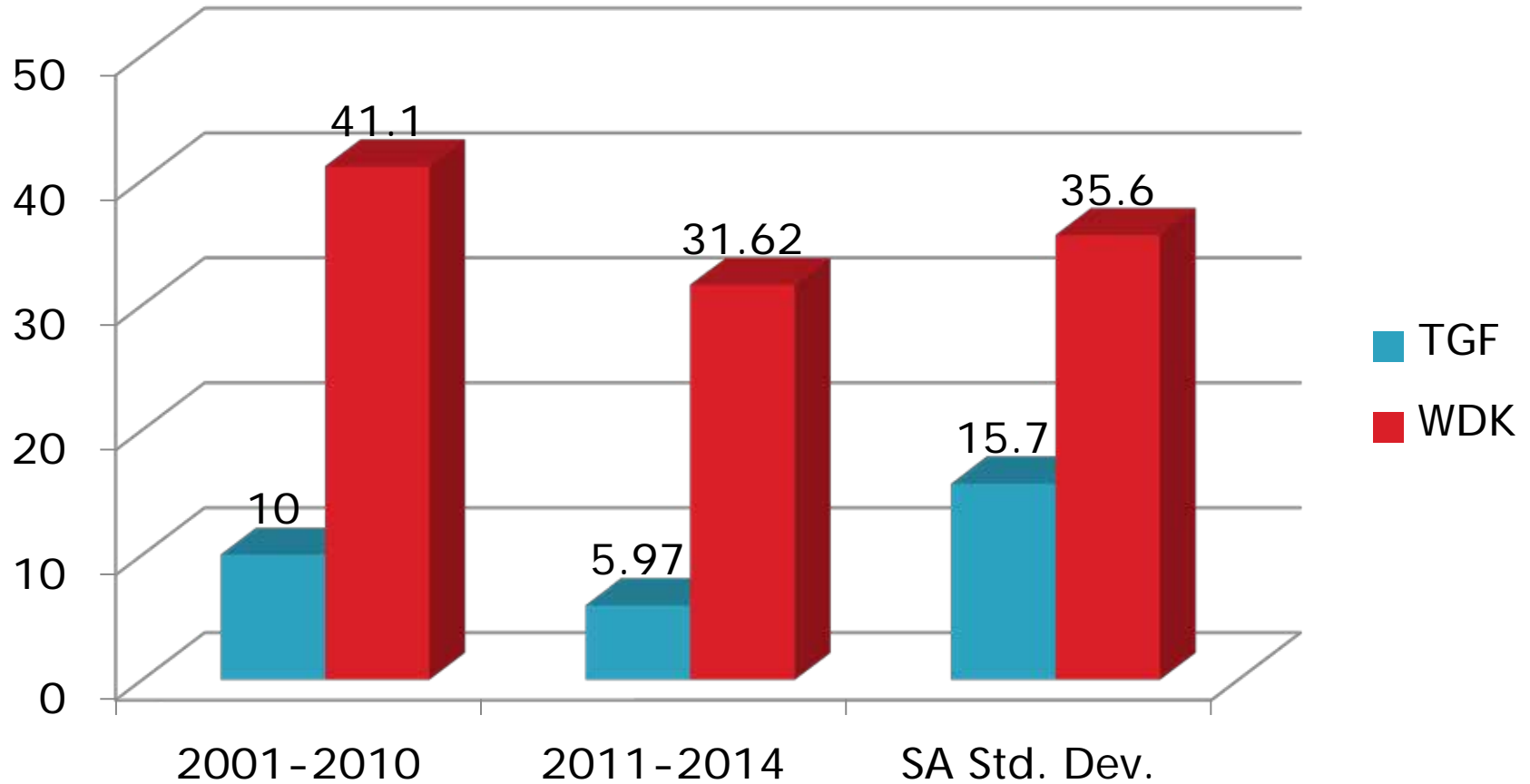


CUSUM Severity Analysis

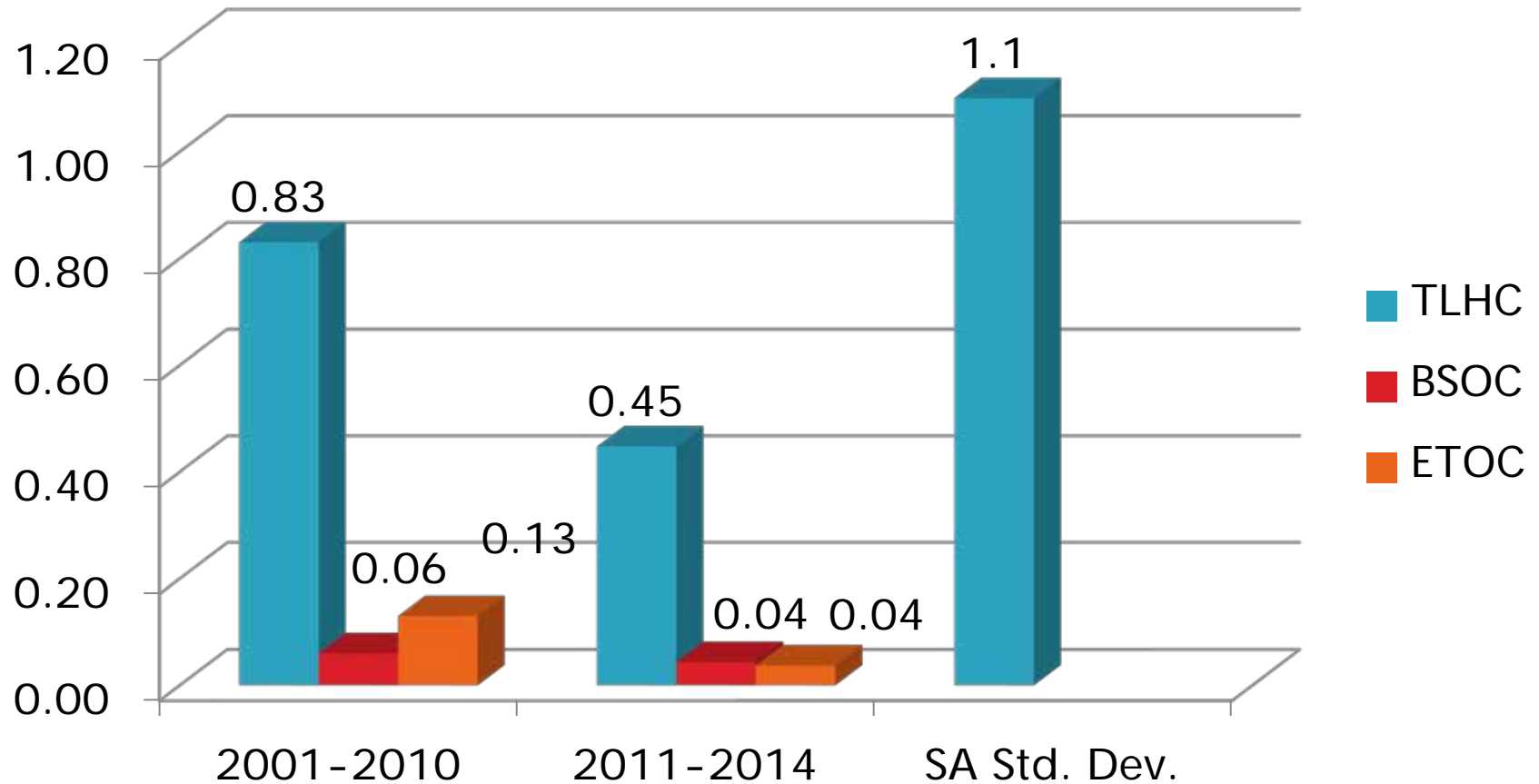


17 NOV 14 12:24

1 K Precision Estimates



1 K Precision Estimates



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1 N Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	5
Failed Calibration Test	OC	1
Operationally Invalid	LC	1
Aborted	XC	4
Total		11

1 N Failed Tests

Failed Parameter	Number of Tests
Severe Top Land Heavy Carbon	1
Total	1

1 N Lost Tests*

Status	Cause	#
Invalid	Gear train wear lead to high copper	1
Aborted	Aborted due to high Copper in oil	1
Aborted	High oil consumption	1
Aborted	High crankcase pressure	1
Aborted	Scuffed during warmup	1
Total		5

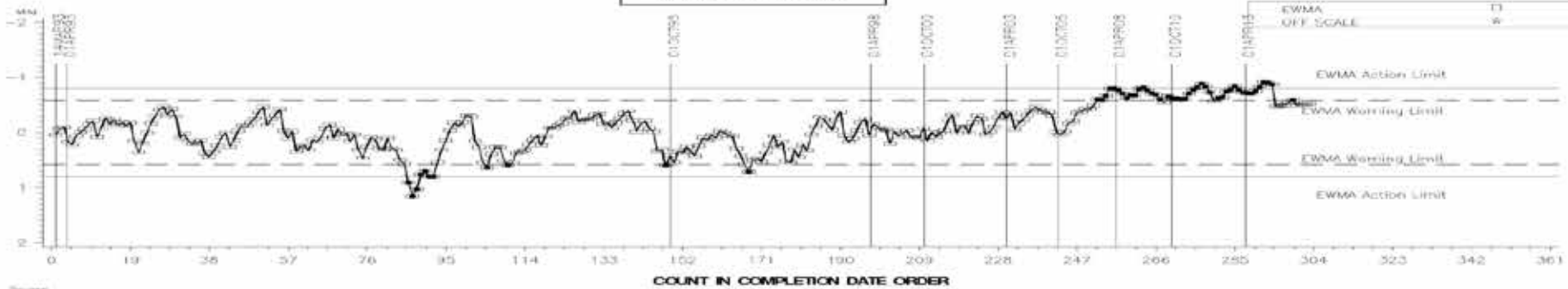
*Invalid and aborted tests

1 N Test Severity

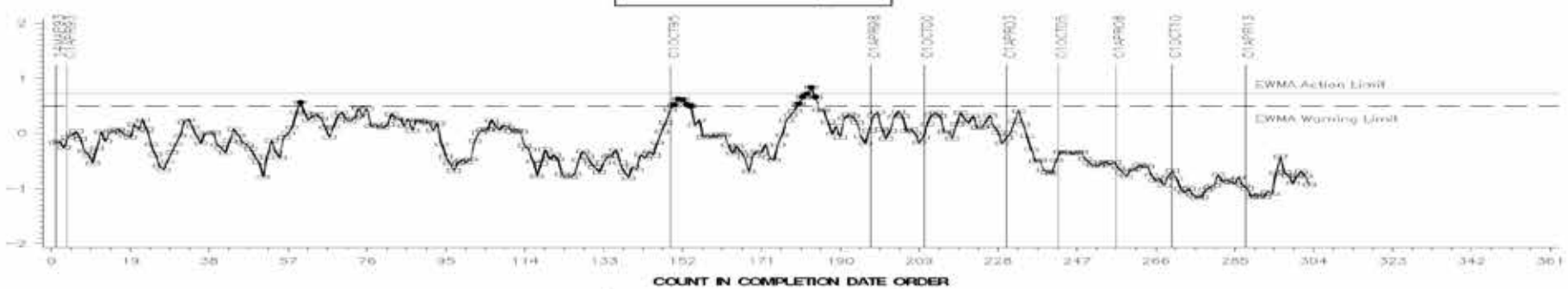
- } TLHC in action alarm
- } WDN and BSOC in warning alarm
- } TGF in control but near warning limit
- } TGF, WDN, TLHC, and BSOC trending mild
- } Severity trends are being evaluated by surveillance panel

Top Groove Fill

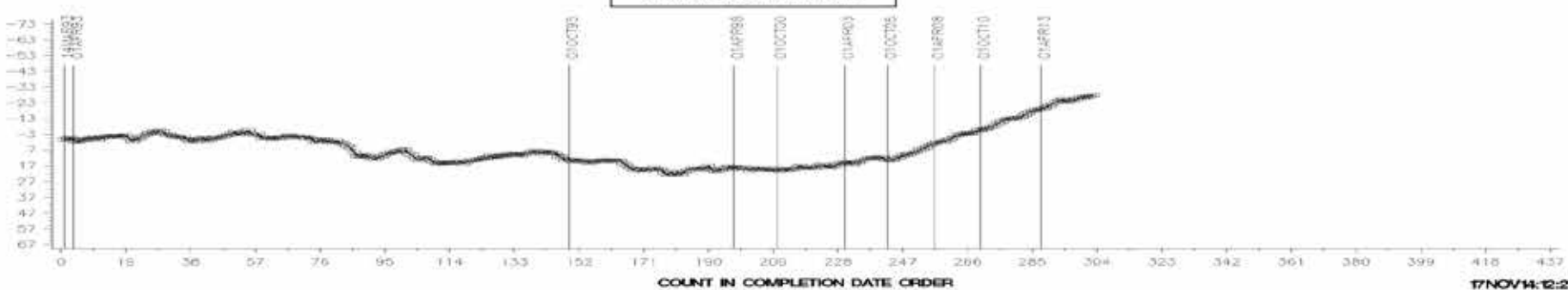
LTMS Severity Analysis



LTMS Precision Analysis



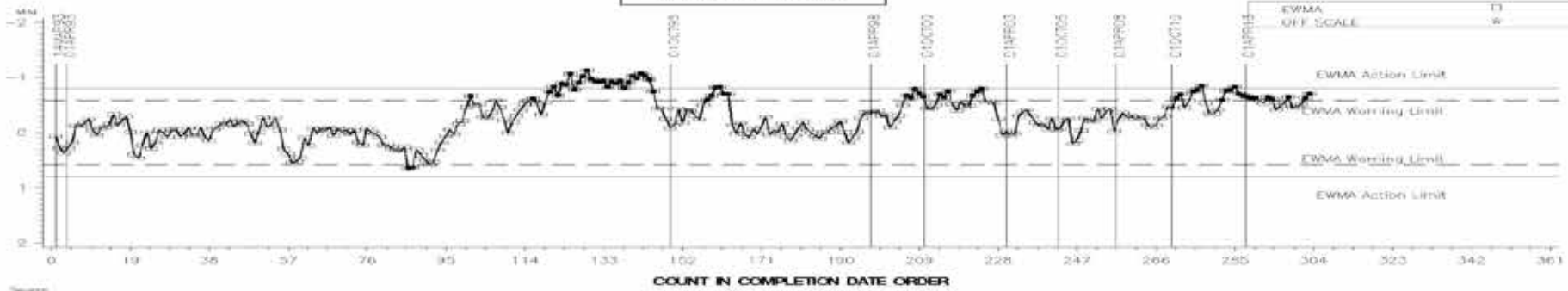
CUSUM Severity Analysis



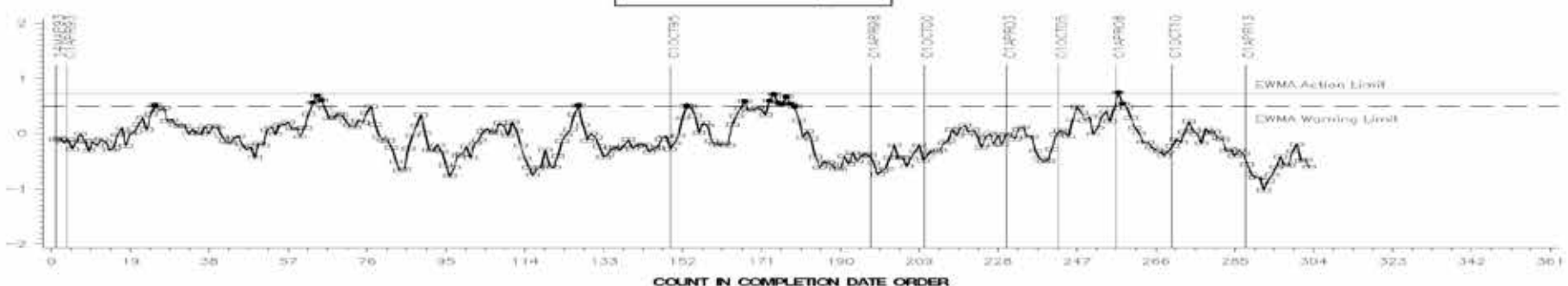
17 NOV 14 12:27

Weighted Total Demerits

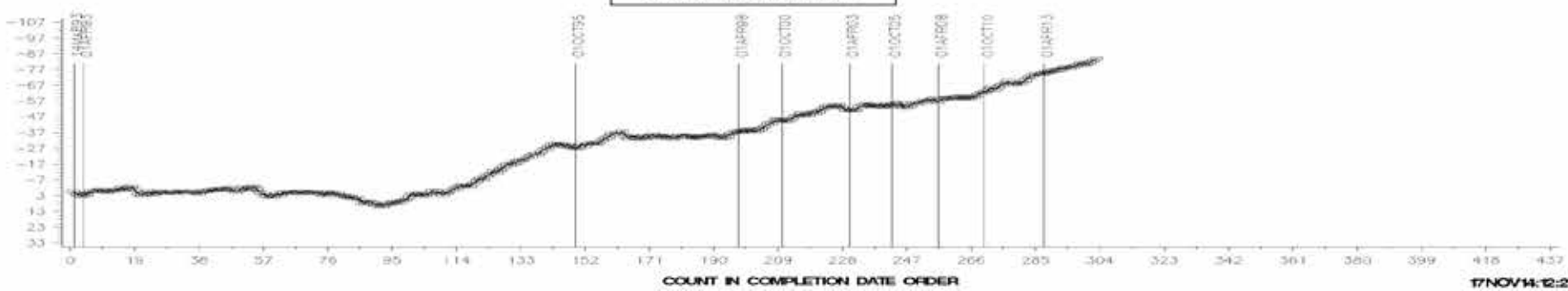
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



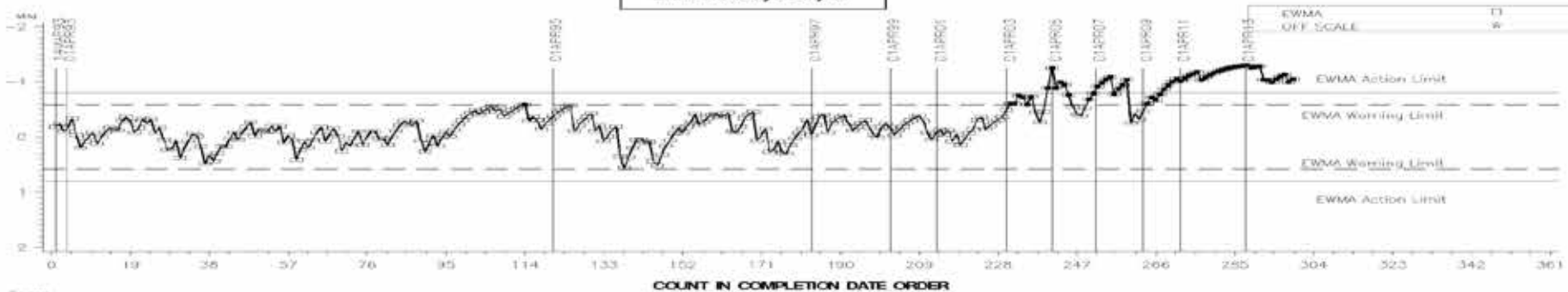
17 NOV 12:27

CATERPILLAR 1N IN INDUSTRY OPERATIONAL VALID DATA

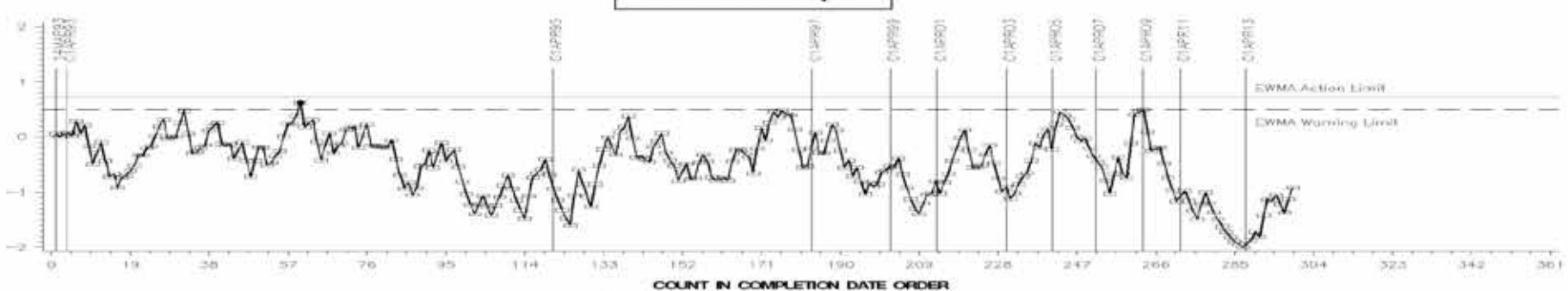
FINAL TRANS. TOP LAND HEAVY CARBON



LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



00MAY14:09:15

Test Monitoring Center

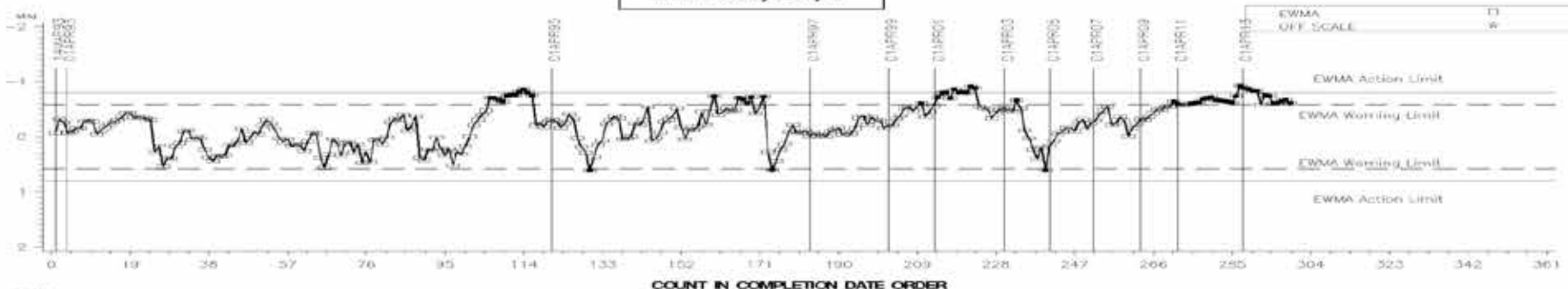
<http://astmtmc.cmu.edu>



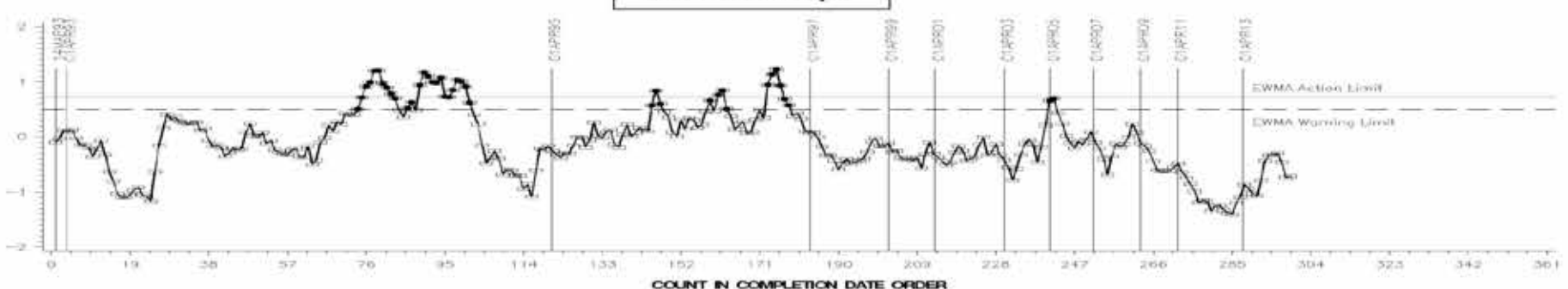
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BSOC

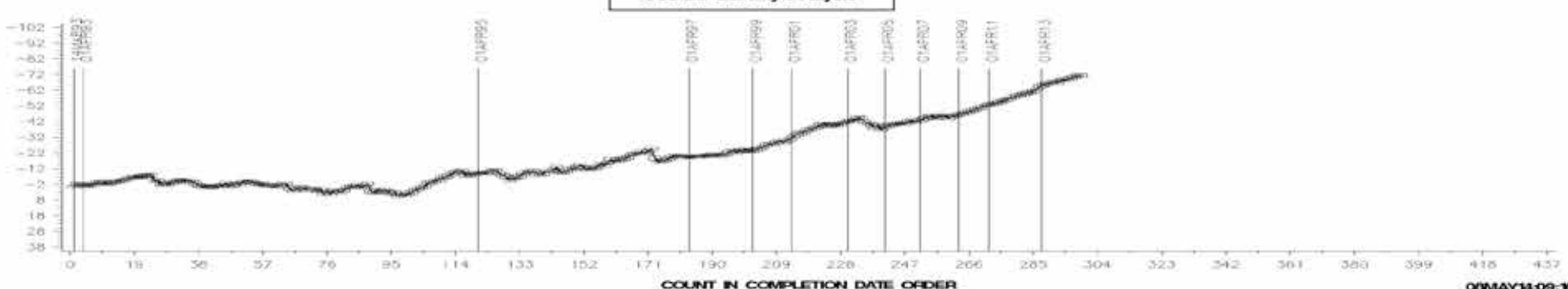
LTMS Severity Analysis



LTMS Precision Analysis

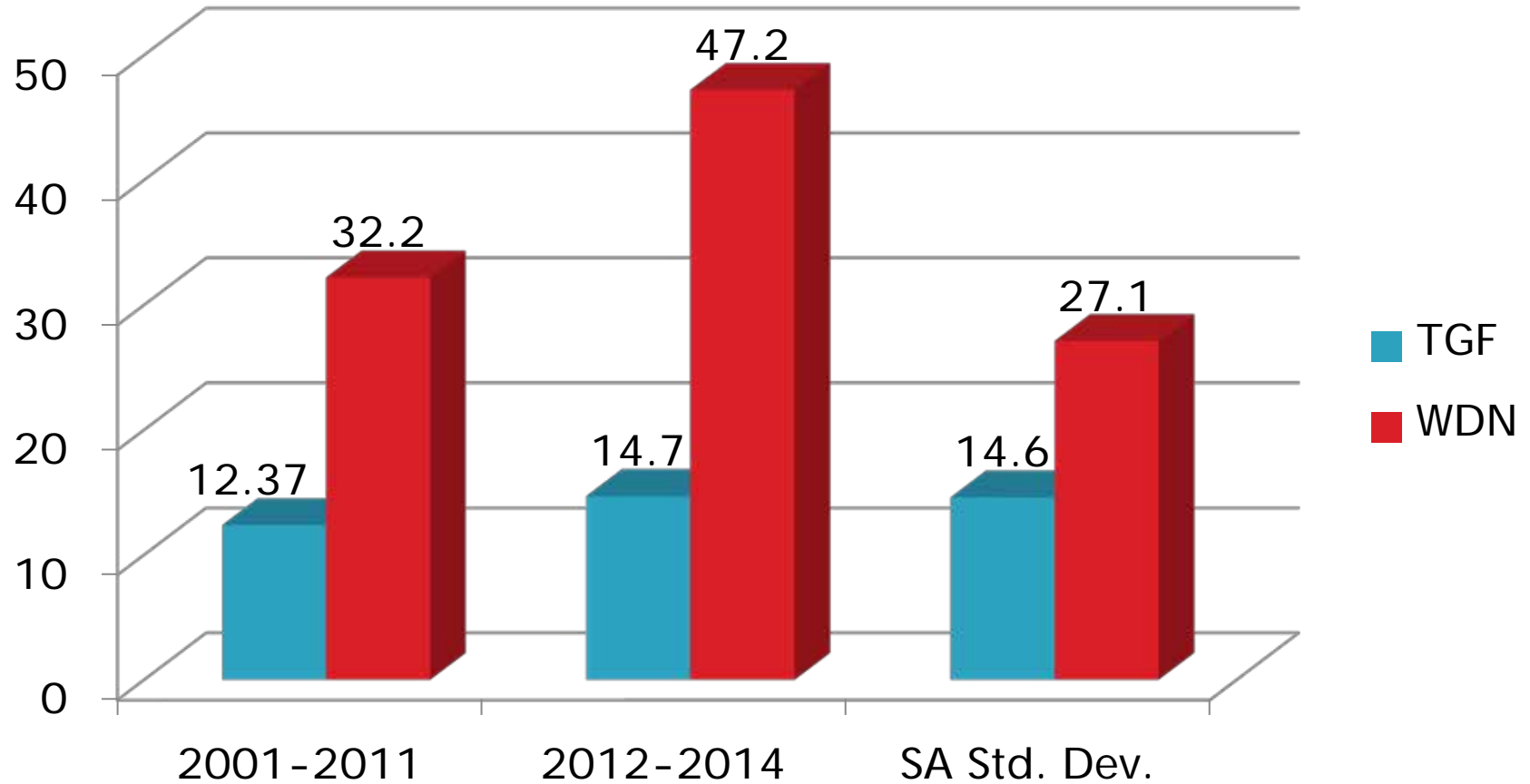


CUSUM Severity Analysis

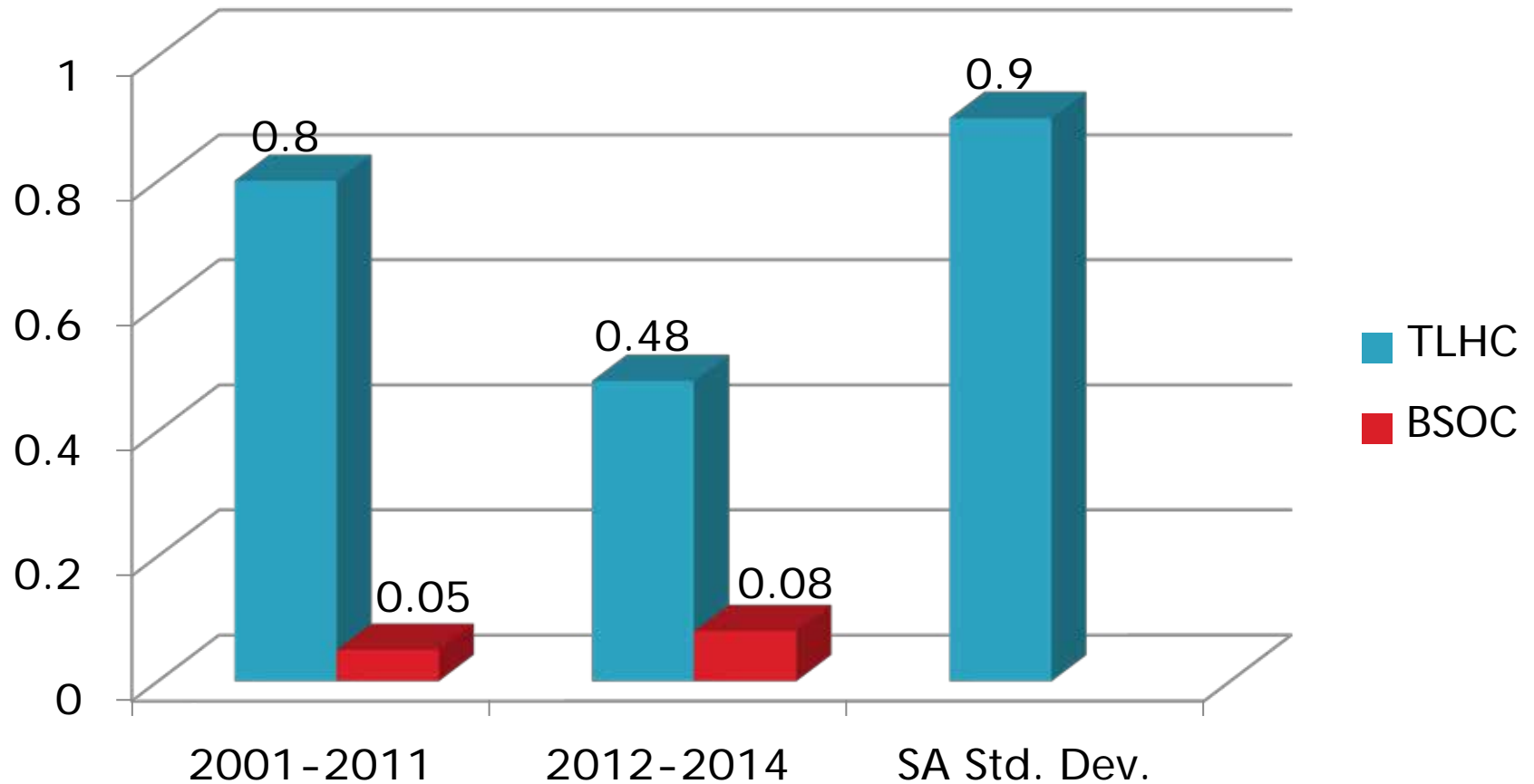


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1 N Precision Estimates



1 N Precision Estimates



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SCOTE 1M-PC

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1 M-PC Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	0
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	1
Total		2

1 M-PC Failed Tests

Failed Parameter	Number of Tests
Mild Top Groove Fill	1
Total	1

1 M-PC Lost Tests*

Status	Cause	#
Aborted	Lifter Failure	1
Total		1

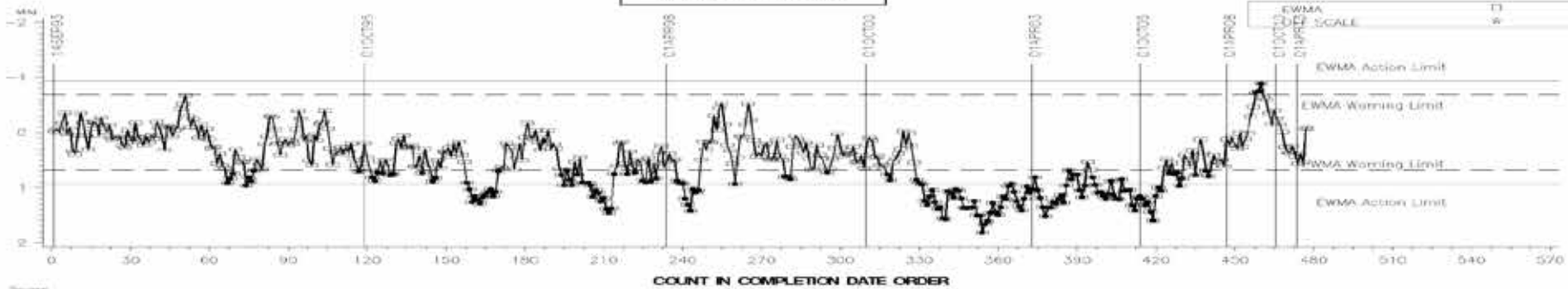
*Invalid and aborted tests

1 M-PC Test Severity

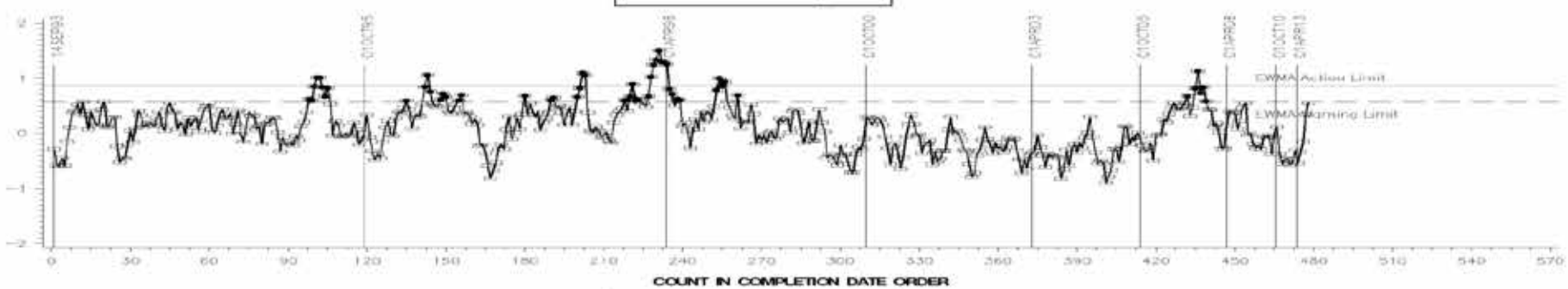
- } TGF in control but near Precision warning alarm.
- } TGF severe trend leveling off.
- } WTD in severity action alarm in mild direction.
- } WTD in precision action alarm.

FINAL TOP GROOVE FILLING

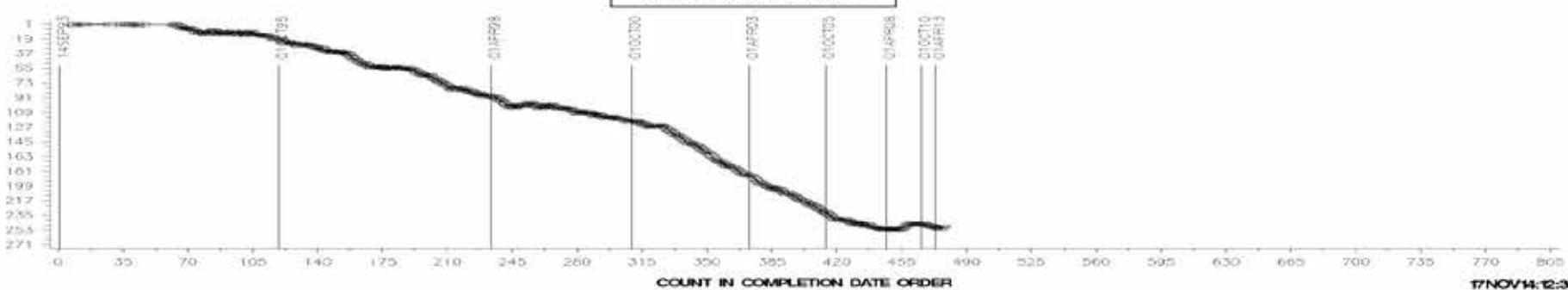
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



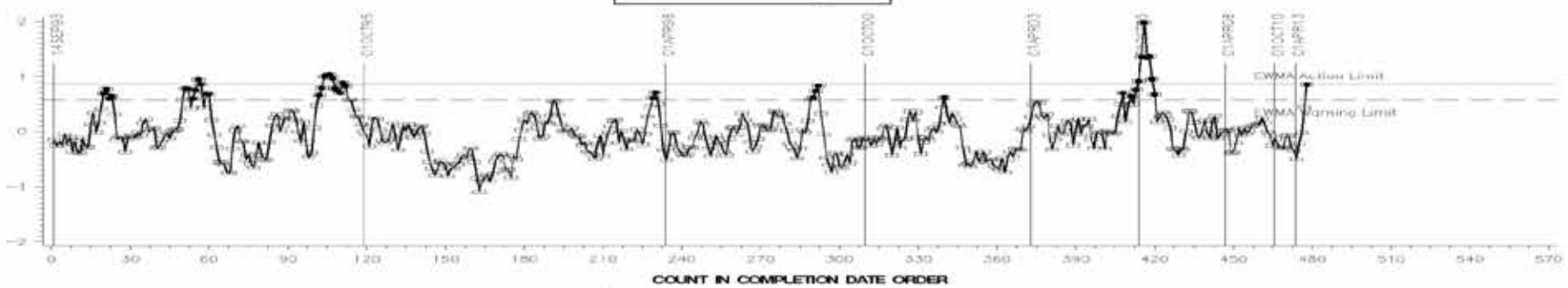
17NOV14:12:36

Weighted Total Demerits

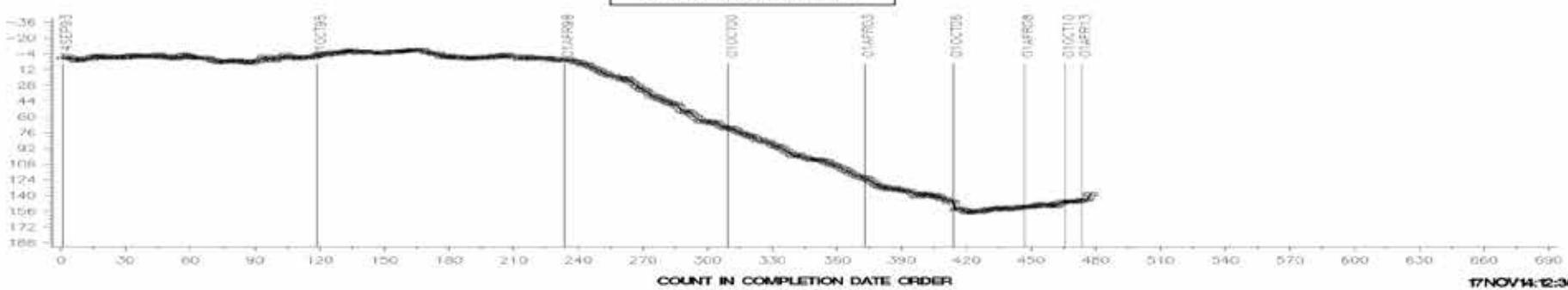
LTMS Severity Analysis



LTMS Precision Analysis

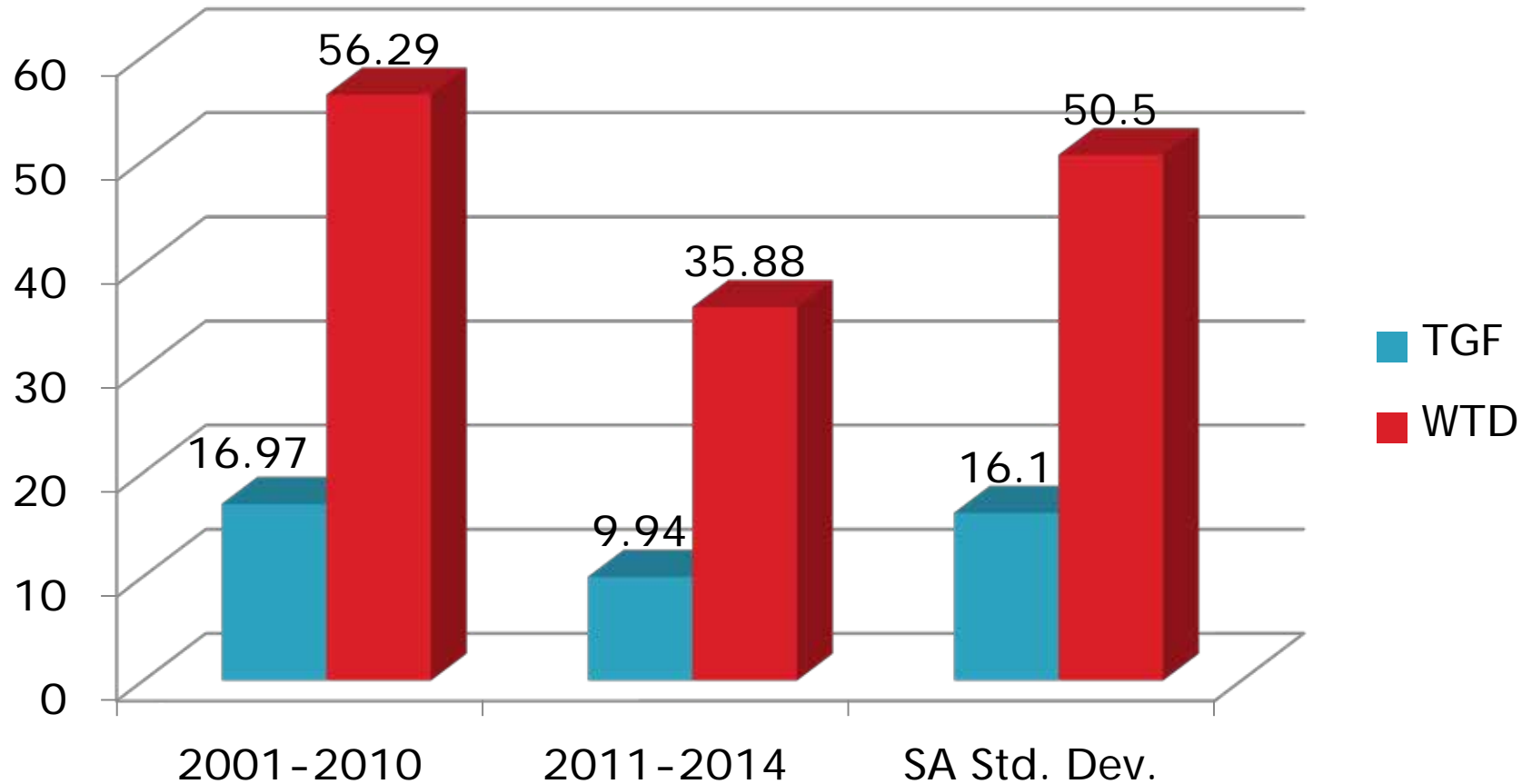


CUSUM Severity Analysis



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1 MPC Precision Estimates



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SCOTE 1 P

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1P Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	2
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	1
Total		4

1 P Failed Tests

Failed Parameter	Number of Tests
Severe oil consumption	1
Total	1

1 P Lost Tests*

Status	Cause	#
Aborted	High oil consumption due to liner scratch	1
Total		1

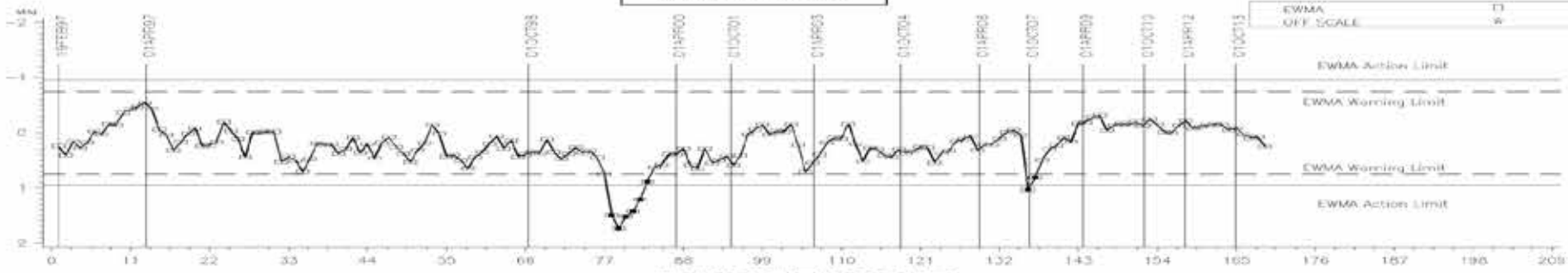
*Invalid and aborted tests

1 P Test Severity

- } EOTOC is in warning limit in severe direction.
- } OC, TGC, TLC and WD are in control.
 - OC near warning limit in severe direction.
- } Panel taking steps to address hardware issues with oil consumption control.

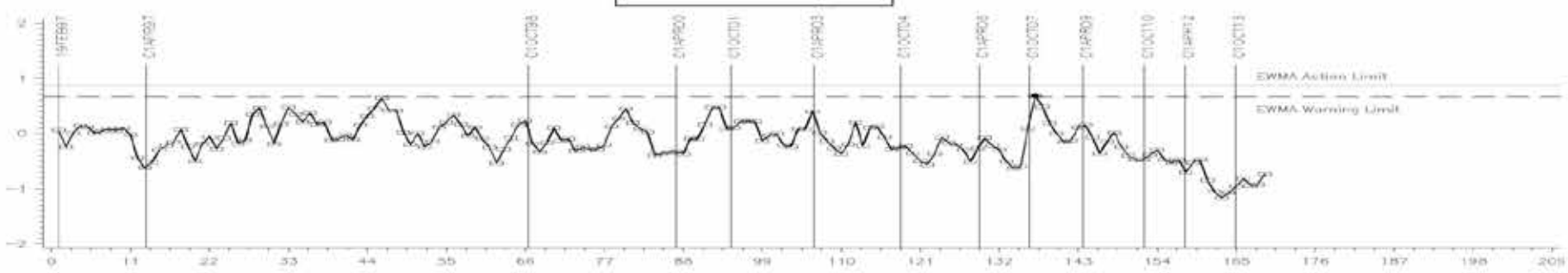
TOP GROOVE CARBON

LTMS Severity Analysis



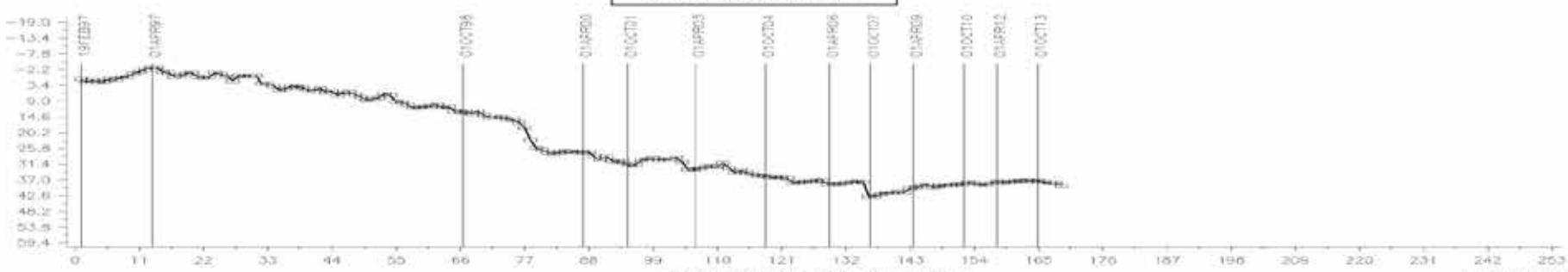
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

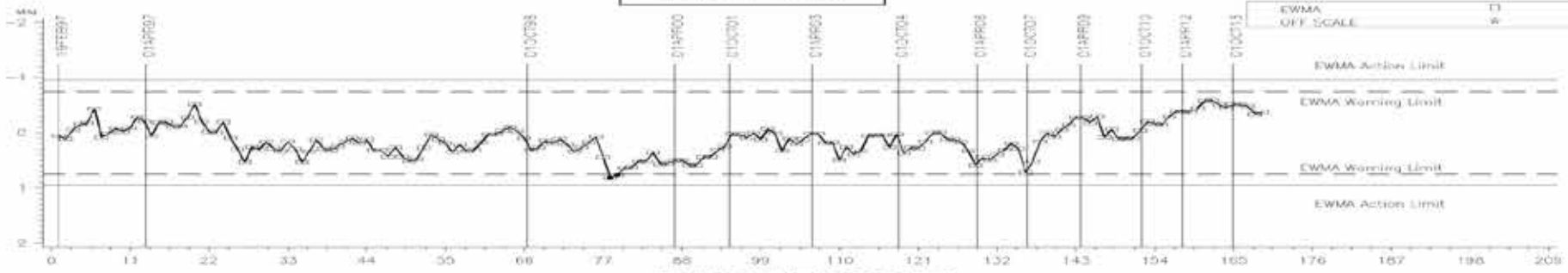


COUNT IN COMPLETION DATE ORDER

17 NOV 14 13:32

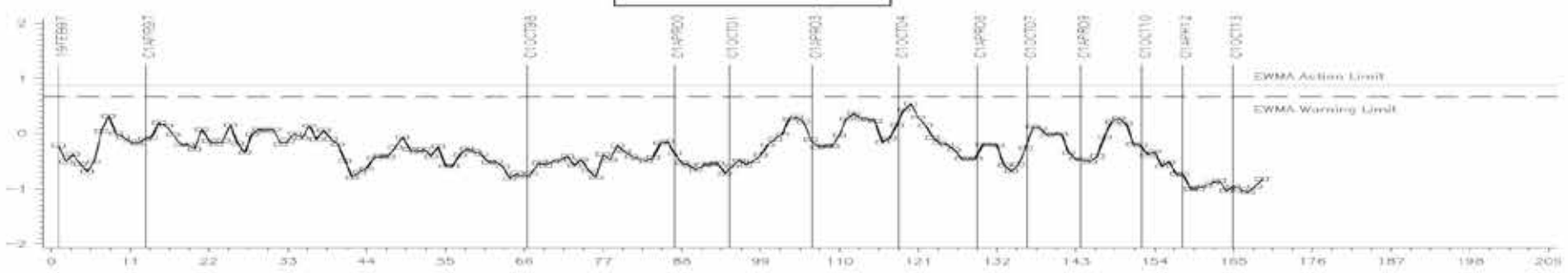
TOP LAND CARBON

LTMS Severity Analysis



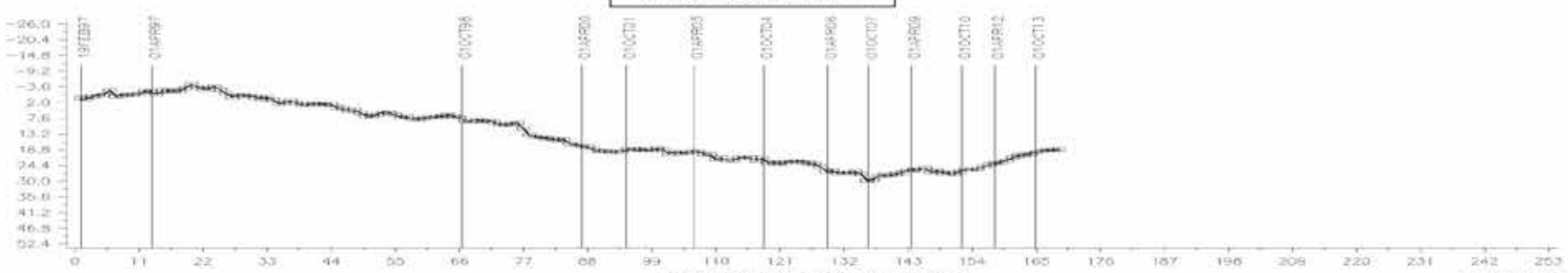
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

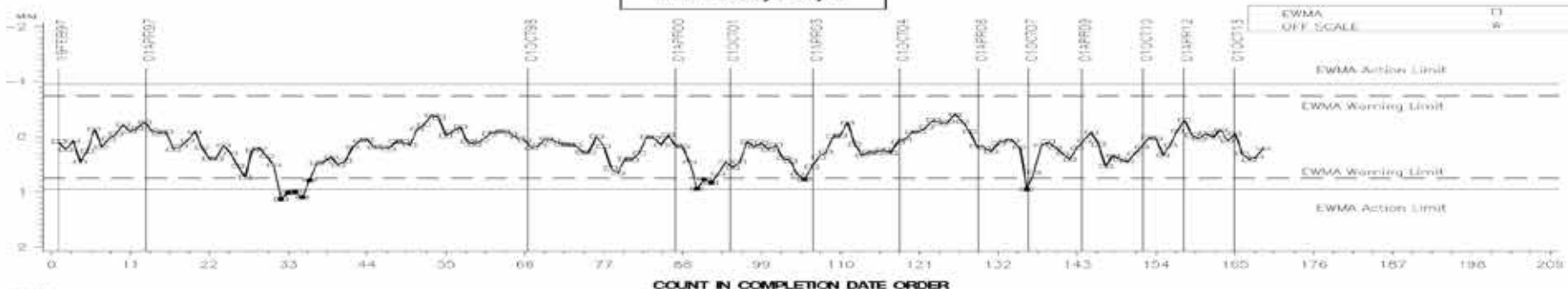


COUNT IN COMPLETION DATE ORDER

17 NOV 14 13:32

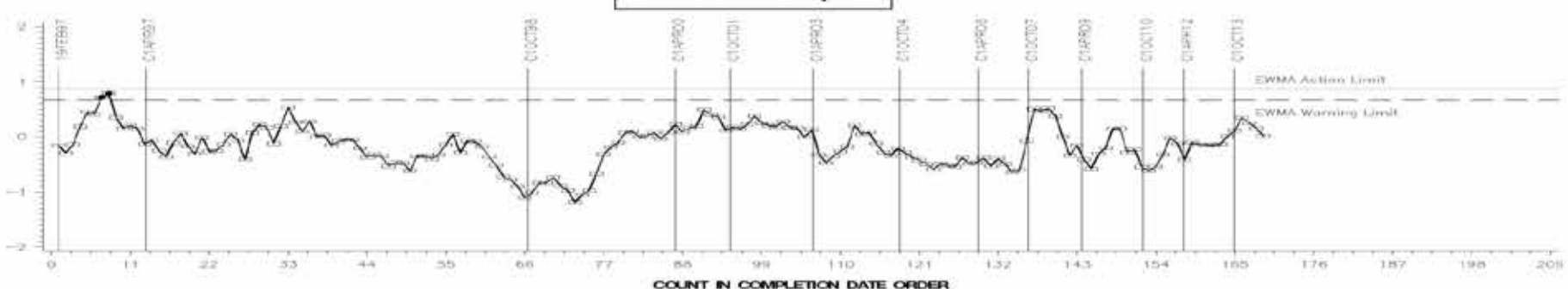
WEIGHTED TOTAL DEMERITS

LTMS Severity Analysis



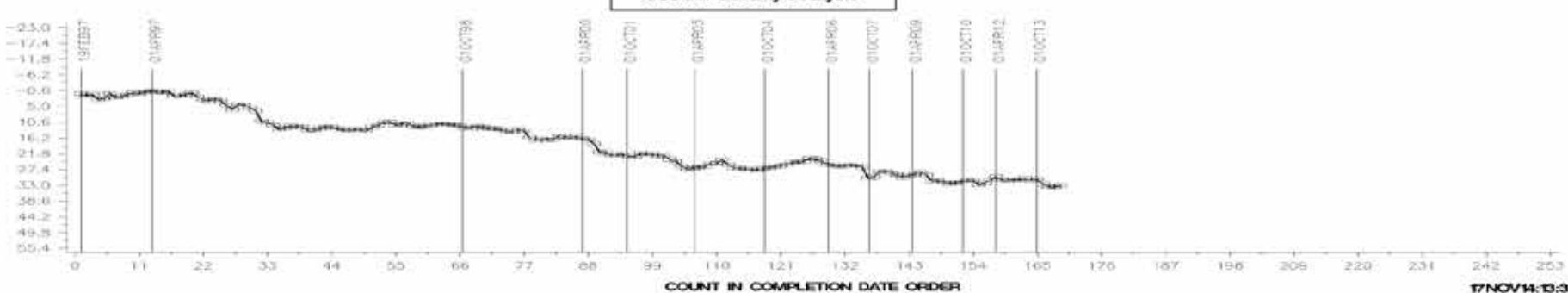
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

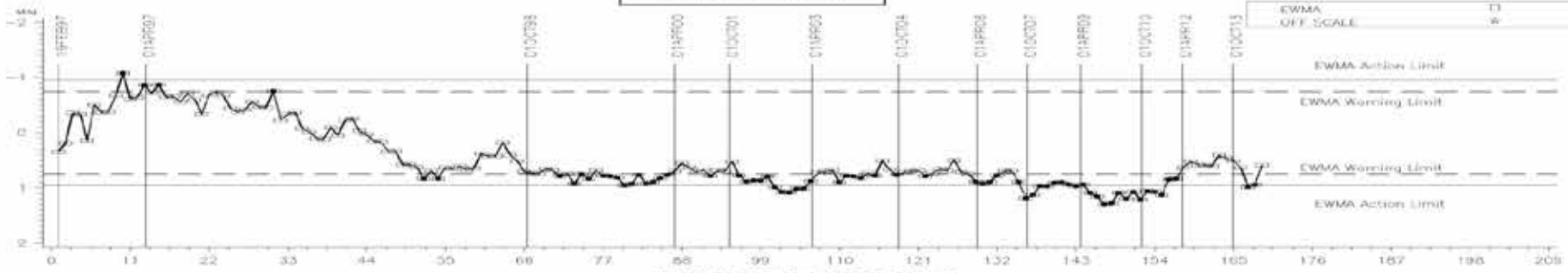


COUNT IN COMPLETION DATE ORDER

17 NOV 14 13:32

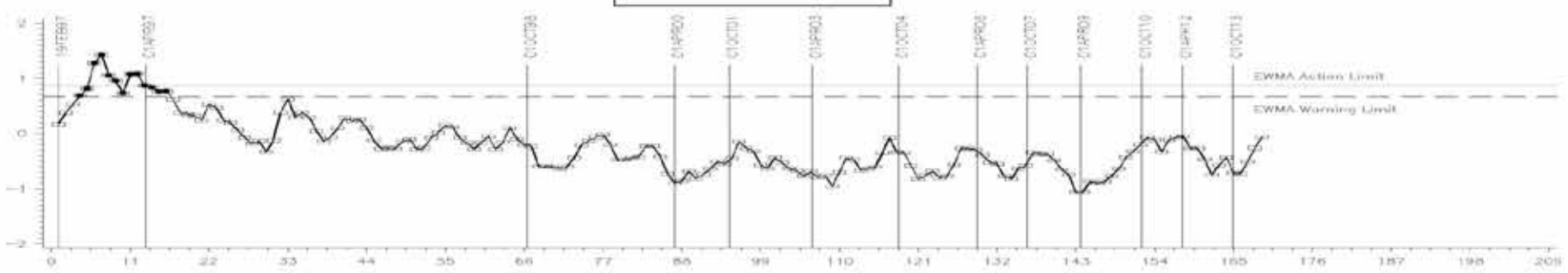
OIL CONSUMPTION

LTMS Severity Analysis



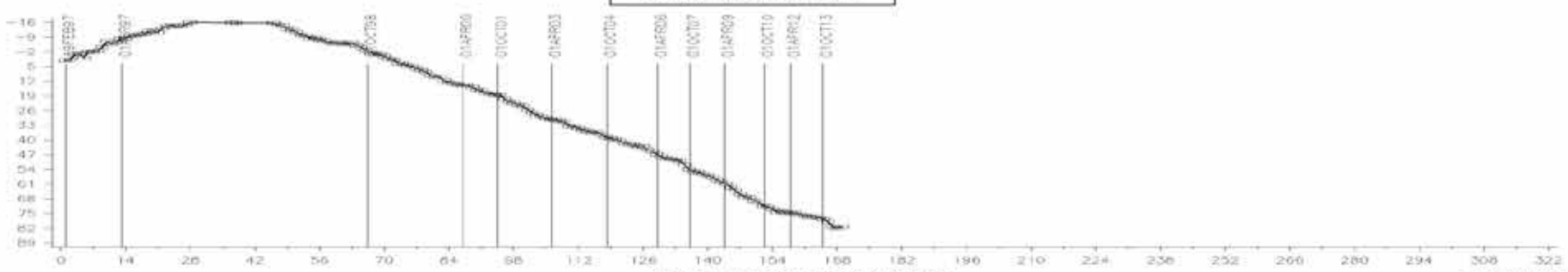
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

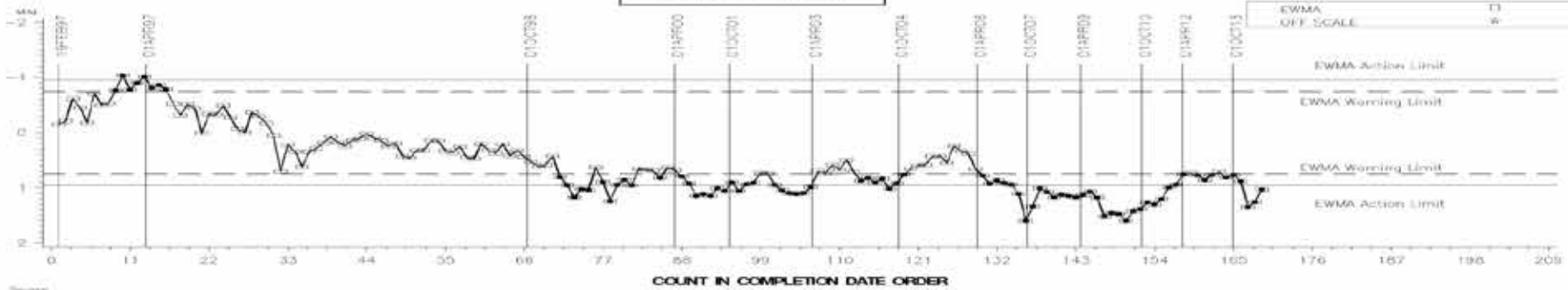


COUNT IN COMPLETION DATE ORDER

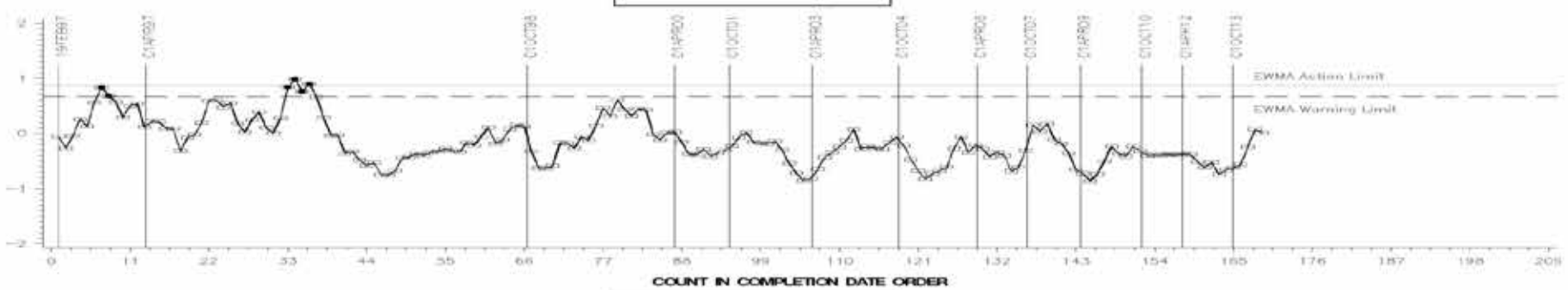
17 NOV 14 13:32

EOTOC

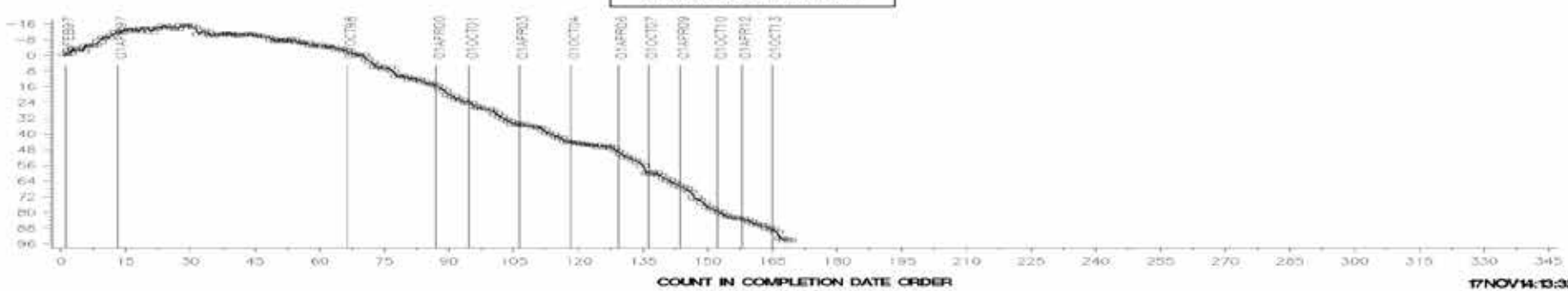
LTMS Severity Analysis



LTMS Precision Analysis

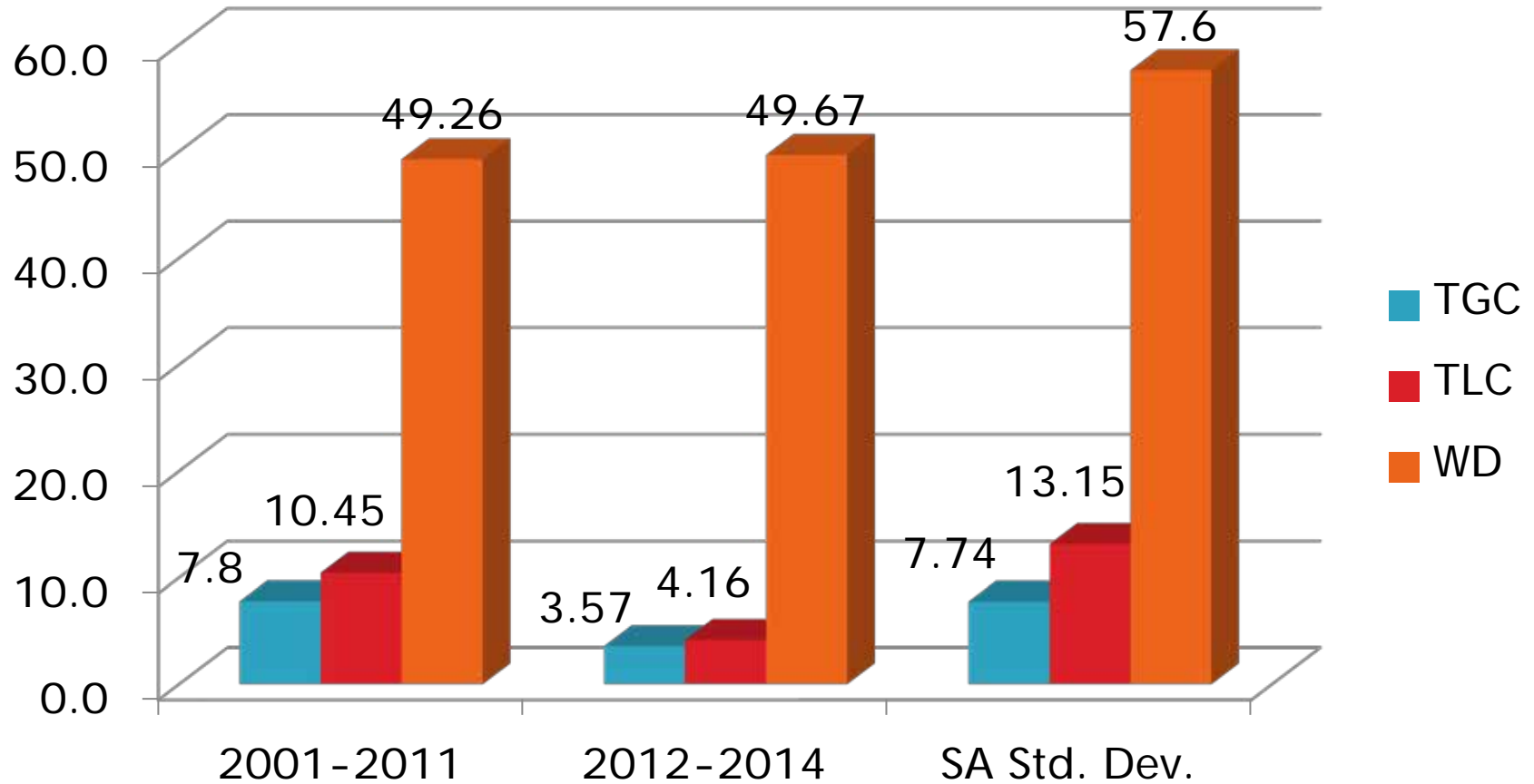


CUSUM Severity Analysis

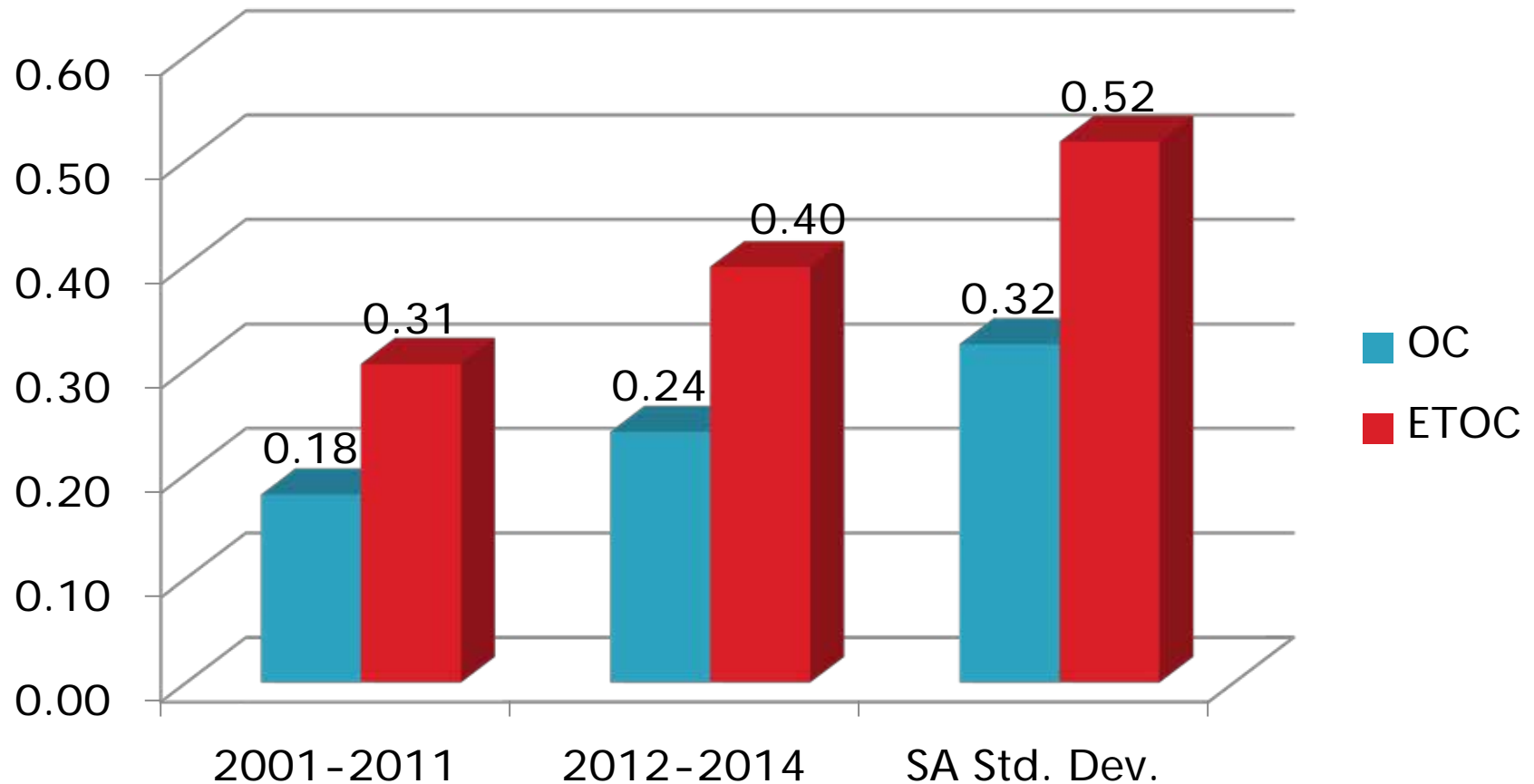


17 NOV 14 13:32

1P Precision Estimates



1P Precision Estimates



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SCOTE 1 R

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1 R Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	0
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	0
Total		0

1 R Failed Tests

Failed Parameter	Number of Tests
Total	0

1 R Lost Tests*

Status	Cause	#
Total		0

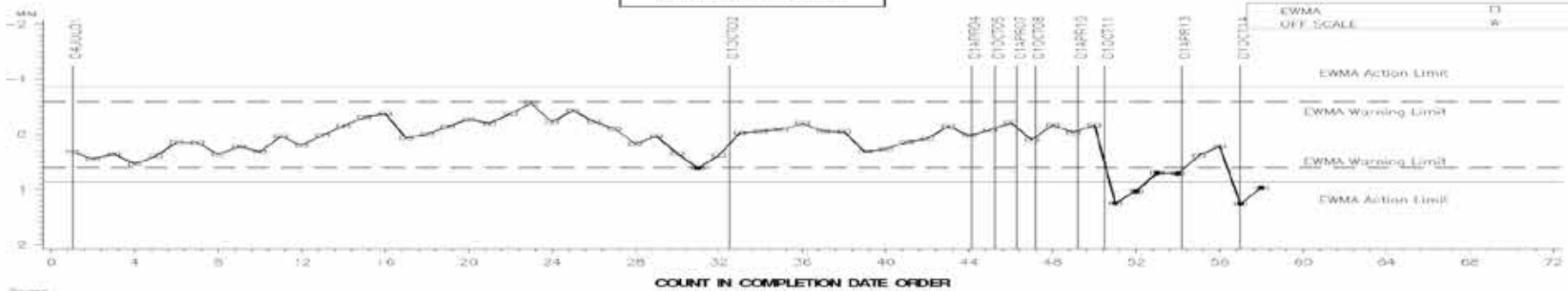
*Invalid and aborted tests

1 R Test Severity

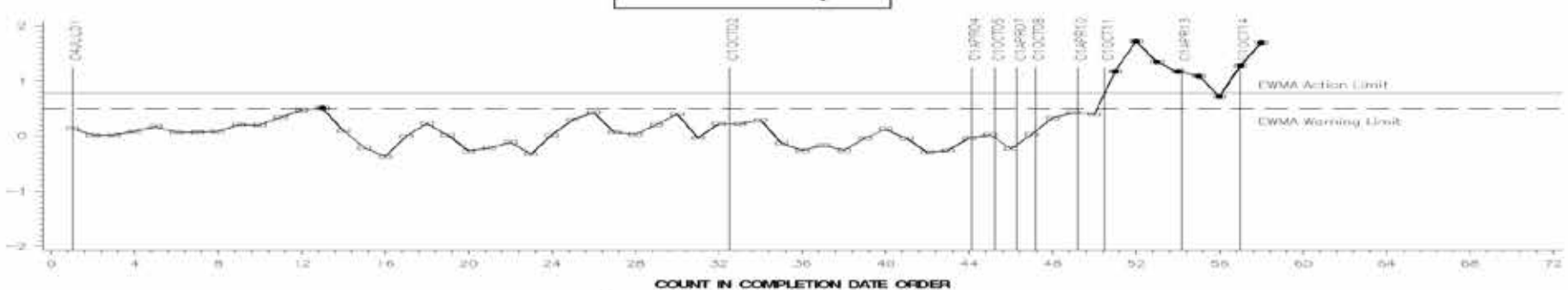
- } Current severity and precision cannot be assessed due to lack of test results during the reporting period.

FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)

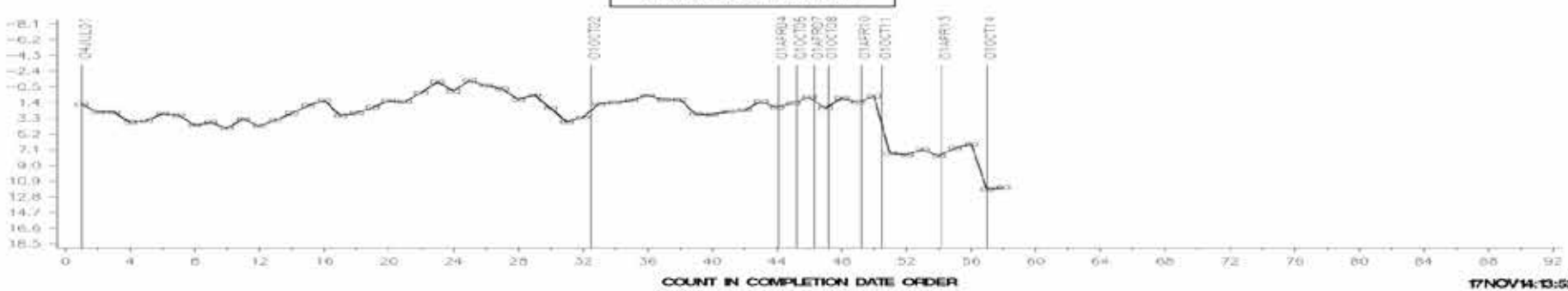
LTMS Severity Analysis



LTMS Precision Analysis



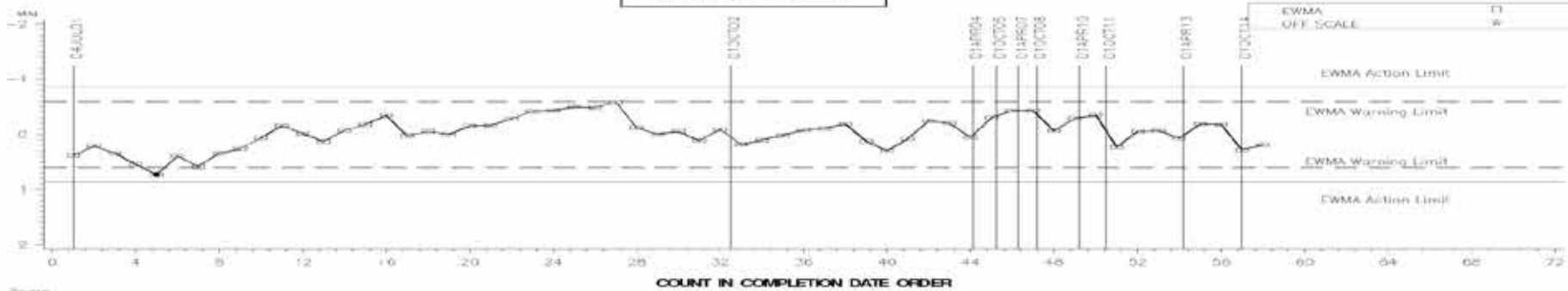
CUSUM Severity Analysis



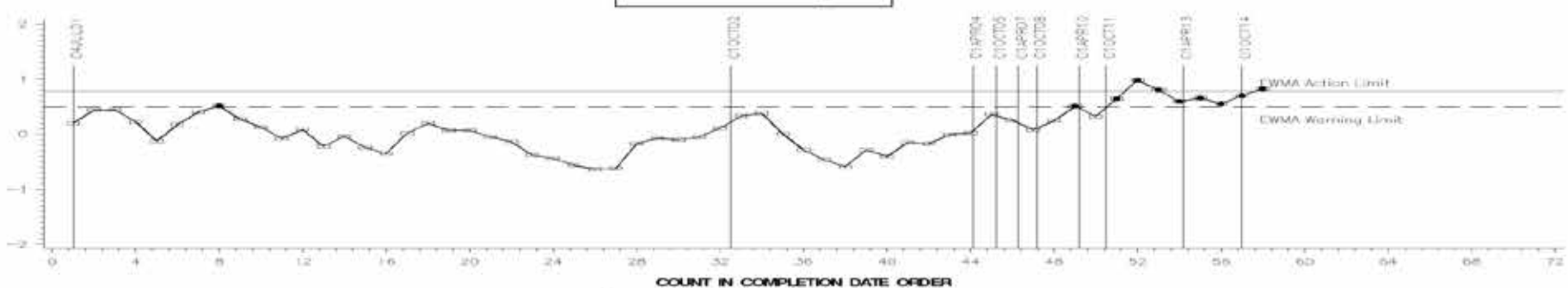
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FINAL TOP GROOVE CARBON (DEMERTS)

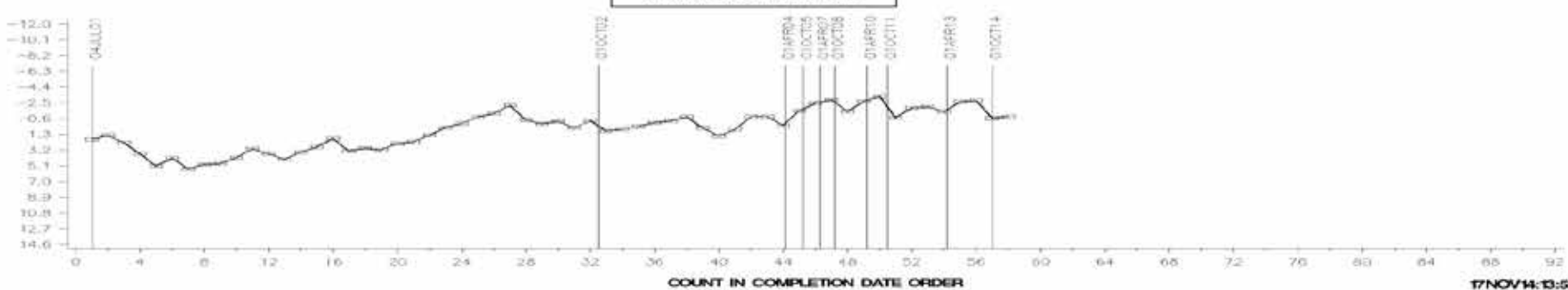
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



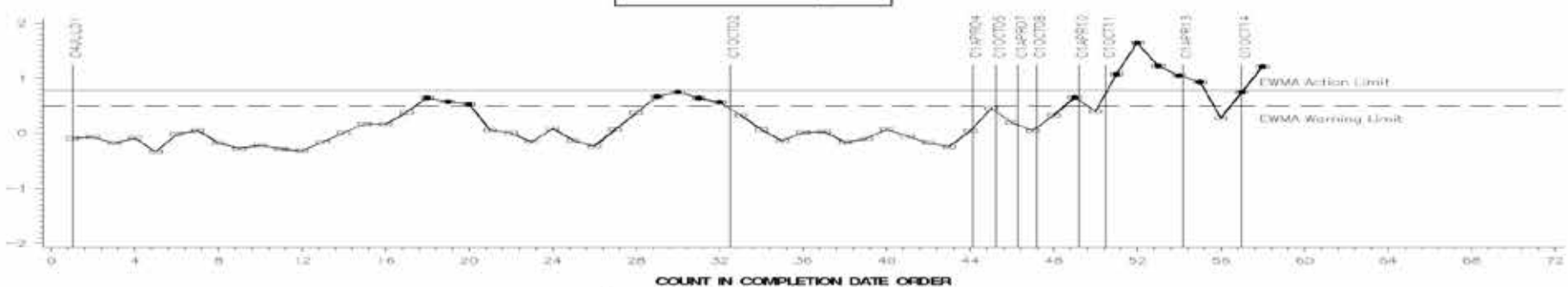
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FINAL TOP LAND CARBON (DEMERITS)

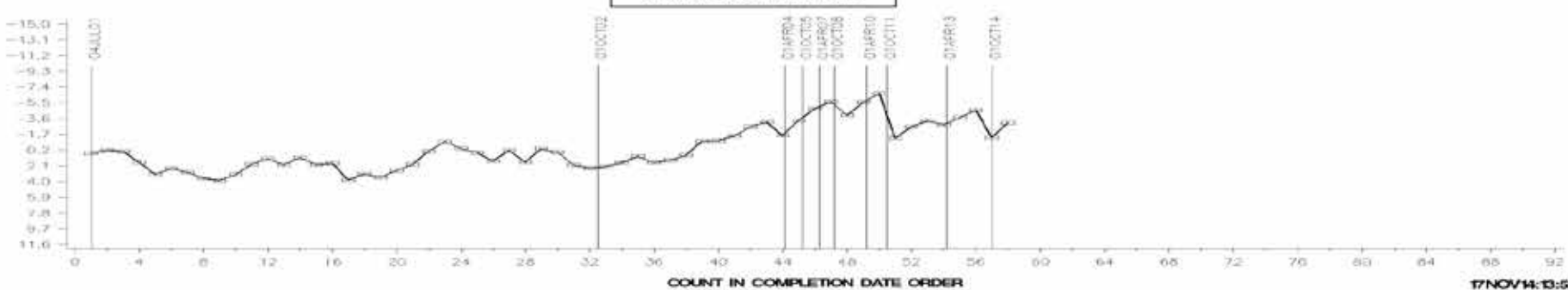
LTMS Severity Analysis



LTMS Precision Analysis



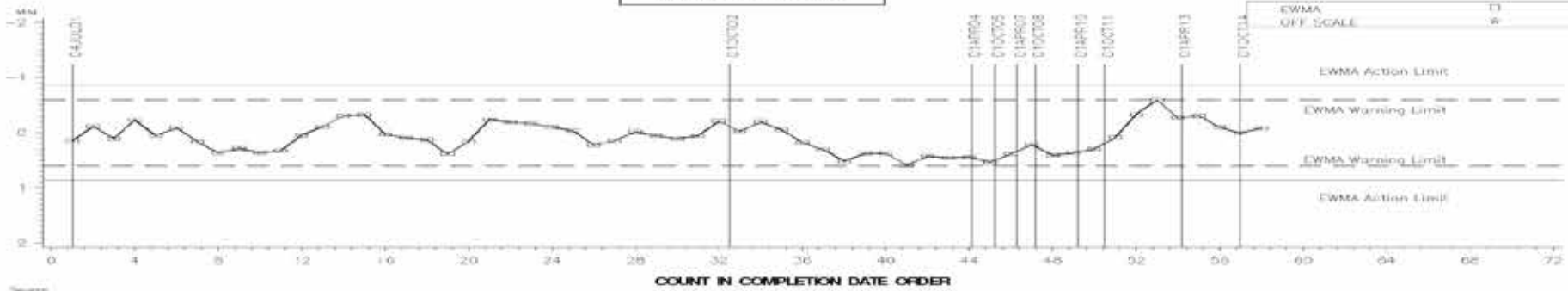
CUSUM Severity Analysis



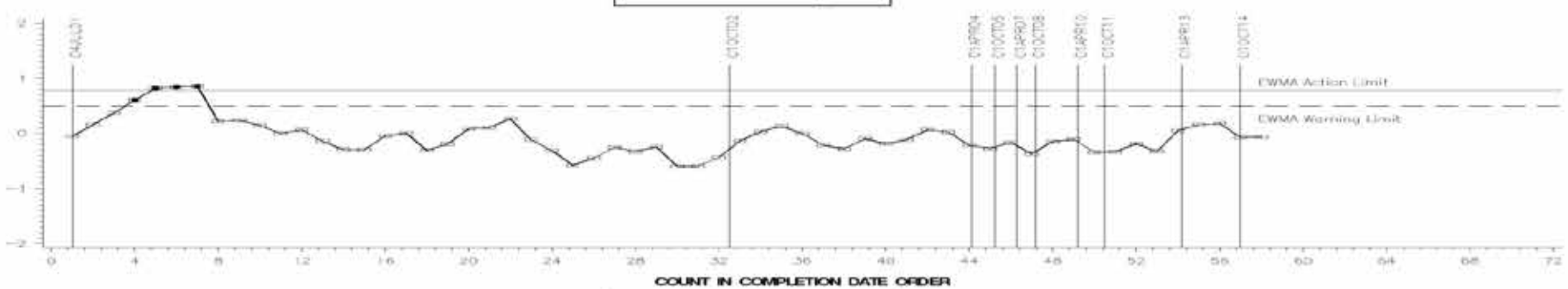
17/NOV/14 13:52

FINAL BOTO

LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



17/NOV/14 13:52

FINAL EOTOC (g/h)

LTMS Severity Analysis



LTMS Precision Analysis

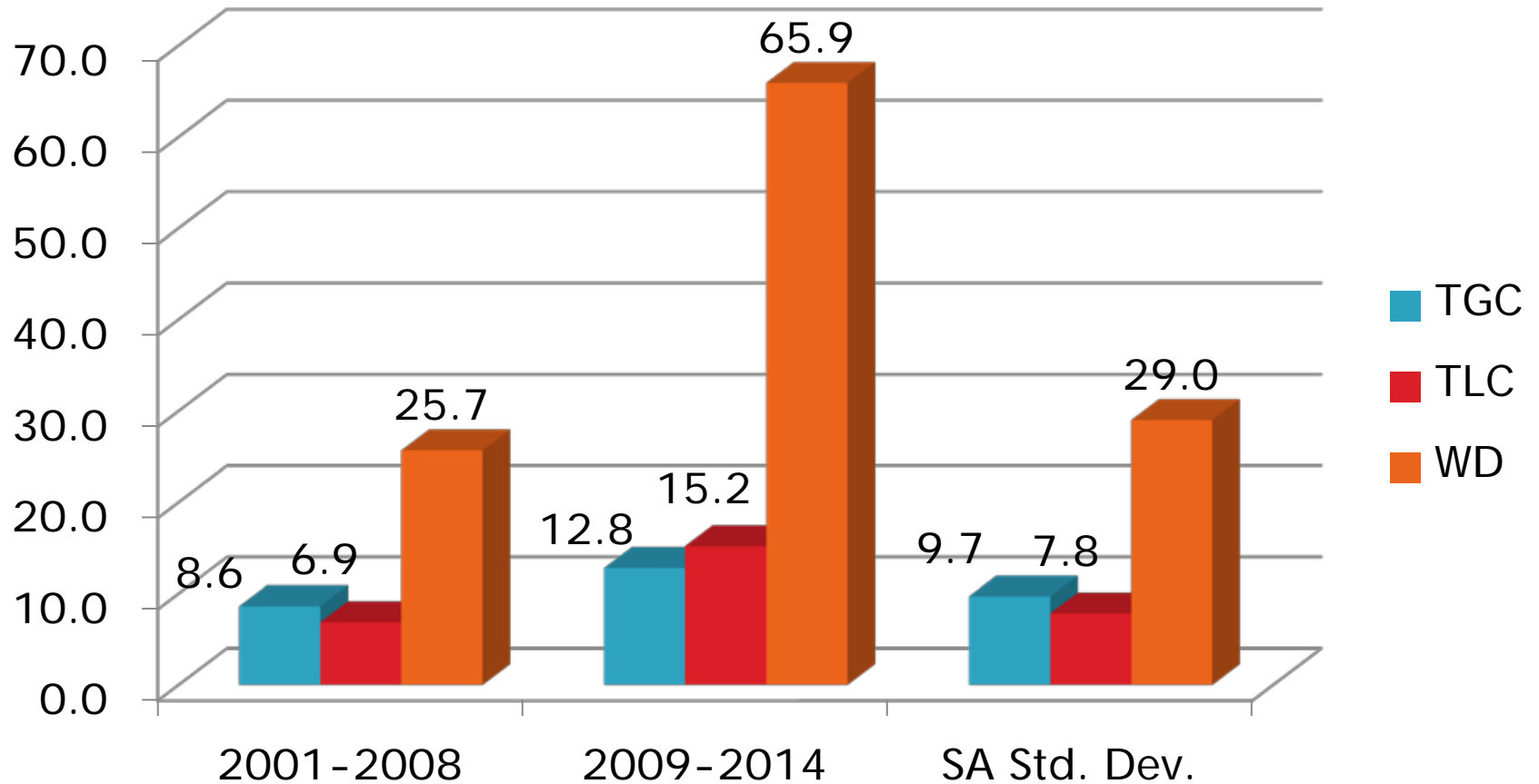


CUSUM Severity Analysis



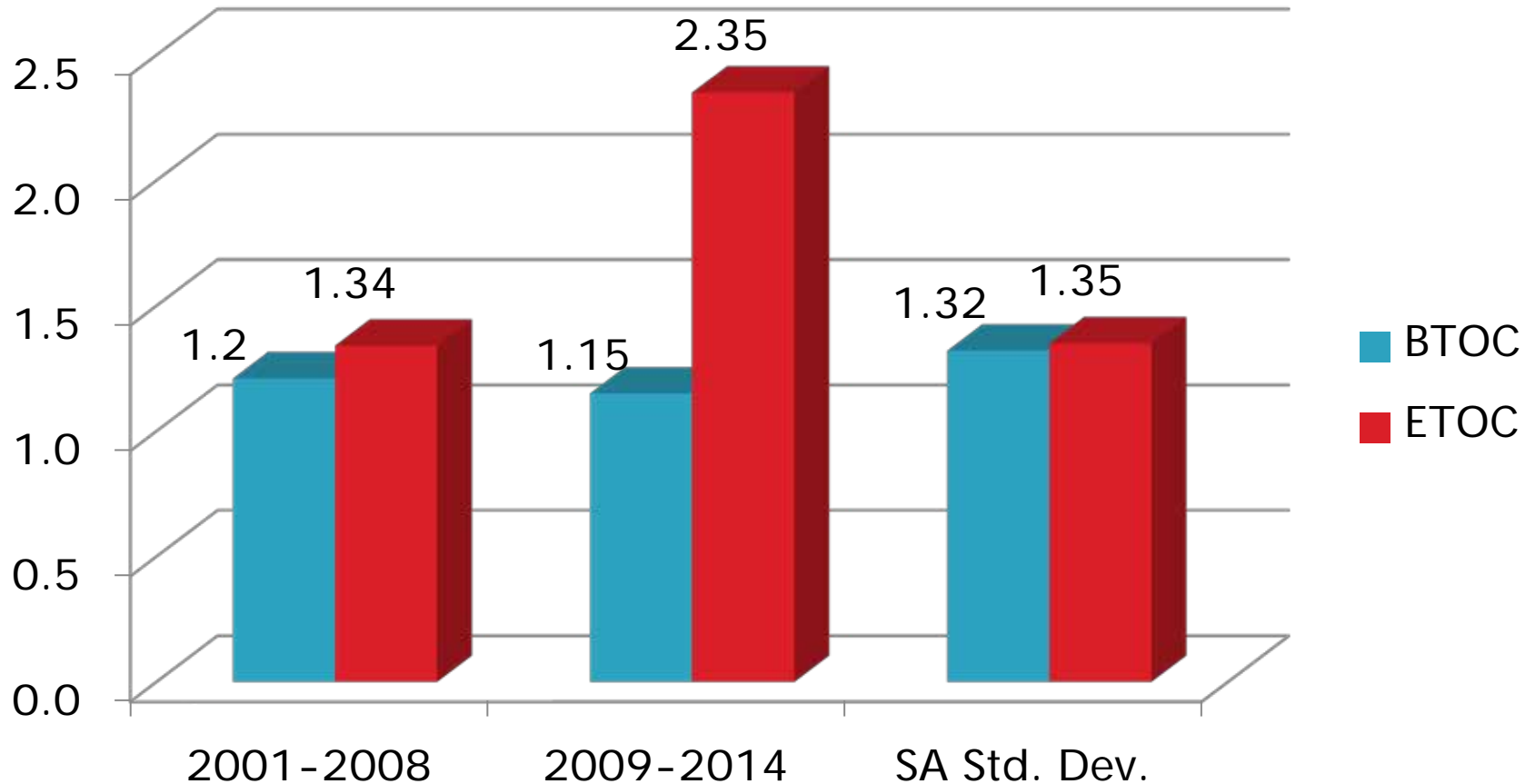
17/NOV/14 13:52

1R Precision Estimates



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1R Precision Estimates



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CAT C13

»» October 2014

C13 Test Activity

Test Status	Validity Code	C13
Acceptable Calibration Test	AC	0
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	0
Total		0

C13 Failed Tests

Failed Parameter	Number of Tests
Total	0

C13 Lost Tests*

Status	Cause	#
Total		0

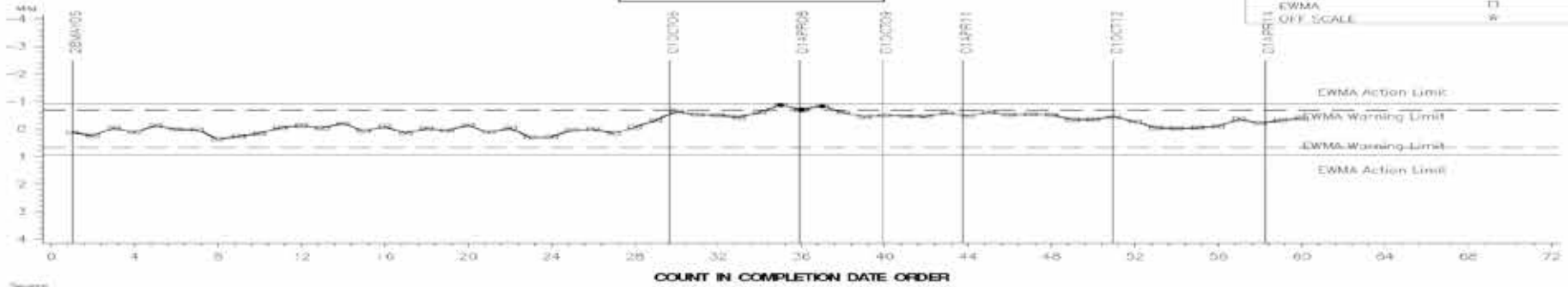
*Invalid and aborted tests

C13 Test Severity

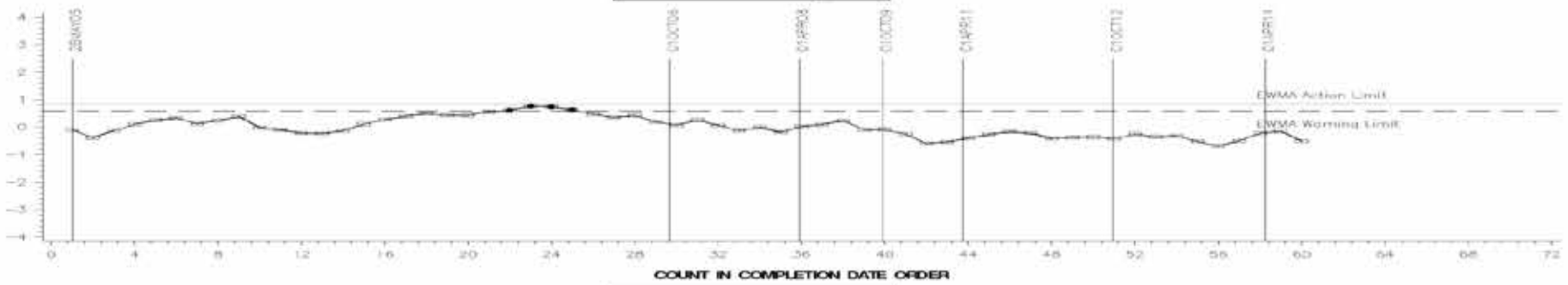
- } Current severity and precision cannot be assessed due to lack of test results during the reporting period.

TOP LAND CARBON AVG. - FINAL RESULT

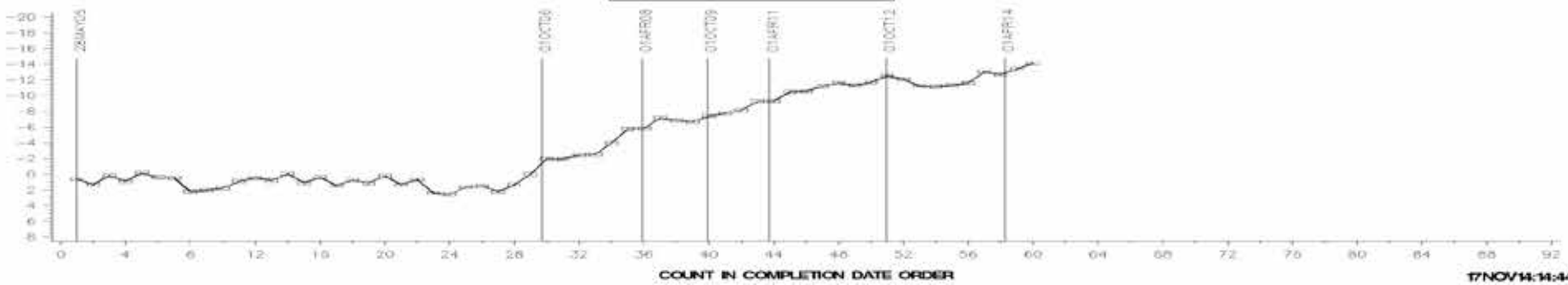
LTMS Severity Analysis



LTMS Precision Analysis



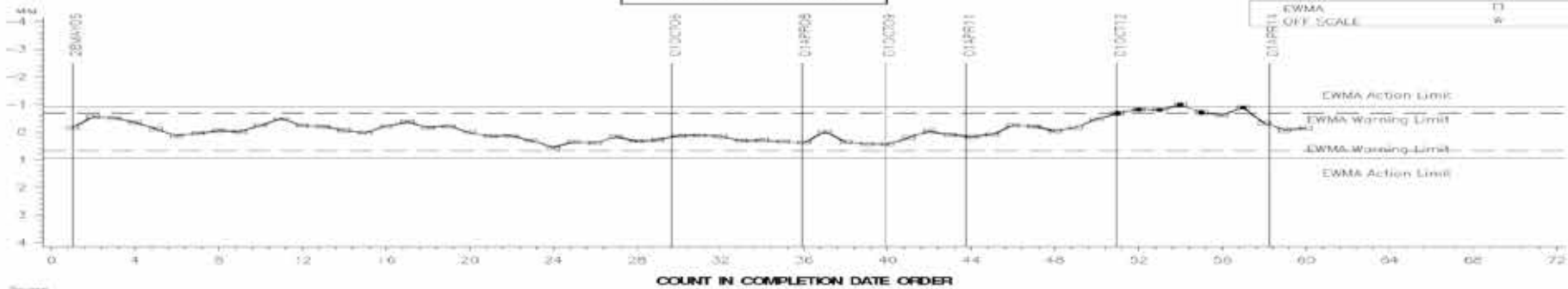
CUSUM Severity Analysis



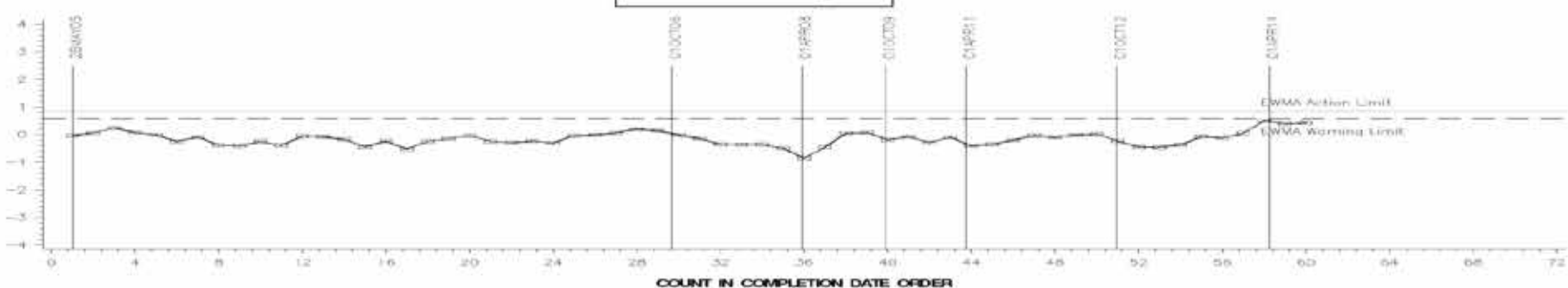
17/NOV/14:14:44

TOP GROOVE CARBON AVG - FINAL RESULT

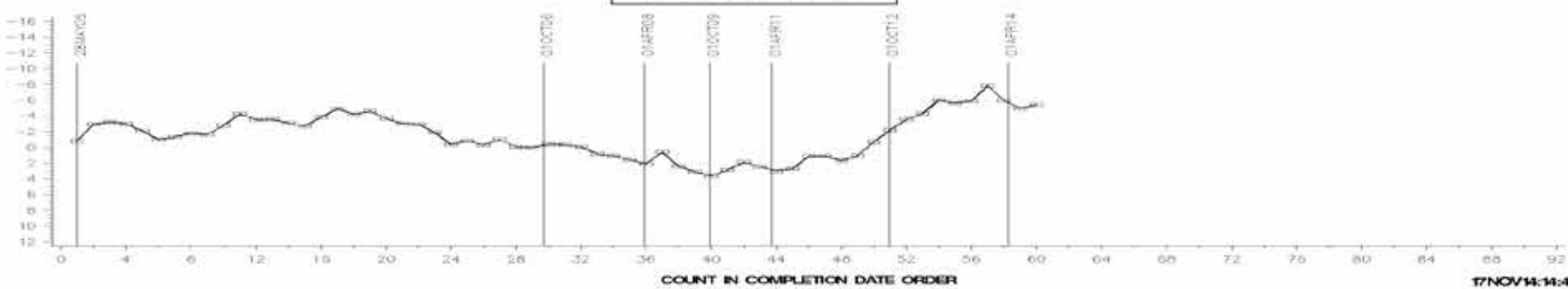
LTMS Severity Analysis



LTMS Precision Analysis



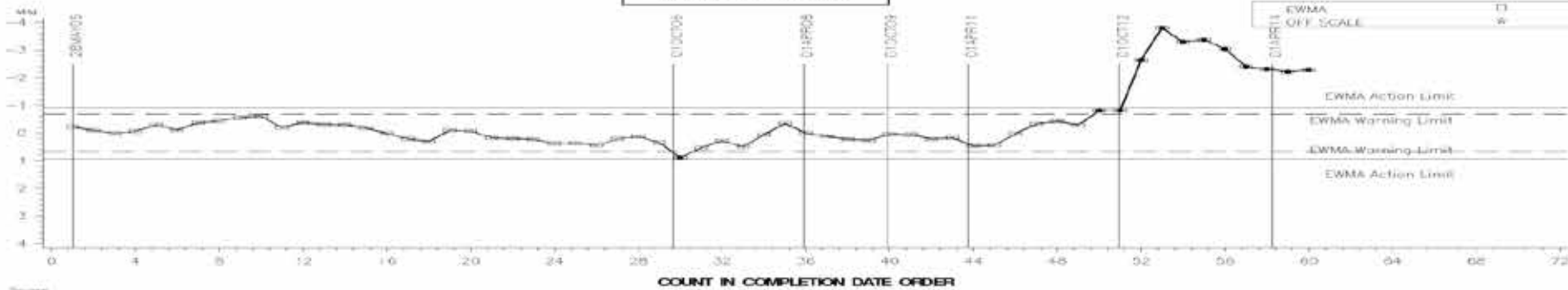
CUSUM Severity Analysis



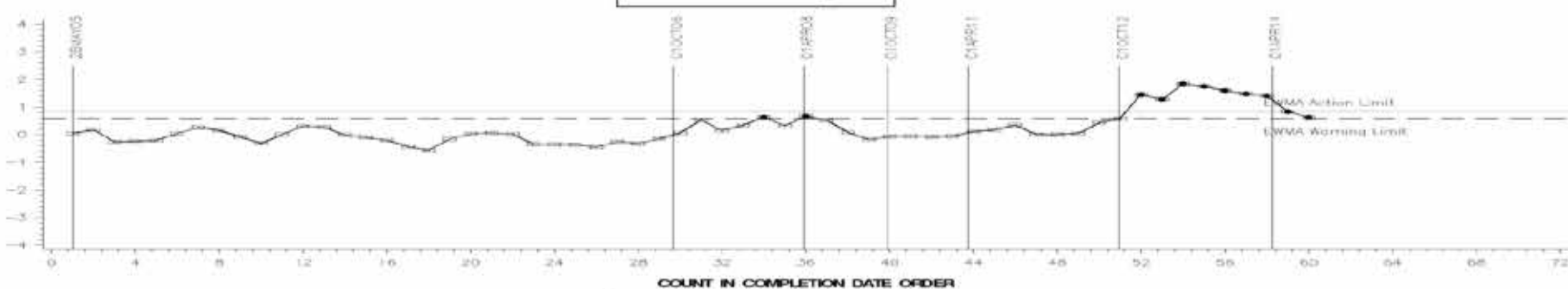
17/NOV/14:44

2ND RING TOP CARBON AVG. — FINAL RESULT

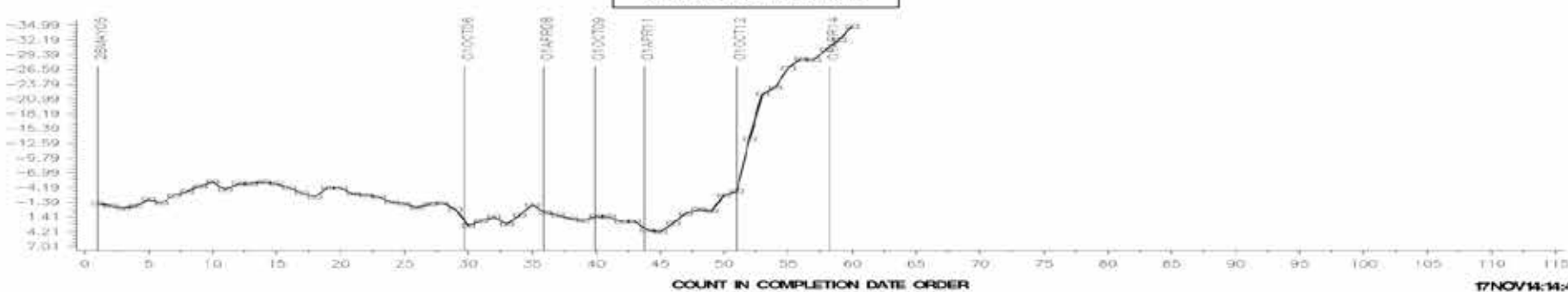
LTMS Severity Analysis



LTMS Precision Analysis



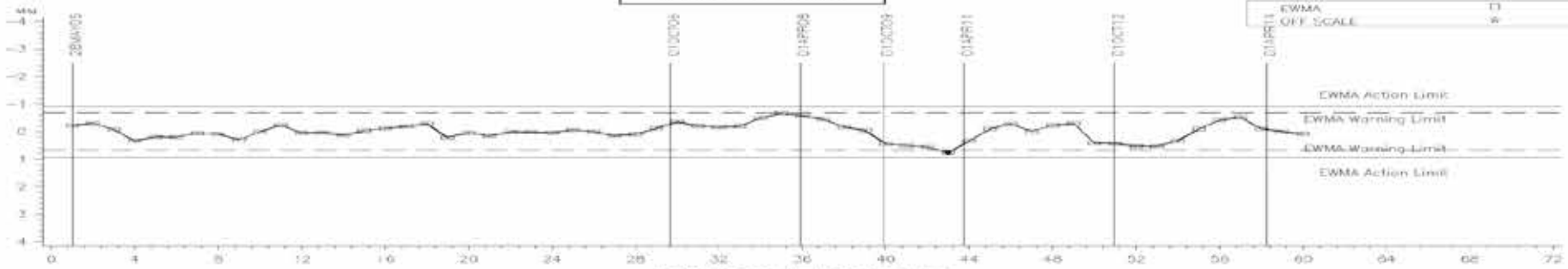
CUSUM Severity Analysis



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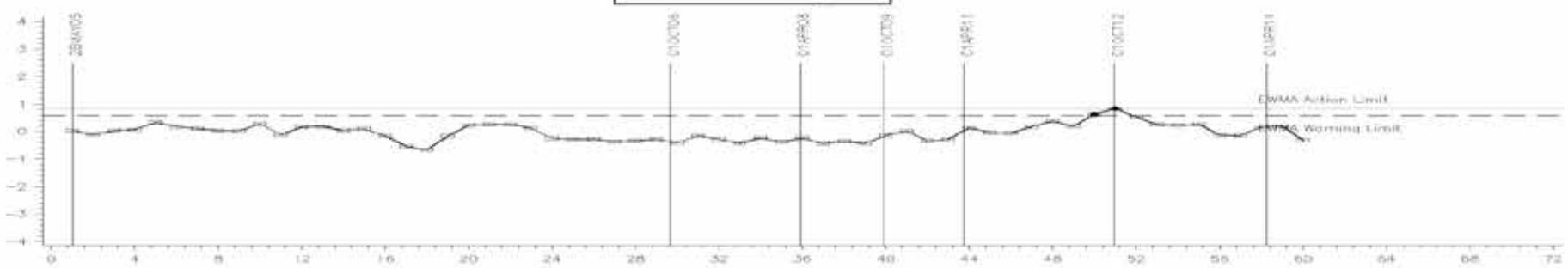
OIL CONS. DELTA - FINAL RESULT

LTMS Severity Analysis



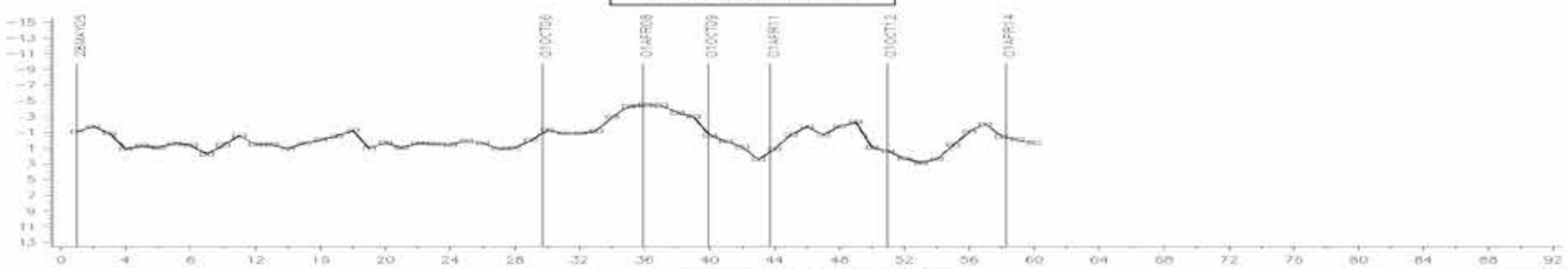
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



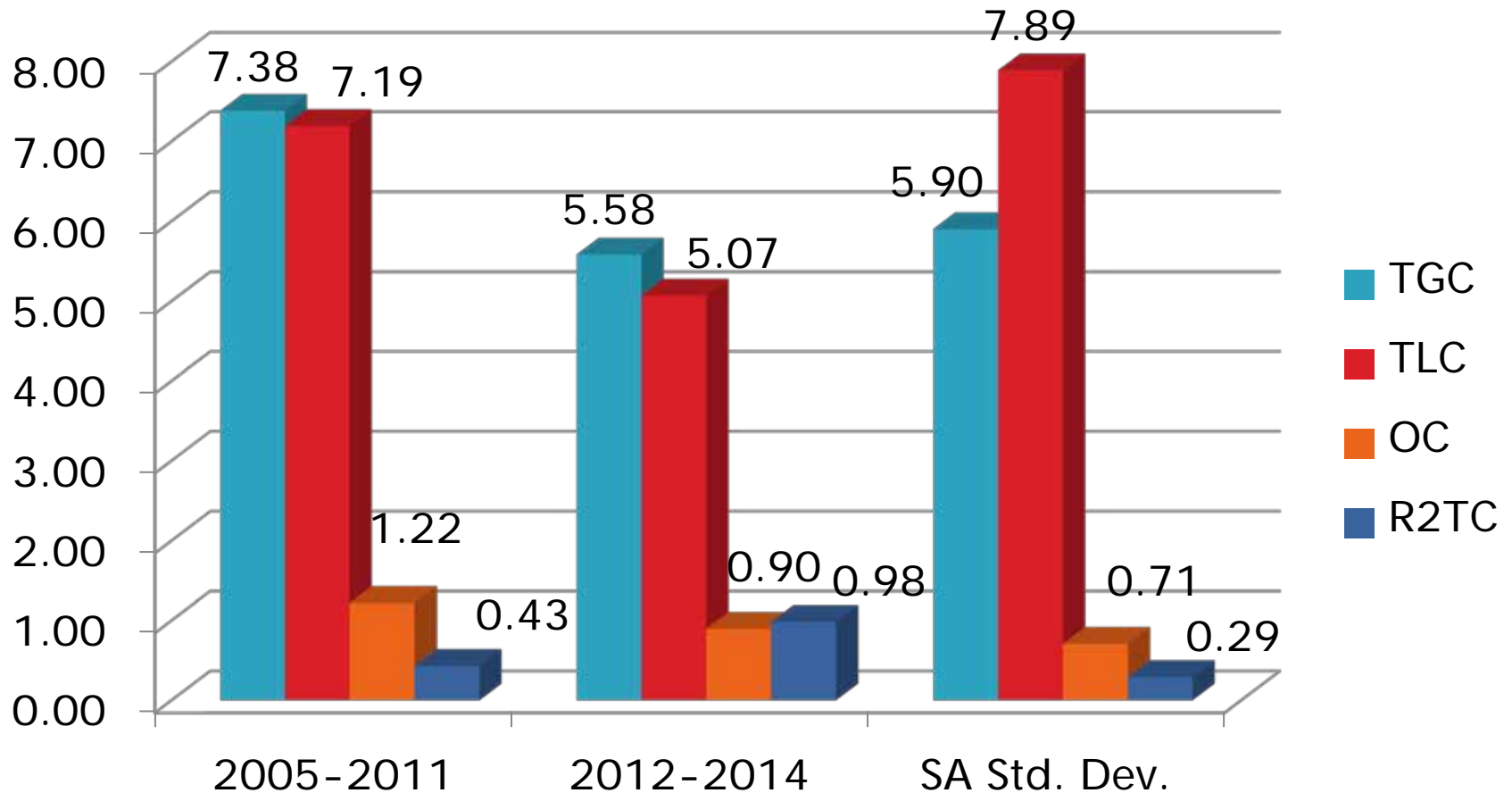
COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis



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C13 Precision Estimates



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Test Monitoring Center
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Cummins ISB

»» October 2014

ISB Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	3
Failed Calibration Test	OC	2
Operationally Invalid	LC	0
Aborted	XC	0
Total		5

ISB Failed Tests

Failed Parameter	Number of Tests
Severe ACSW	2
Total	2

ISB Lost Tests*

Status	Cause	#
No lost tests		
Total		0

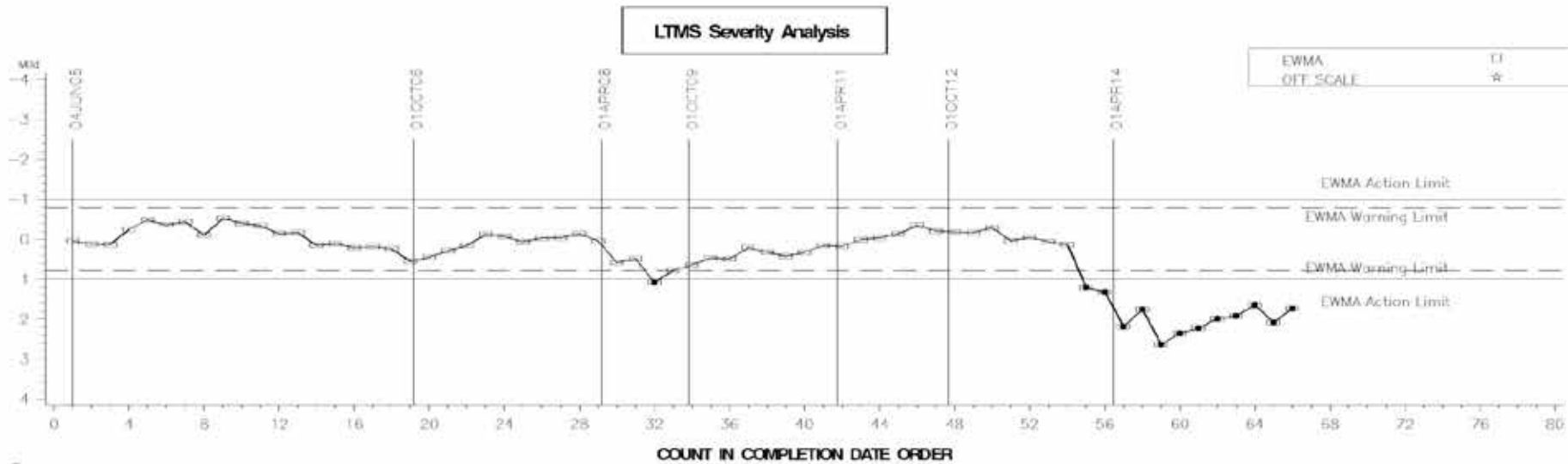
*Invalid and aborted tests

ISB Test Severity

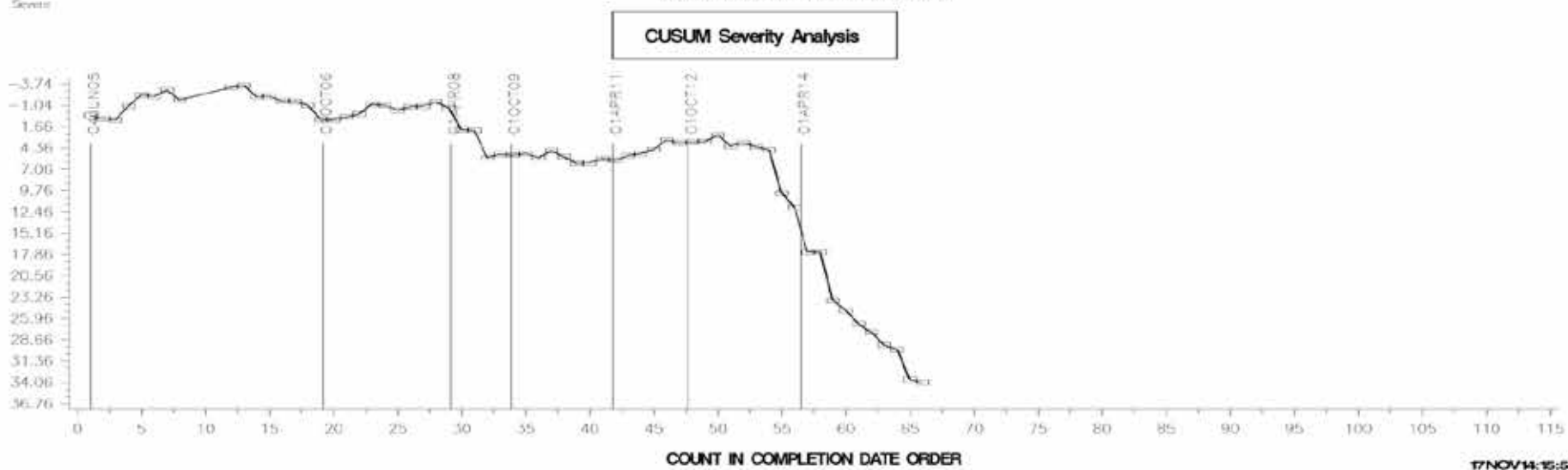
- } ACSW is in action alarm severe direction.
- } ATWL in action alarm in the mild direction.

AVERAGE CAMSHAFT WEAR

Standard Deviation Units



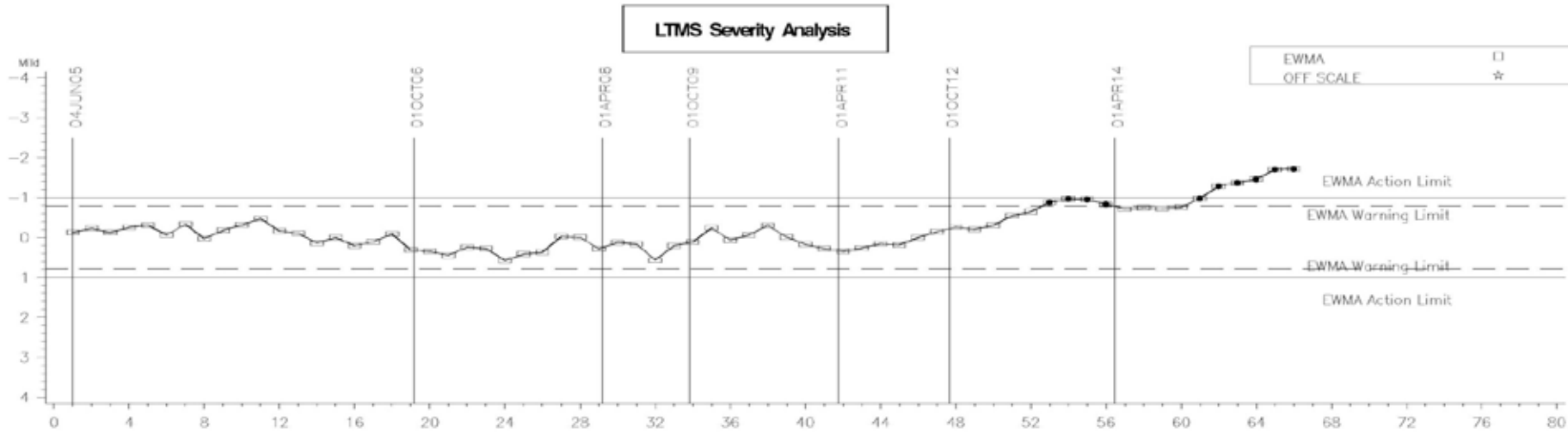
Standard Deviation Units



17 NOV 14 15:58

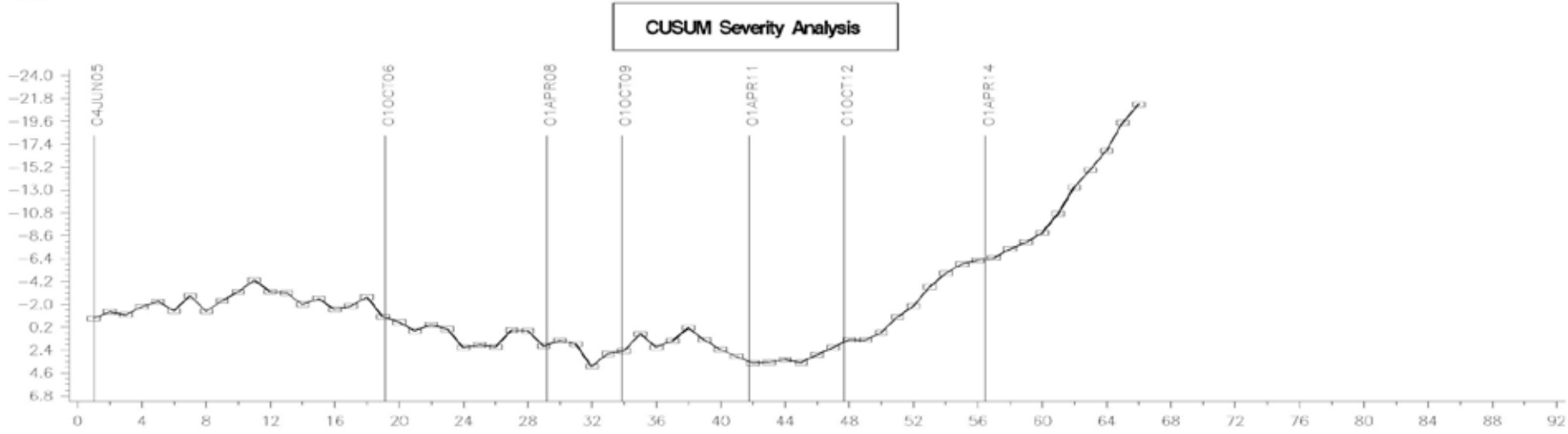
AVERAGE TAPPET WEIGHT LOSS

Standard Deviation Units



COUNT IN COMPLETION DATE ORDER

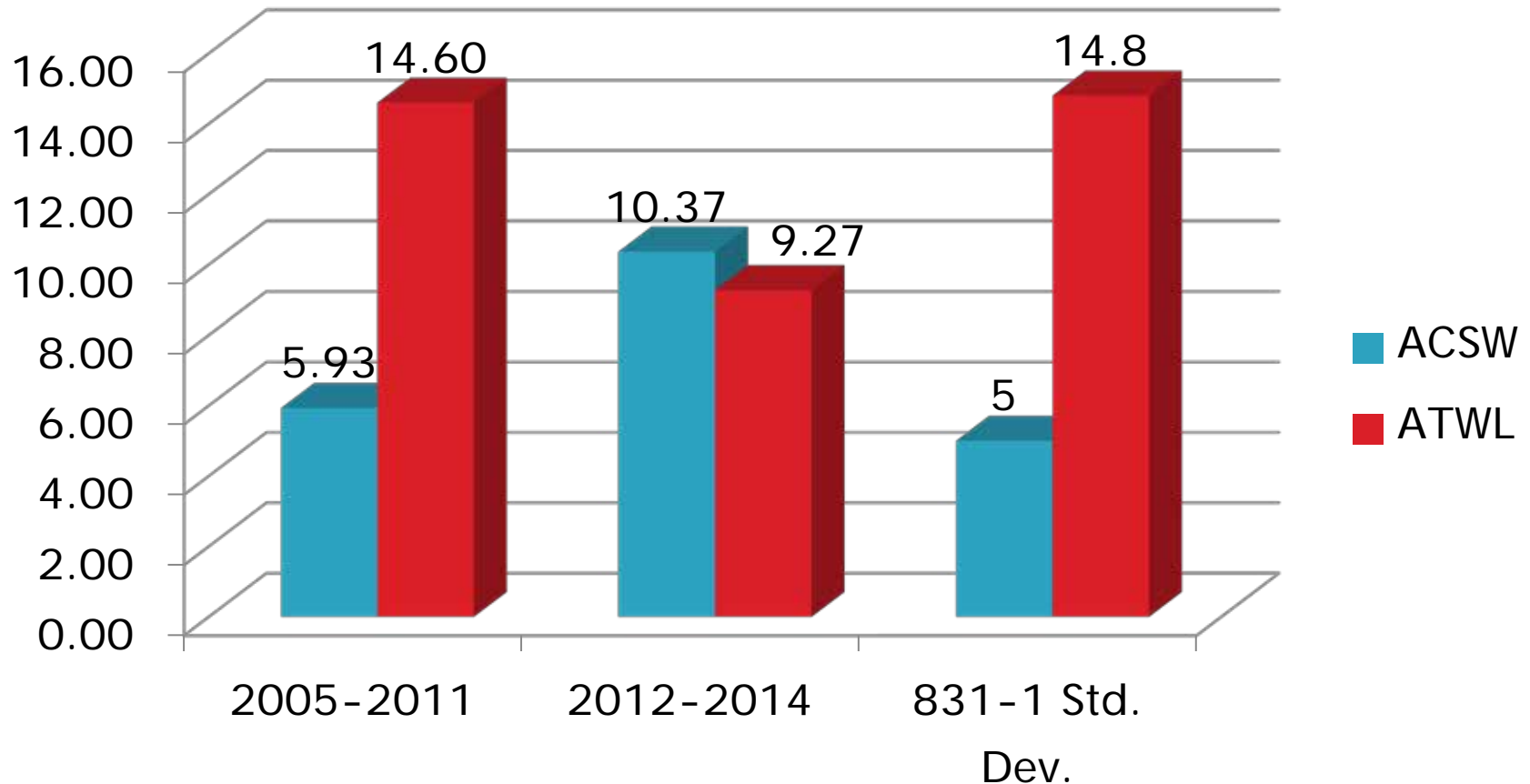
Standard Deviation Units



COUNT IN COMPLETION DATE ORDER

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ISB Precision Estimates



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Cummins ISM

»» October 2014

Test Monitoring Center

<http://astmtmc.cmu.edu>



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ISM Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	3
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	1
Total		5

ISM Failed Tests

Failed Parameter	Number of Tests
Mild filter plugging delta pressure	1
Total	1

ISM Lost Tests*

Status	Cause	#
Injector Failure		1
Total		1

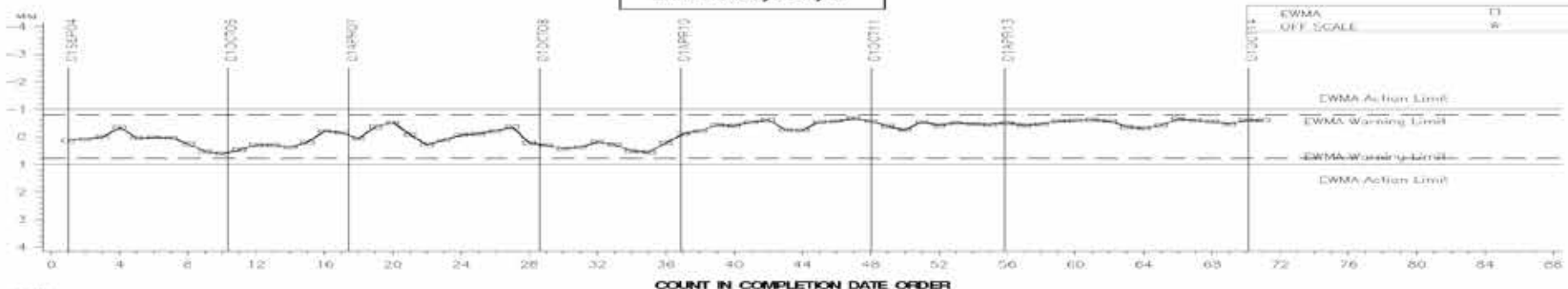
*Invalid and aborted tests

ISM Test Severity

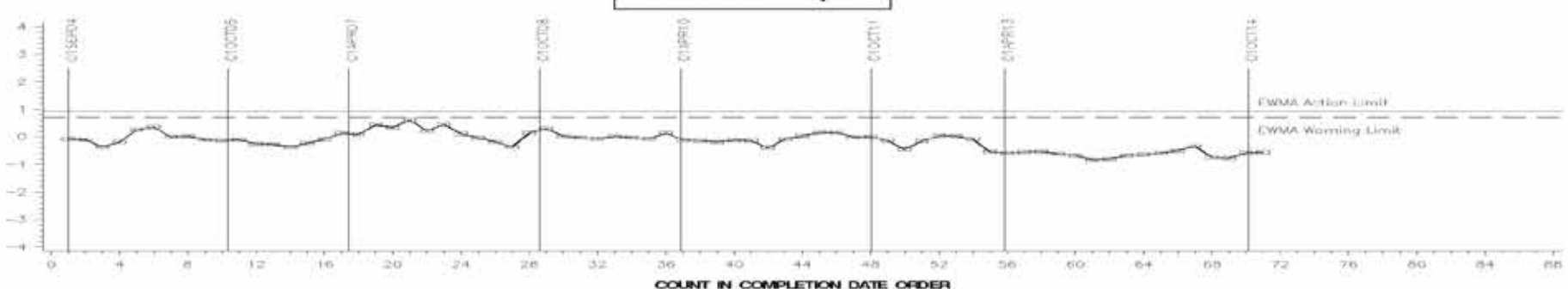
- } CWL and ASR in control.
 - CWL trending mild.
 - ASR possibly trending severe.
- } FPD in mild action alarm.
 - FPD mild trend ending.
- } IAS in mild warning alarm.

CROSSHEAD WEIGHT LOSS ADJUSTED TO 3.9 % SOOT

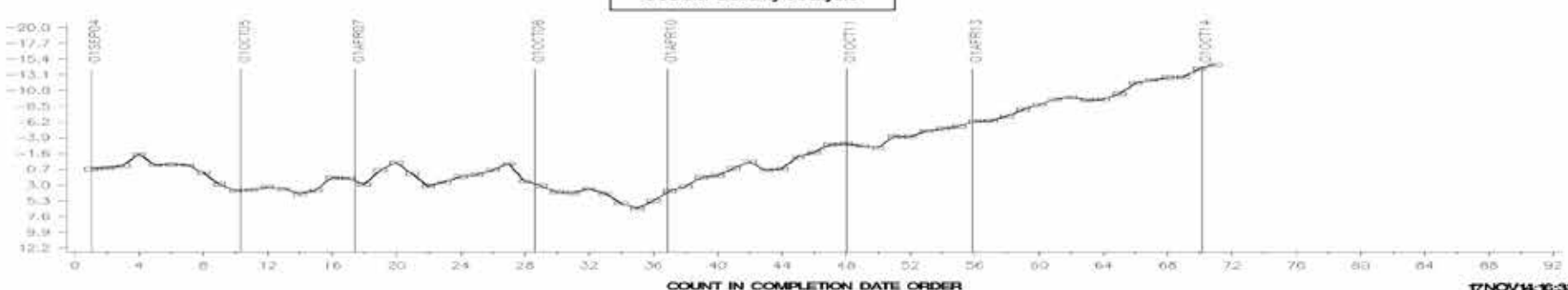
LTMS Severity Analysis



LTMS Precision Analysis



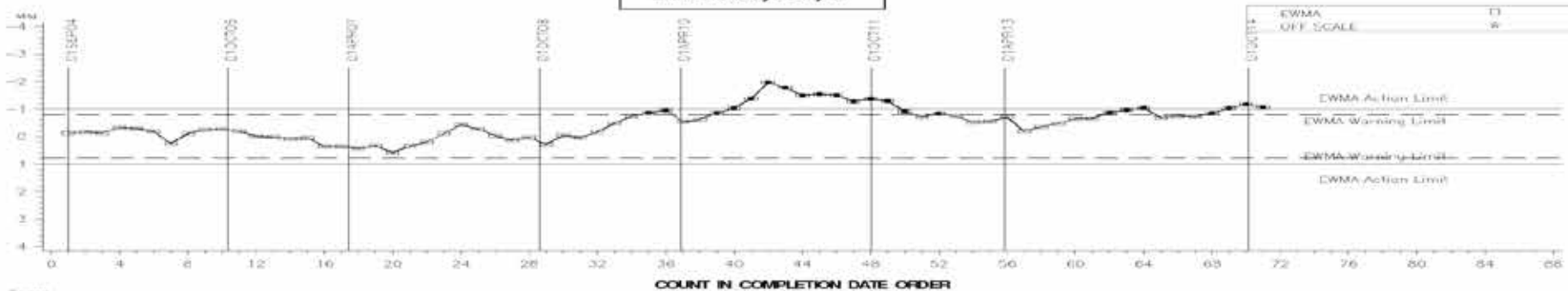
CUSUM Severity Analysis



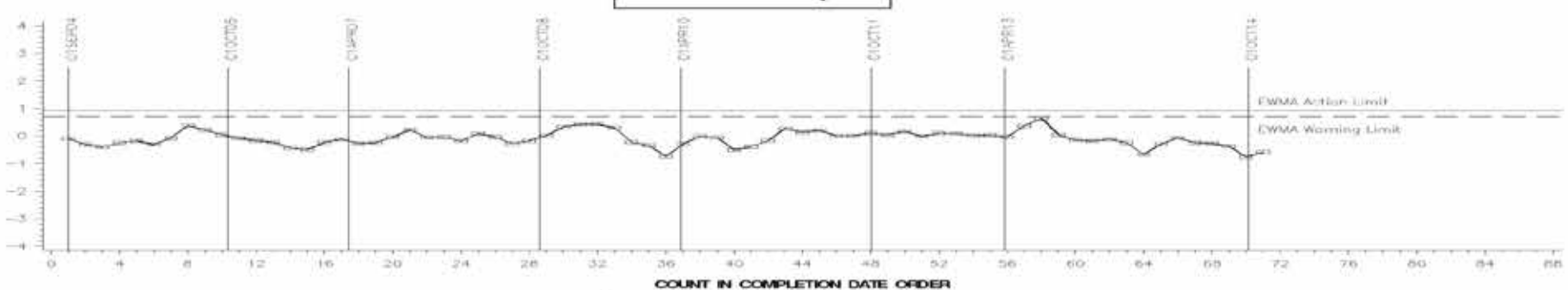
17/NOV/14:16:33

FILTER PLUGGING DELTA P

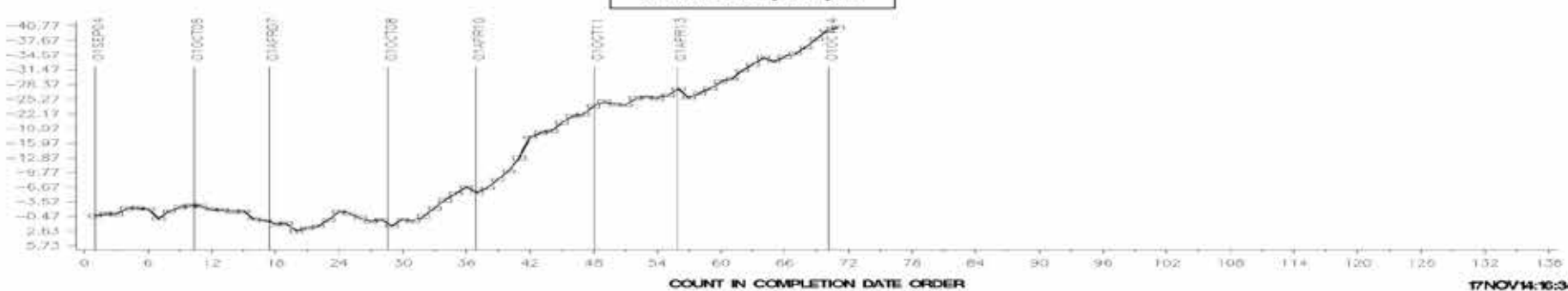
LTMS Severity Analysis



LTMS Precision Analysis



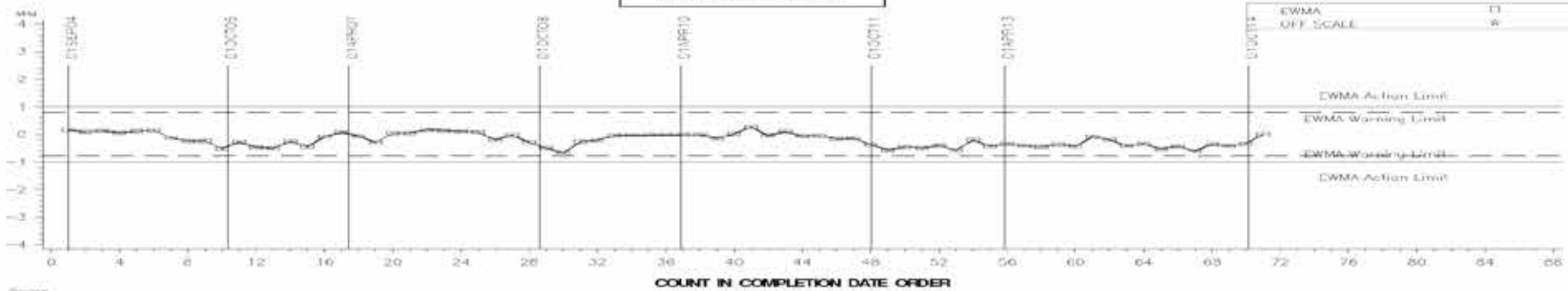
CUSUM Severity Analysis



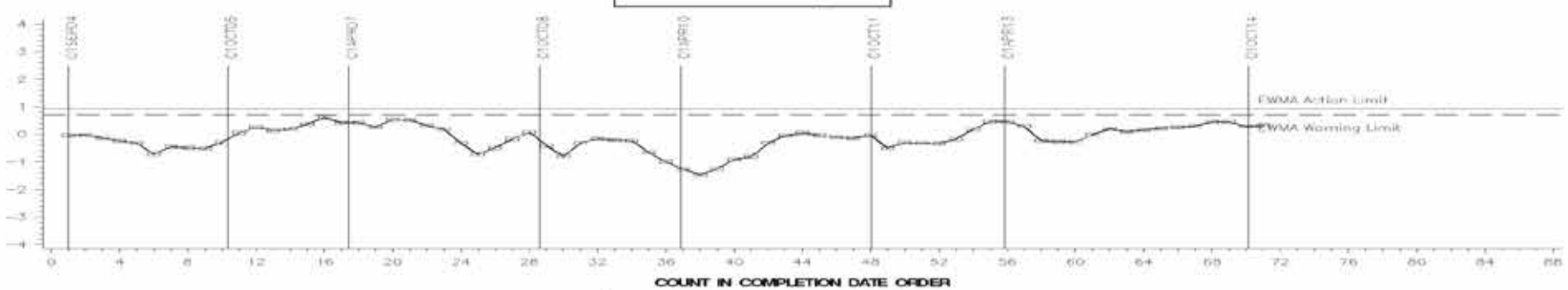
17/NOV/16:34

AVERAGE SLUDGE RATING

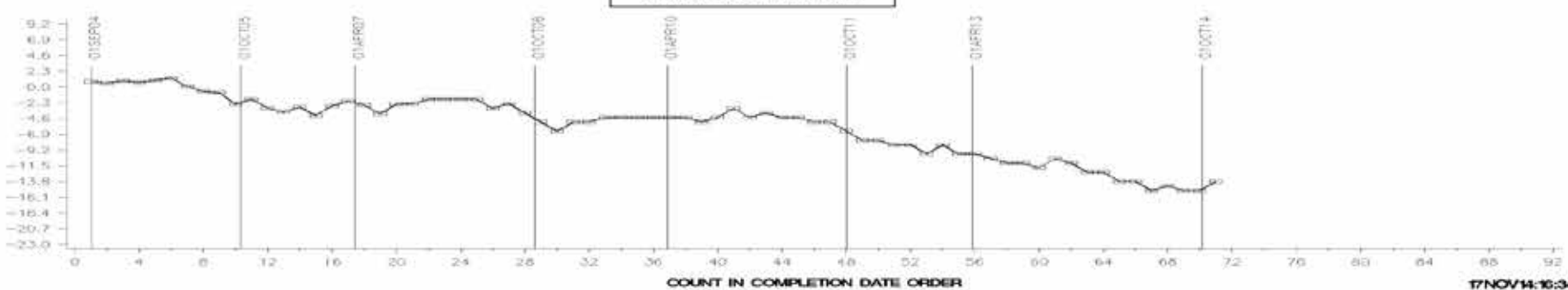
LTMS Severity Analysis



LTMS Precision Analysis



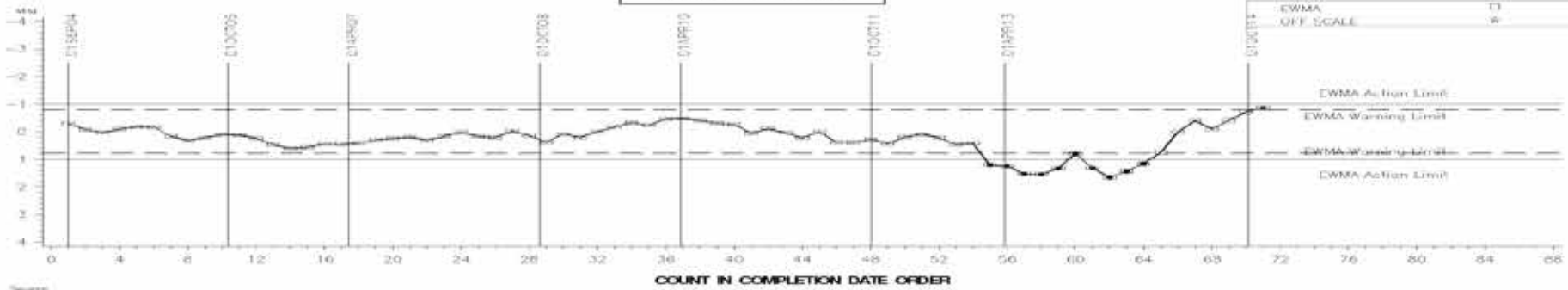
CUSUM Severity Analysis



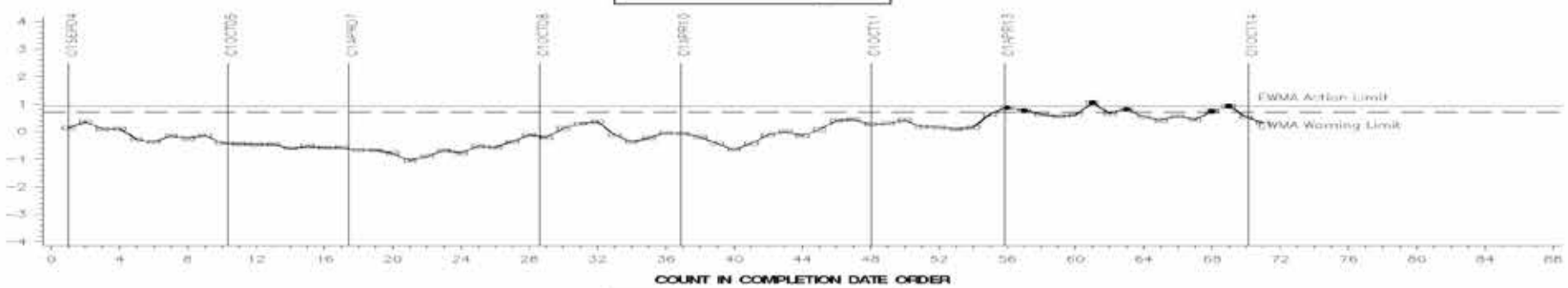
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ISM INDUSTRY OPERATIONAL VALID DATA
 INJECTOR SCREW WEIGHT LOSS ADJUSTED TO 3.9% SOOT

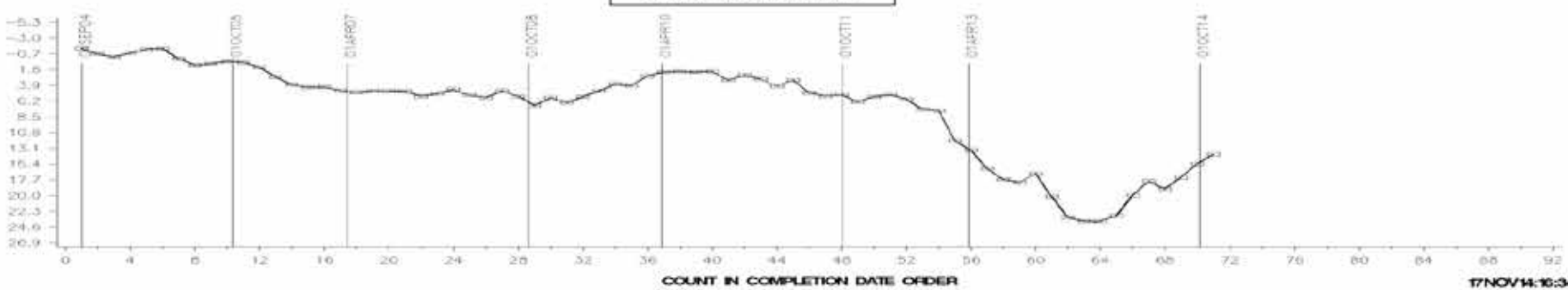
LTMS Severity Analysis



LTMS Precision Analysis

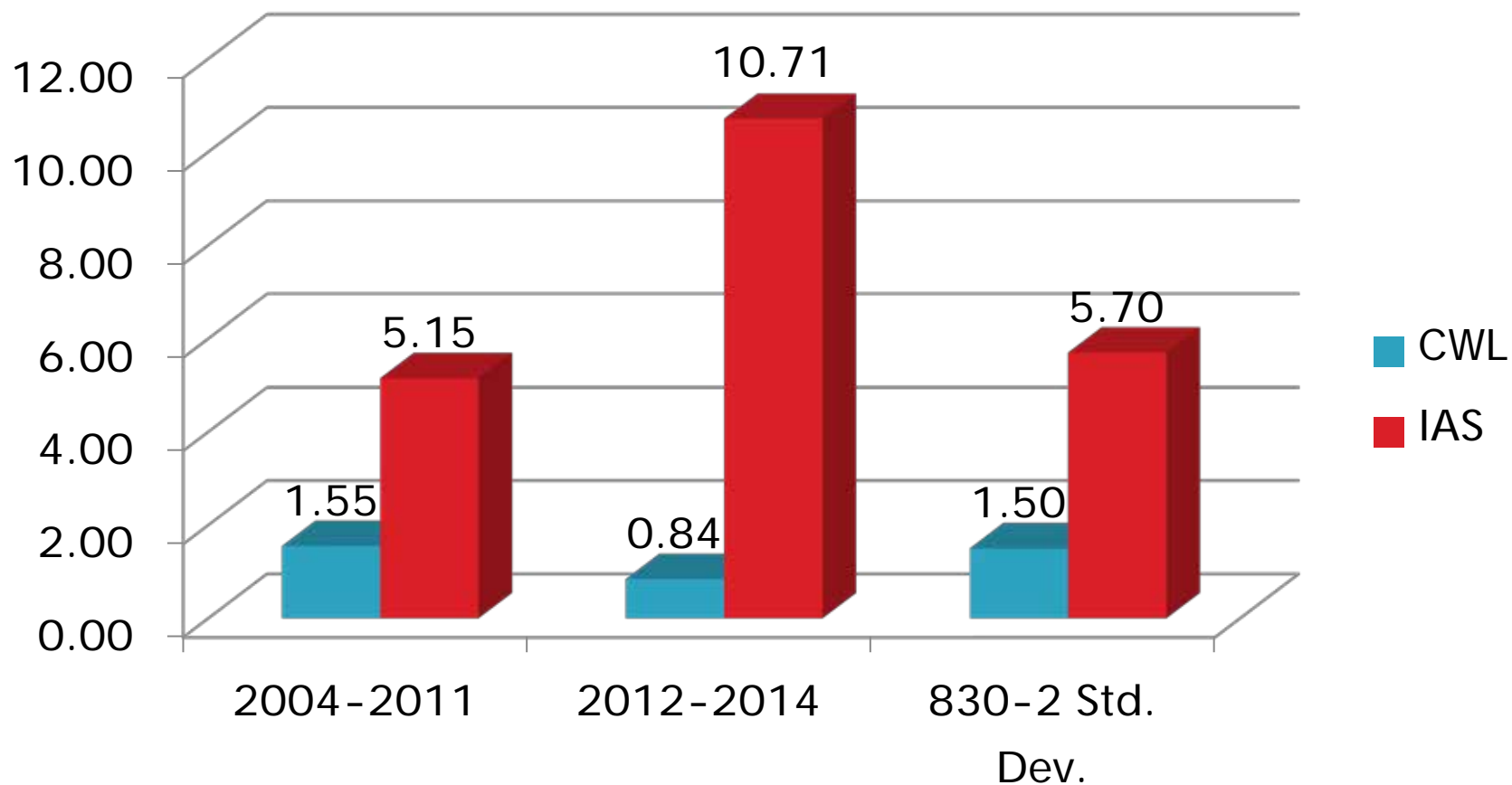


CUSUM Severity Analysis

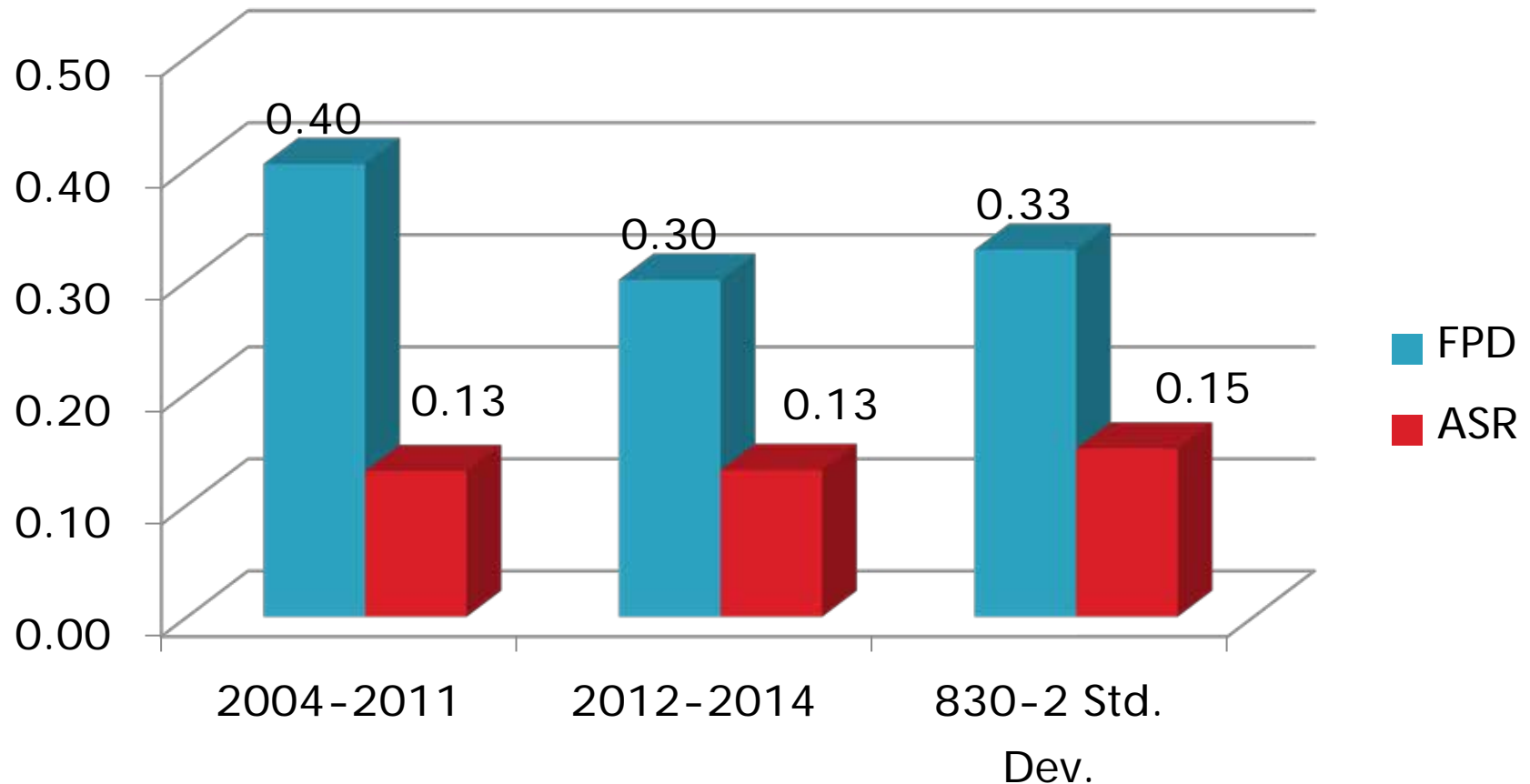


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ISM Precision Estimates



ISM Precision Estimates



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Test Monitoring Center
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EOAT

»» October 2014

EOAT Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	1
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	0
Total		1

EOAT Failed Tests

Failed Parameter	Number of Tests
Total	0

EOAT Lost Tests*

Status	Cause	#
Total		0

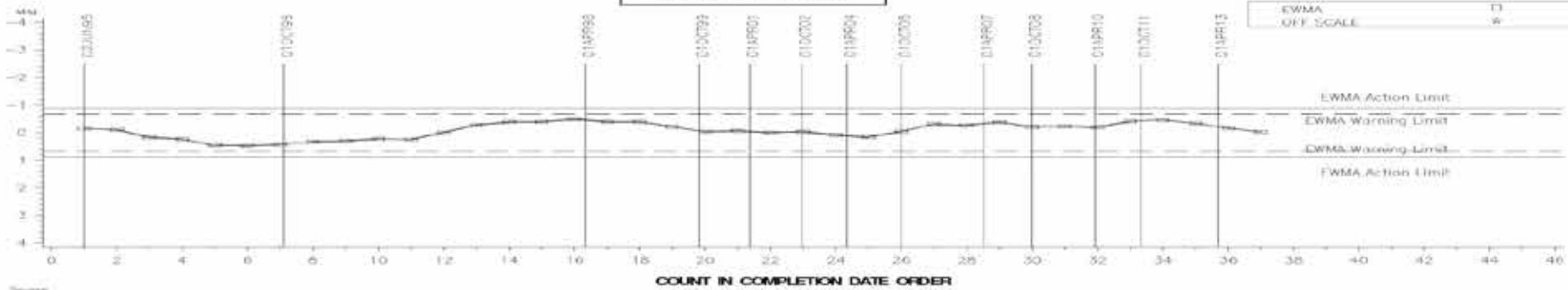
*Invalid and aborted tests

EOAT Test Severity

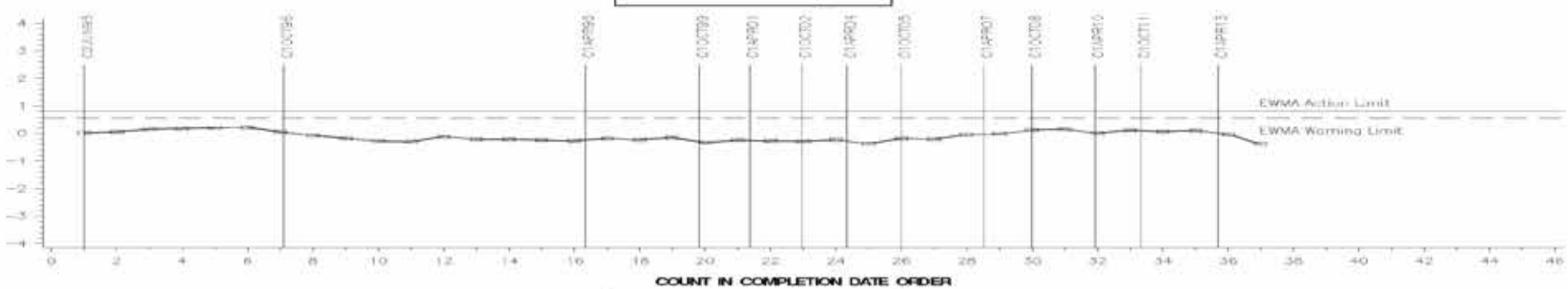
} AEQA in control.

ENGINE OIL AERATION

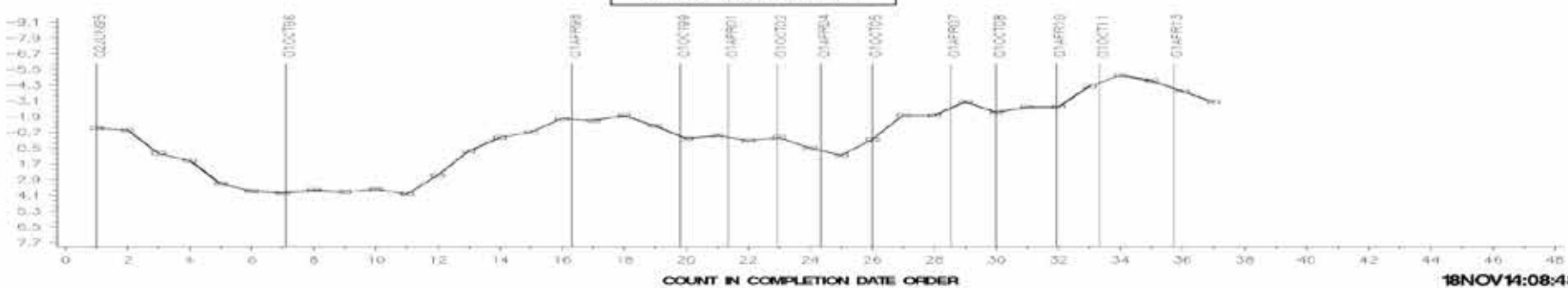
LTMS Severity Analysis



LTMS Precision Analysis



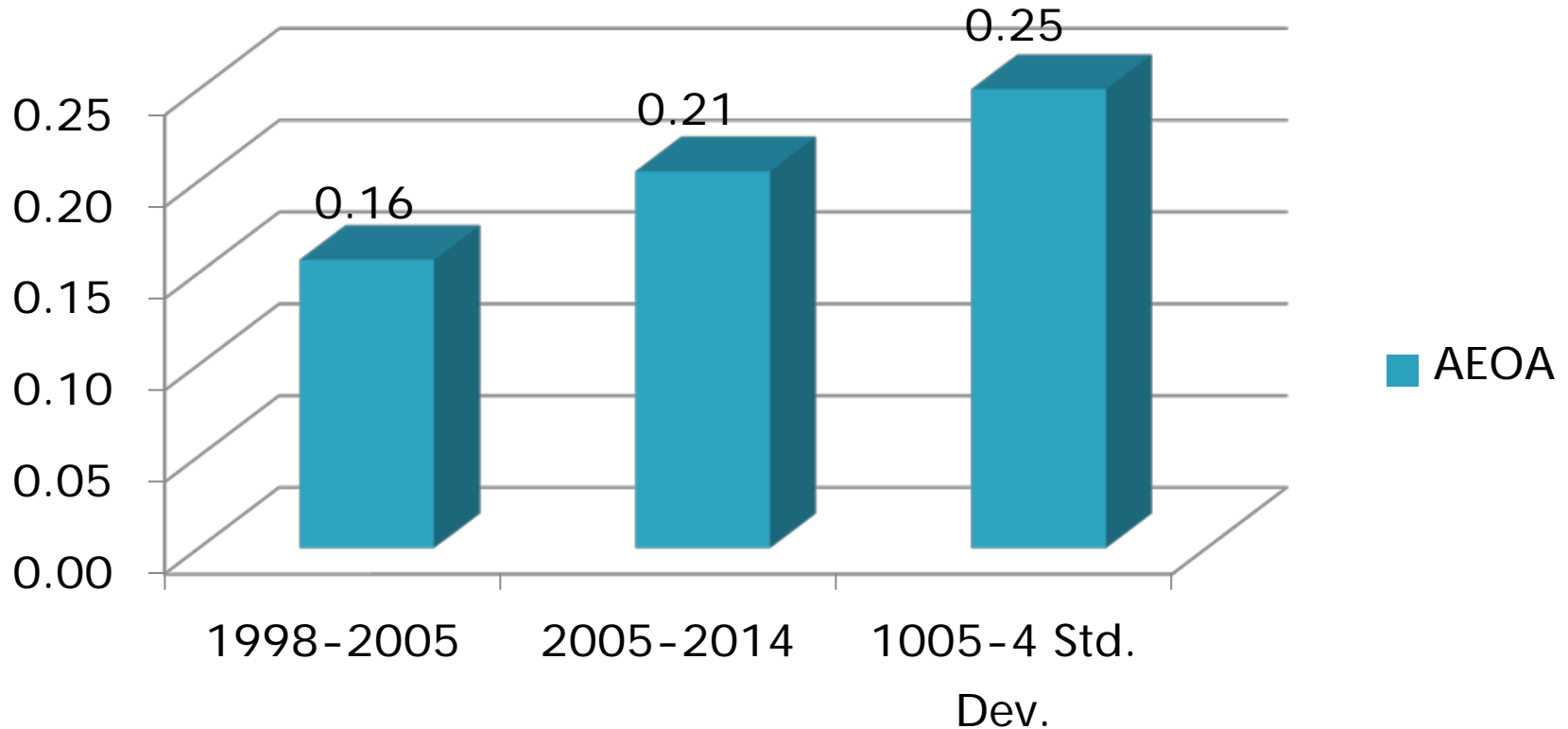
CUSUM Severity Analysis



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EOAT Precision Estimates

AEOA



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Test Monitoring Center

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A Program of ASTM International

RFWT

»» October 2014

RFWT Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	2
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	0
Total		2

RFWT Failed Tests

Failed Parameter	Number of Tests
Total	0

RFWT Lost Tests*

Status	Cause	#
Total		0

*Invalid and aborted tests

RFWT Test Severity

- } AFW in control but trending mild and near warning alarm.

Average Follower Wear

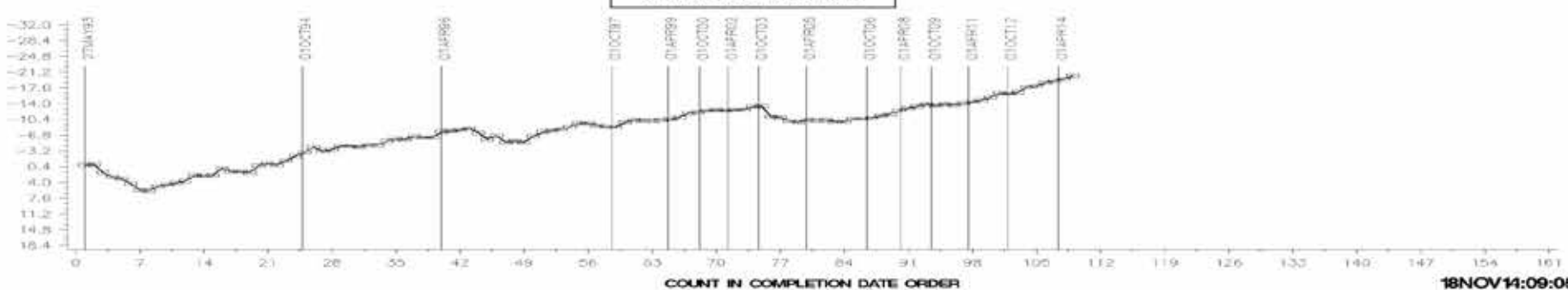
LTMS Severity Analysis



LTMS Precision Analysis



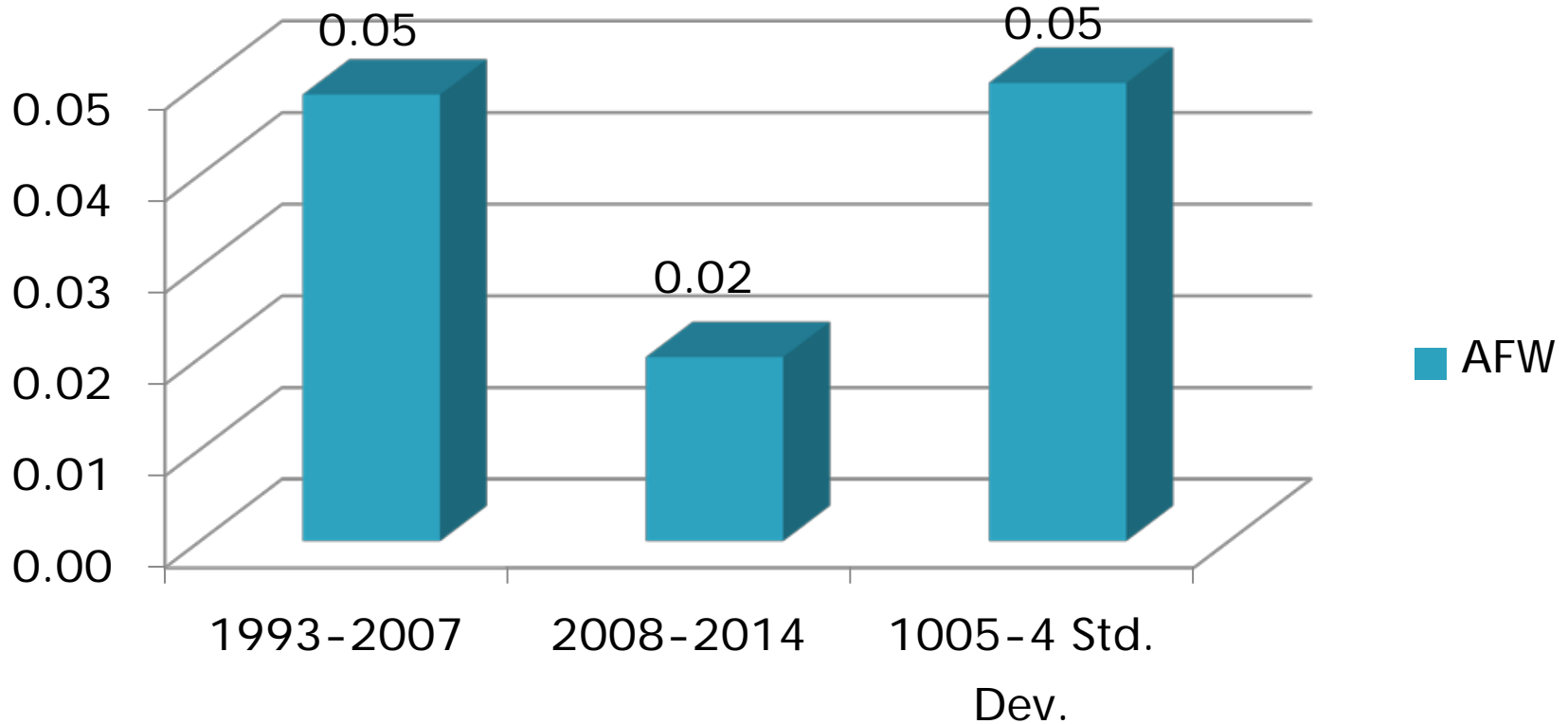
CUSUM Severity Analysis



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RFWT Precision Estimates

AFW



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Mack T-8/T-8E

»» October 2014

Test Monitoring Center

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T-8/T-8E Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	3
Failed Calibration Test	OC	0
Operationally Invalid	LC	1
Aborted	XC	3
Total		6

T-8/T8-E Failed Tests

Failed Parameter	Number of Tests
Total	0

T-8/T8-E Lost Tests*

Status	Cause	#
Invalid	Cracked intake manifold	1
Aborted	Projected to miss soot window	3
Total		4

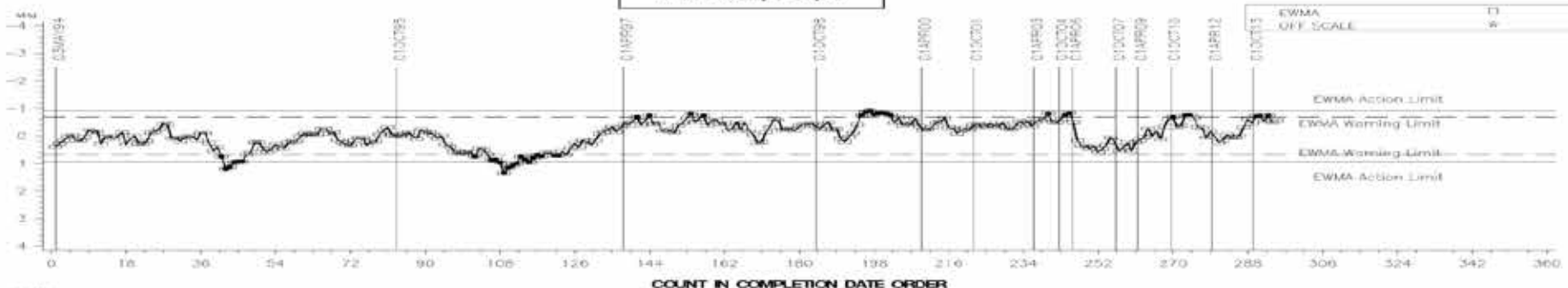
*Invalid and aborted tests

T-8/T-8E Test Severity

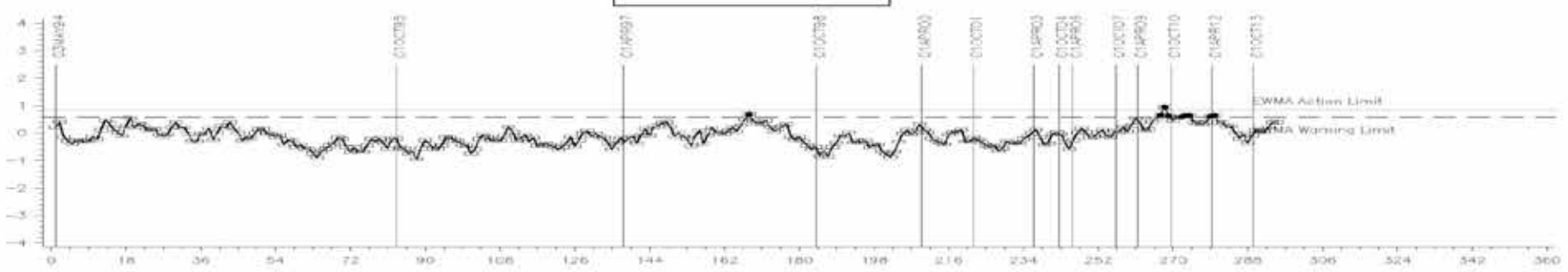
- } VI38, RV48 and RV2 are in control.
 - VI38 near warning alarm mild direction.

FINAL REFERENCE VISCOSITY AT 3.8% TGA SOOT LEVEL

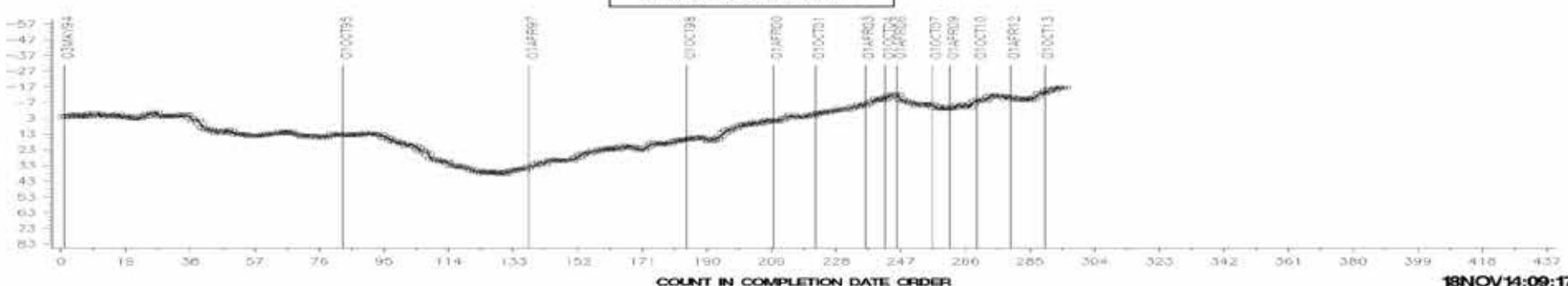
LTMS Severity Analysis



LTMS Precision Analysis



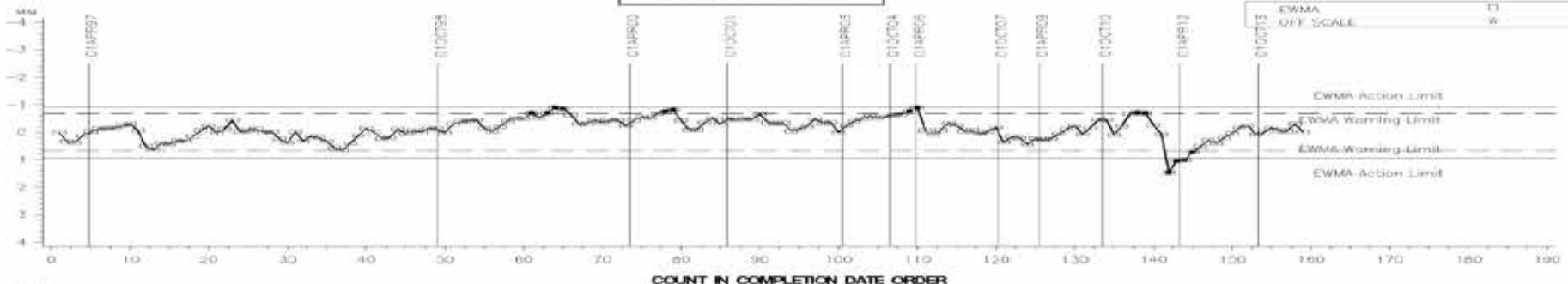
CUSUM Severity Analysis



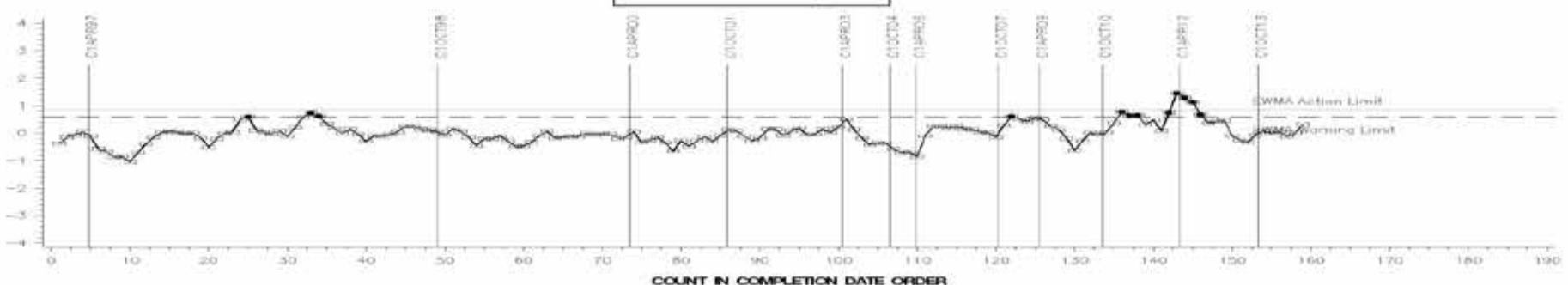
18NOV14:09:17

FINAL RELATIVE VISCOSITY (50% LOSS)

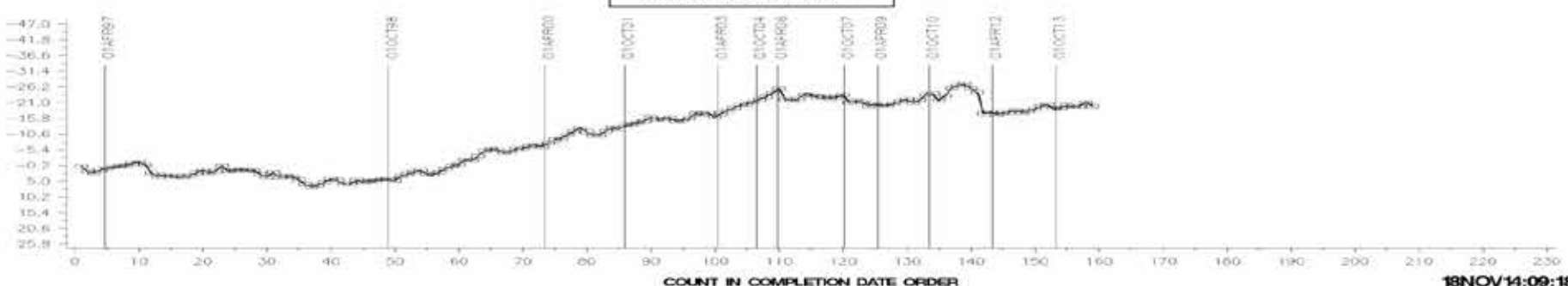
LTMS Severity Analysis



LTMS Precision Analysis



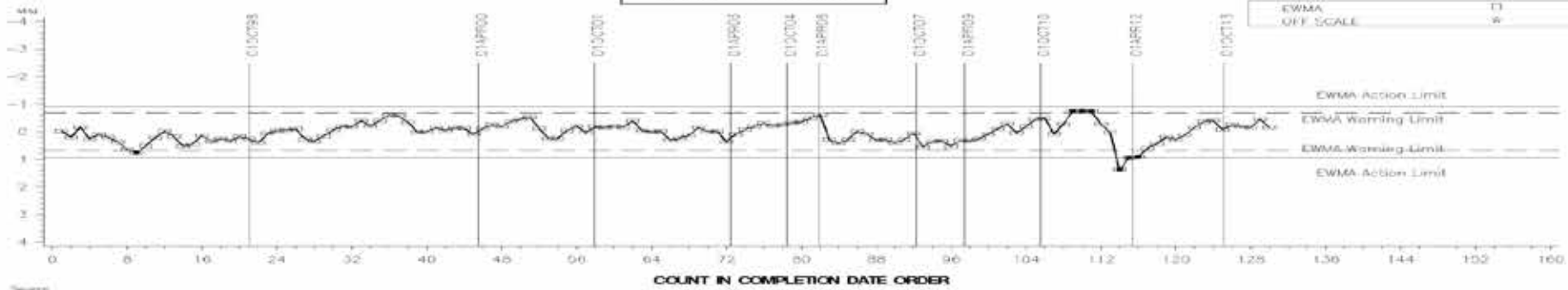
CUSUM Severity Analysis



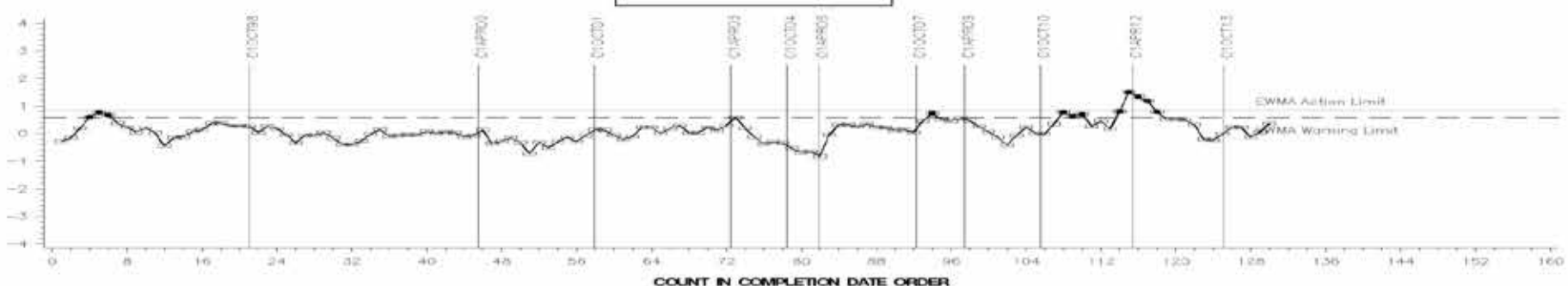
18NOV14:09:18

FINAL RELATIVE VISCOSITY (100% LOSS)

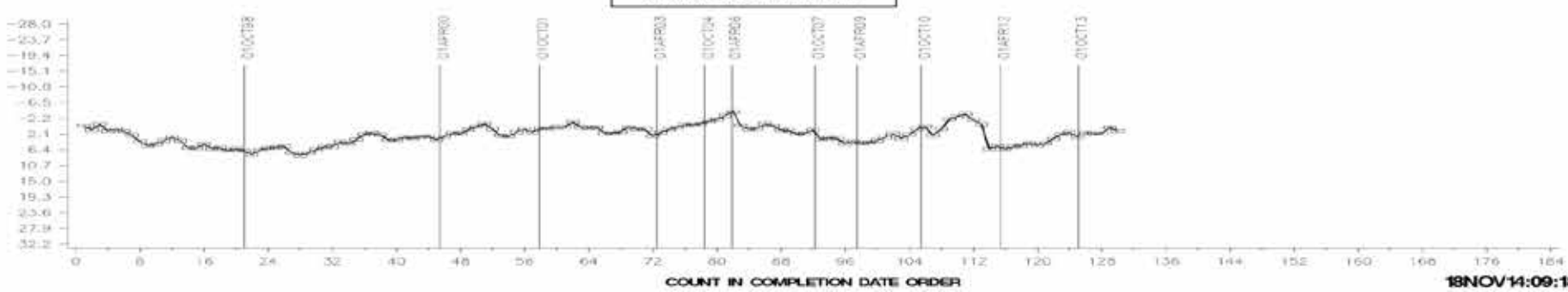
LTMS Severity Analysis



LTMS Precision Analysis

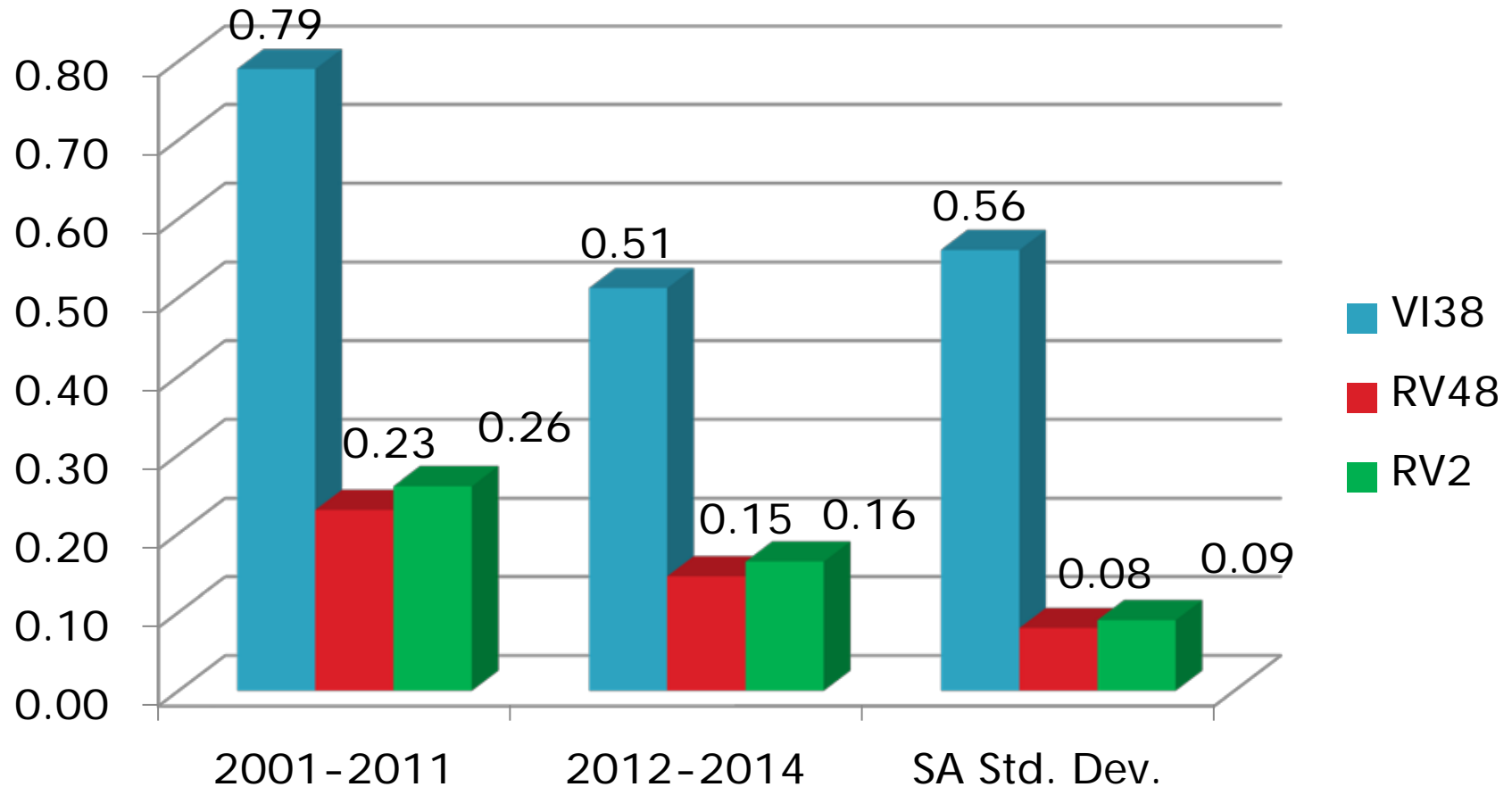


CUSUM Severity Analysis



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T-8/E Precision Estimates



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Test Monitoring Center

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Mack T-11

»» October 2014

T-11 Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	6
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	3
Total		9

T-11 Failed Tests

Failed Parameter	Number of Tests
Total	0

T-11 Lost Tests*

Status	Cause	#
Aborted	Valve crosshead failure; high fuel dilution	1
Aborted	Injector lifter failure	1
Aborted	Poor control due to bad thermocouple	1
Total		3

*Invalid and aborted tests

T-11 Test Severity

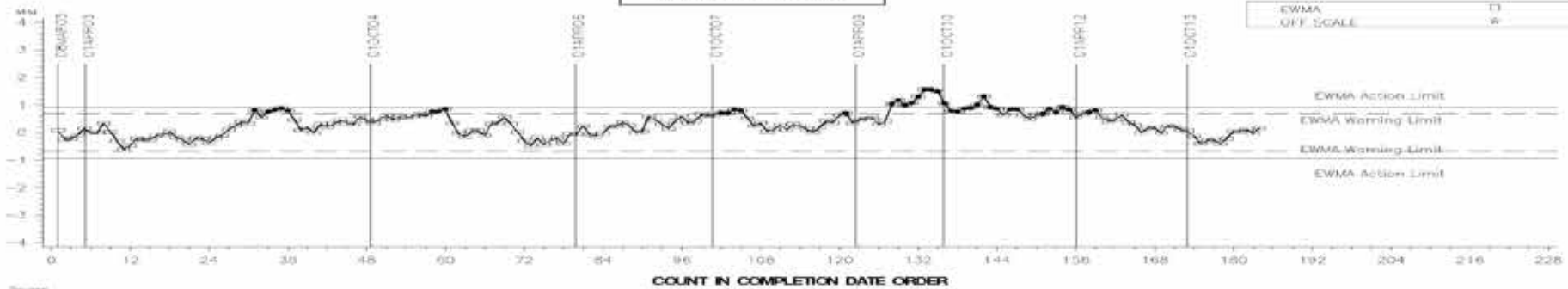
- } SOOT, SOOT4 and SOOT5 in control chart limits.
- } MRV in action precision alarm.

T-11 INDUSTRY OPERATIONALY VALID DATA

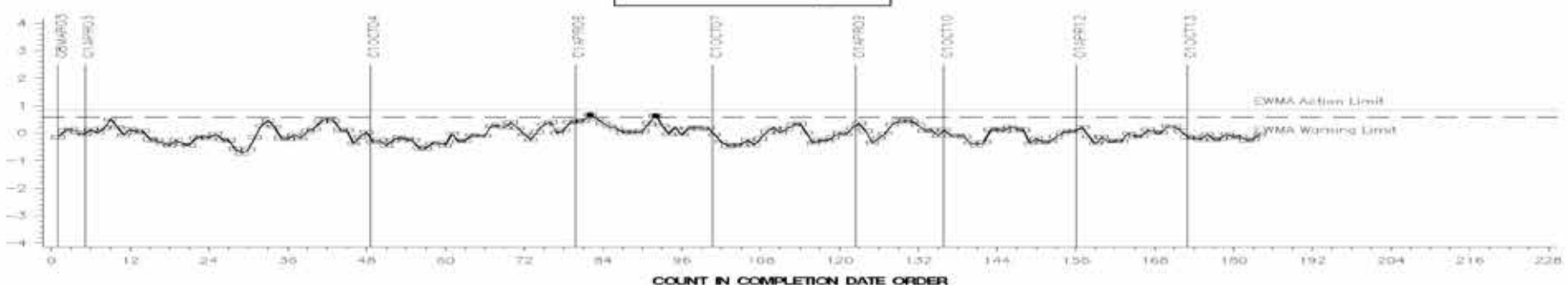


SOOT AT 12 cSt

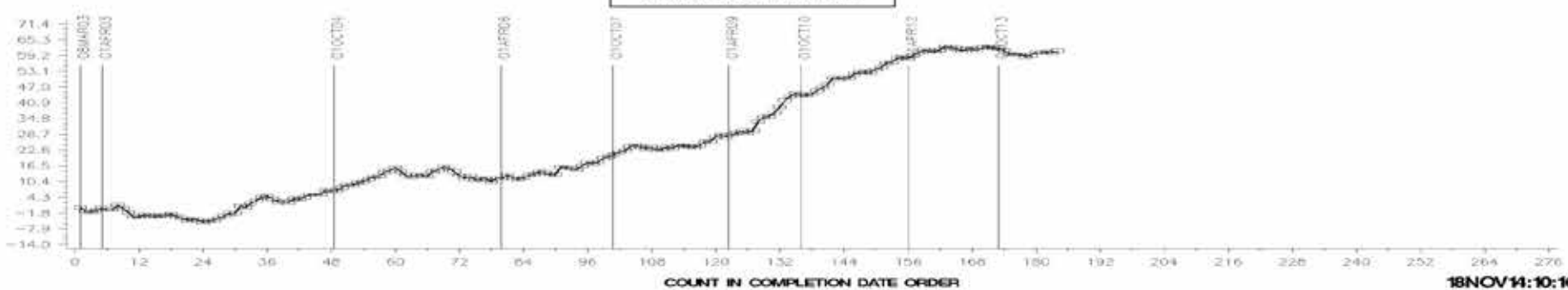
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis



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Test Monitoring Center

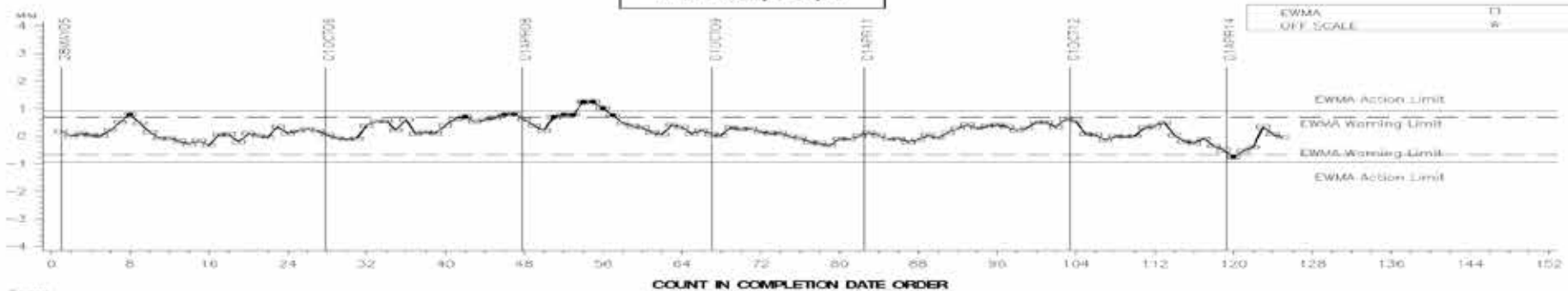
<http://astmtmc.cmu.edu>



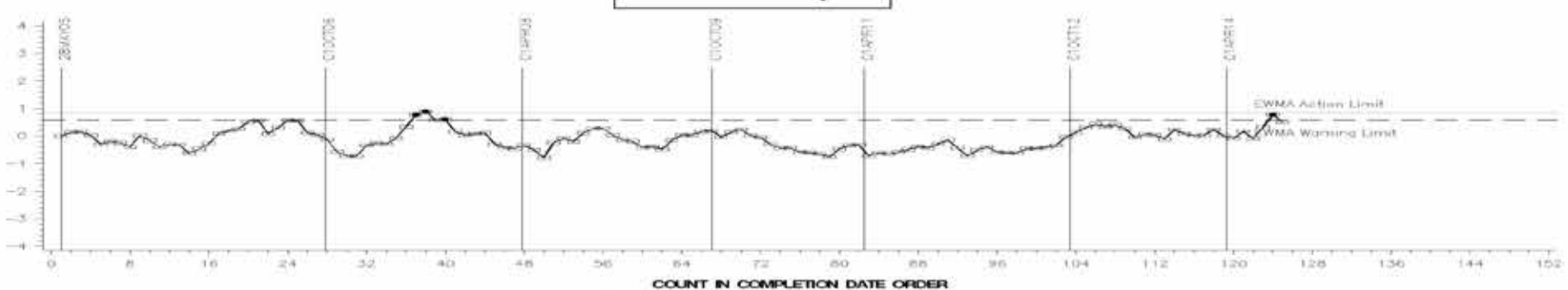
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SOOT @ 4 cSt - FINAL RESULT

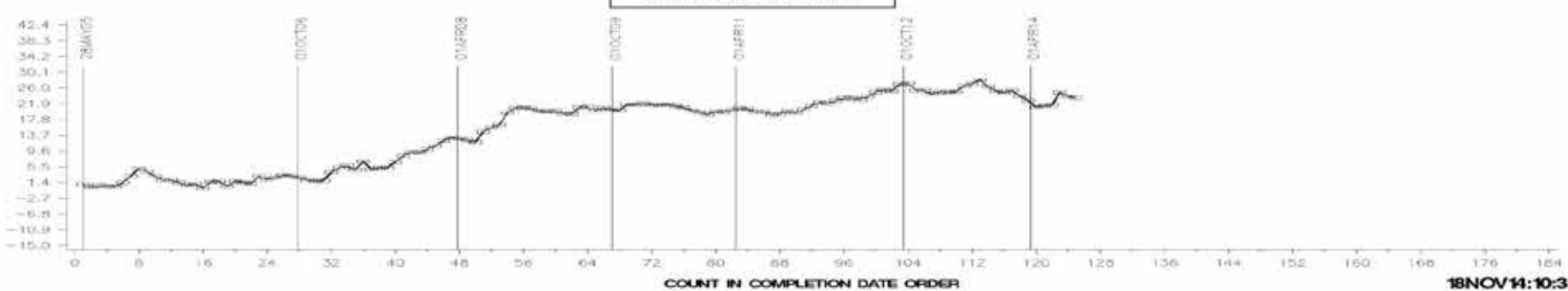
LTMS Severity Analysis



LTMS Precision Analysis



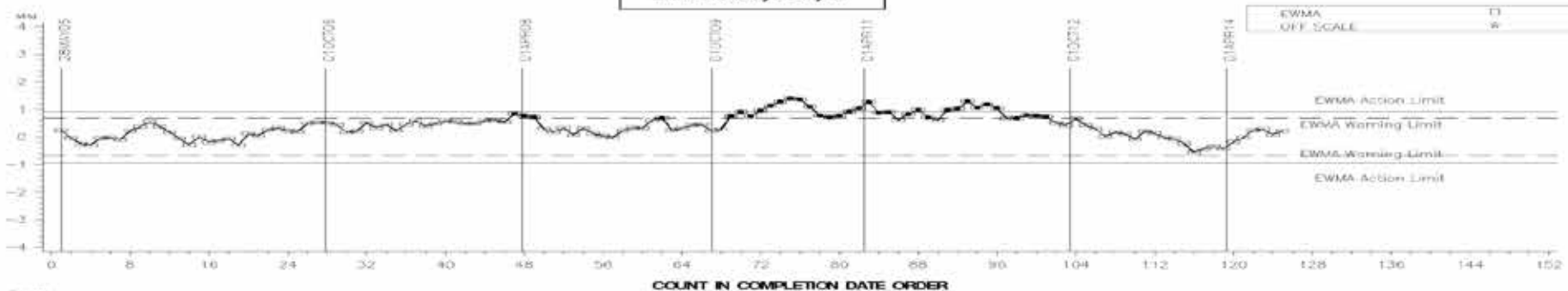
CUSUM Severity Analysis



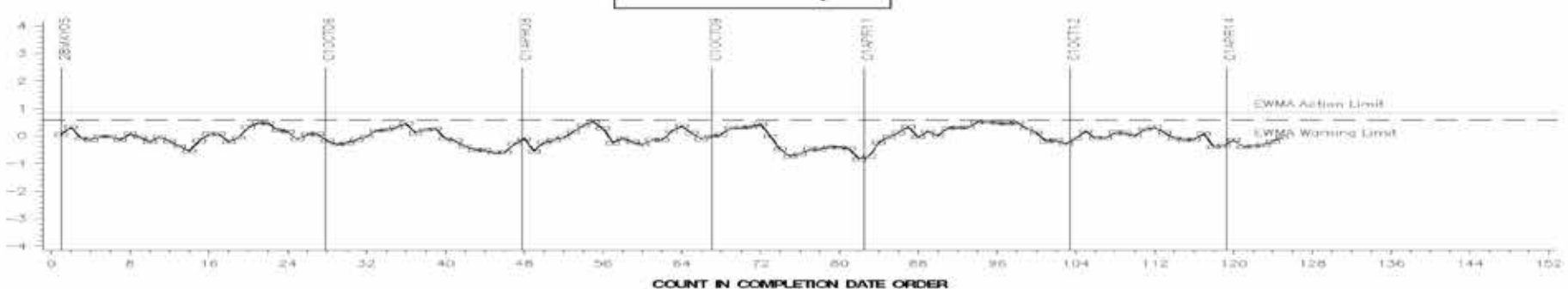
18NOV14:10:31

SOOT @ 15 cSt - FINAL RESULT

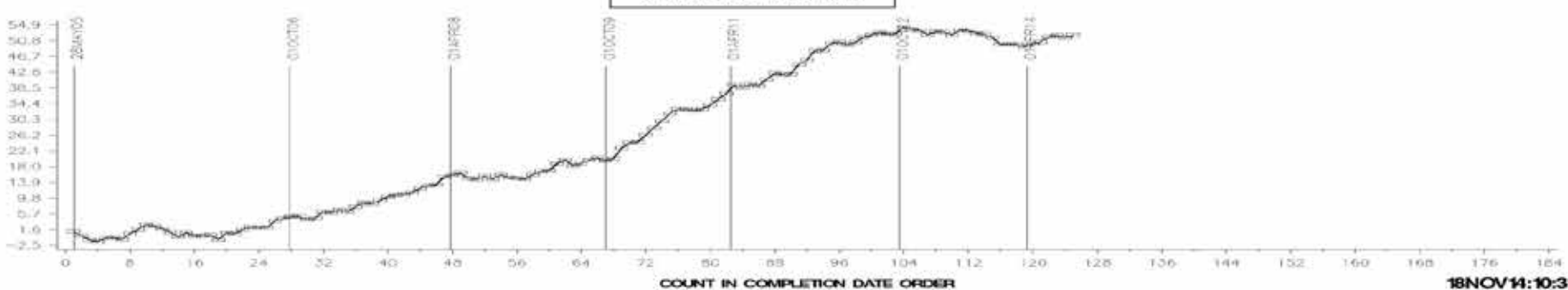
LTMS Severity Analysis



LTMS Precision Analysis

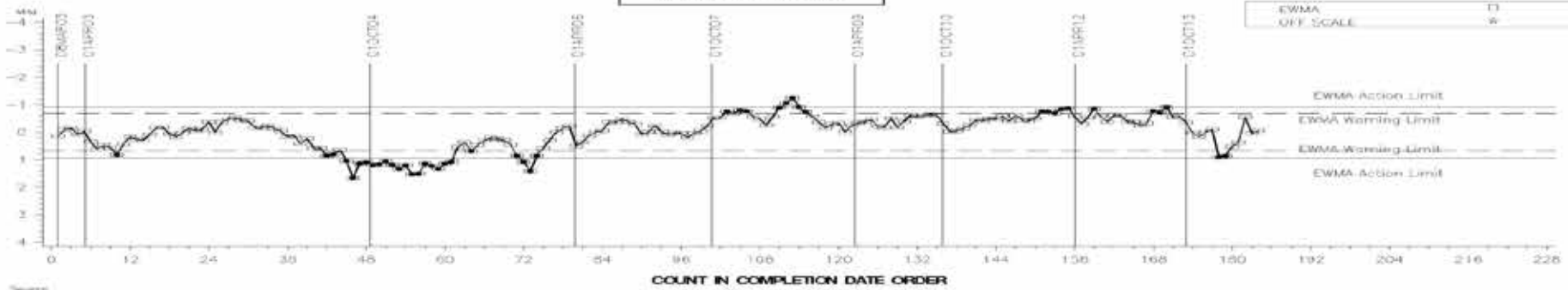


CUSUM Severity Analysis

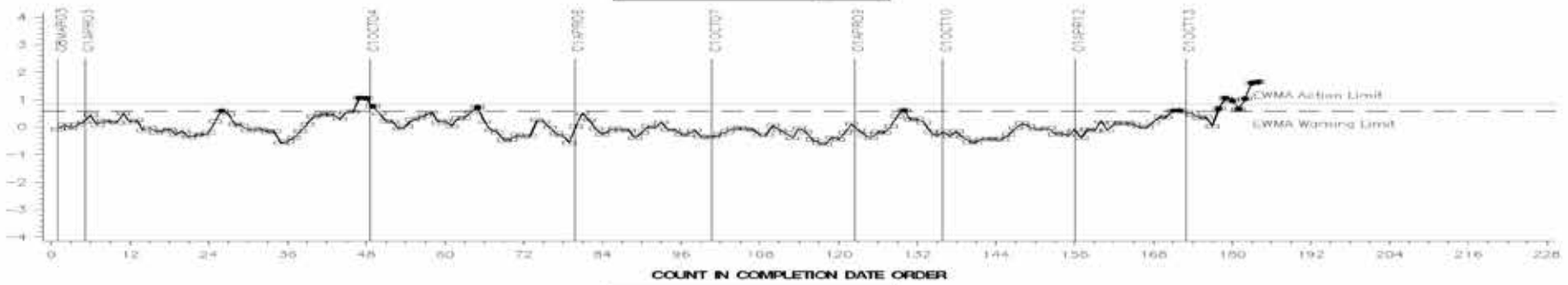


18NOV14:10:31

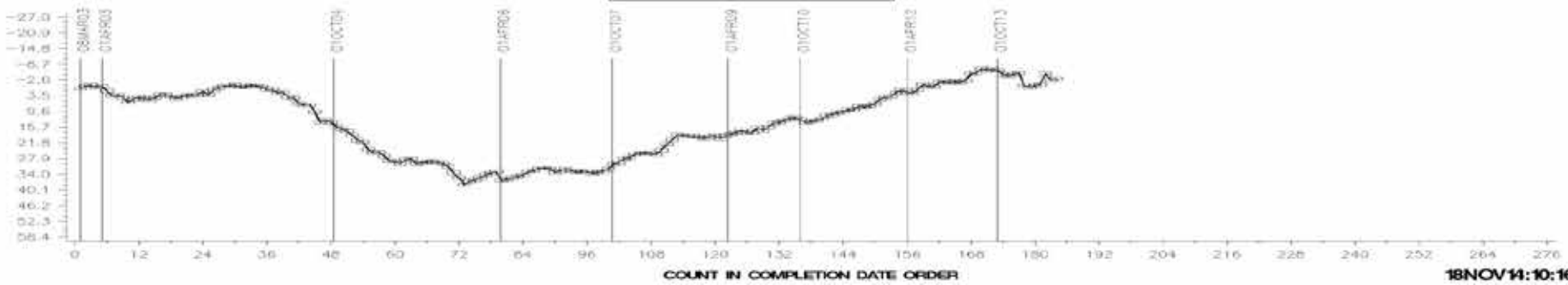
MRV VISCOSITY
LTMS Severity Analysis



LTMS Precision Analysis

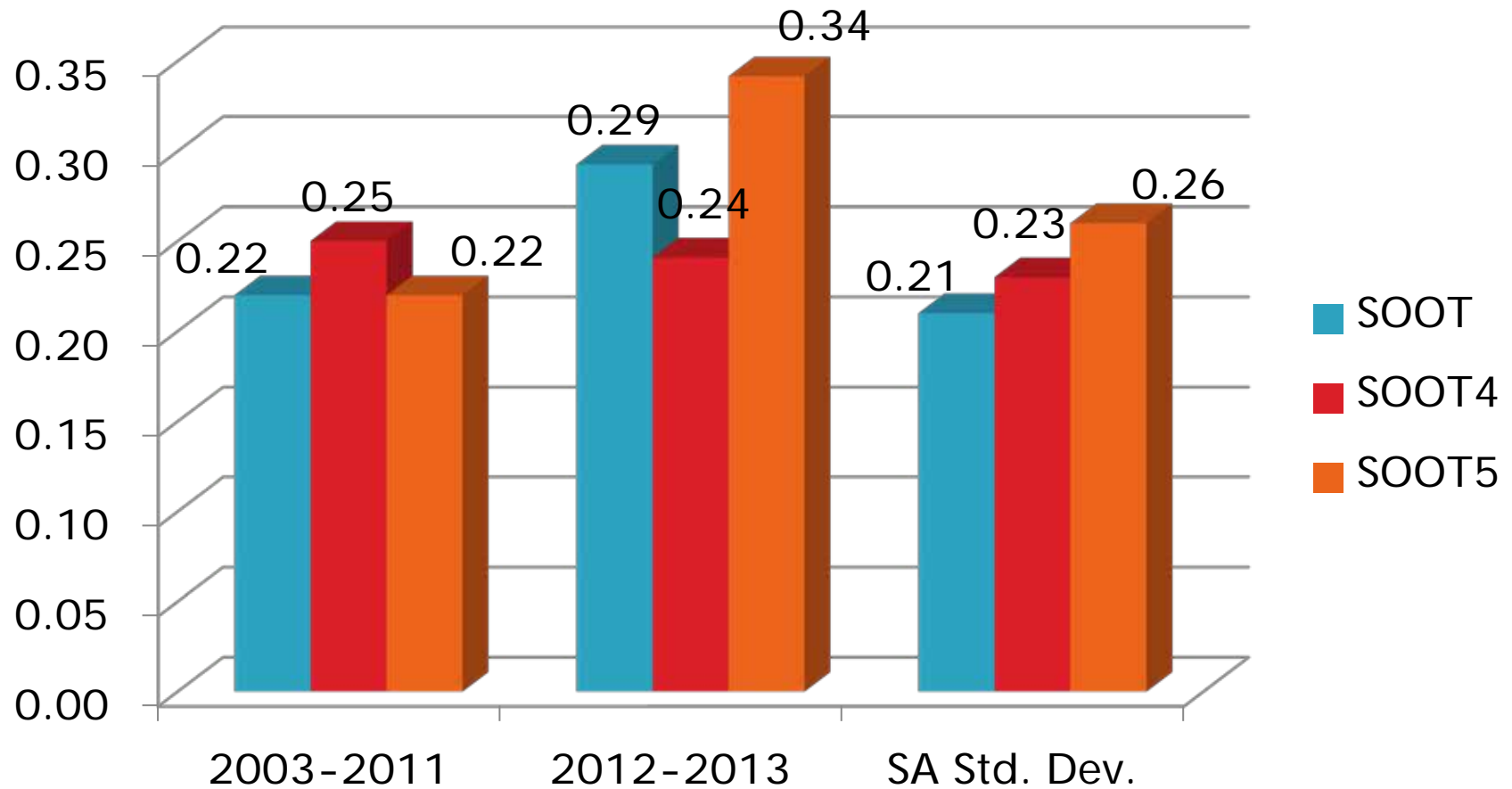


CUSUM Severity Analysis



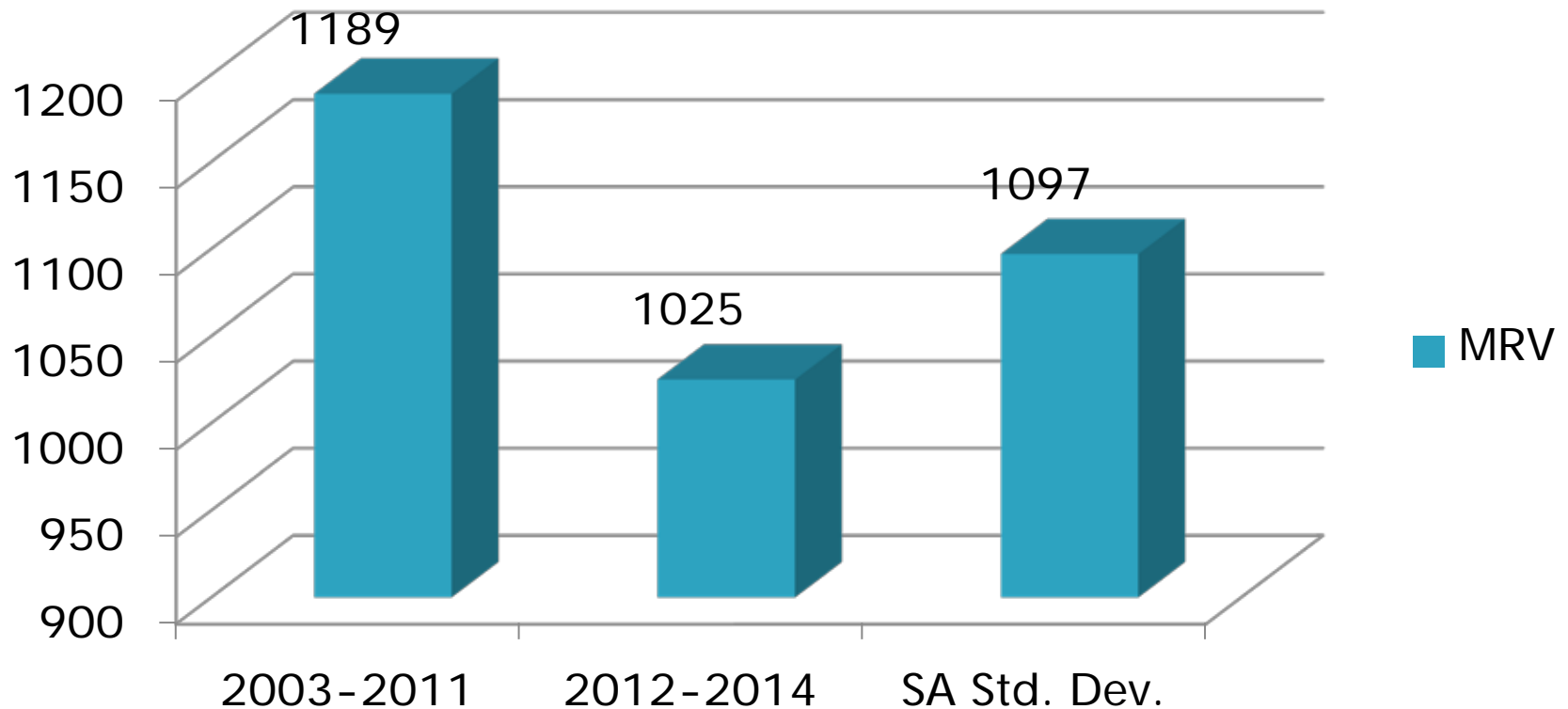
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T-11 Precision Estimates



T-11 Precision Estimates

MRV



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Test Monitoring Center
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Mack T-12

»» October 2014

T-12 Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	4
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	3
Total		8

T-12 Failed Tests

Failed Parameter	Number of Tests
Mild CLW	1
Total	1

T-12 Lost Tests*

Status	Cause	#
Aborted	Missed 100 hr soot window	1
Aborted	Stuck intake valve	1
Aborted	Internal engine failure at startup	1
Total		3

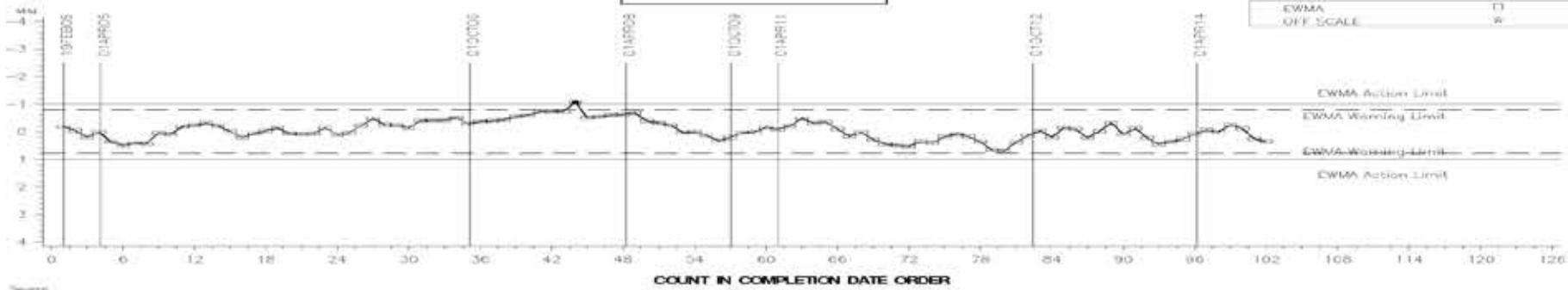
*Invalid and aborted tests

T-12 Test Severity

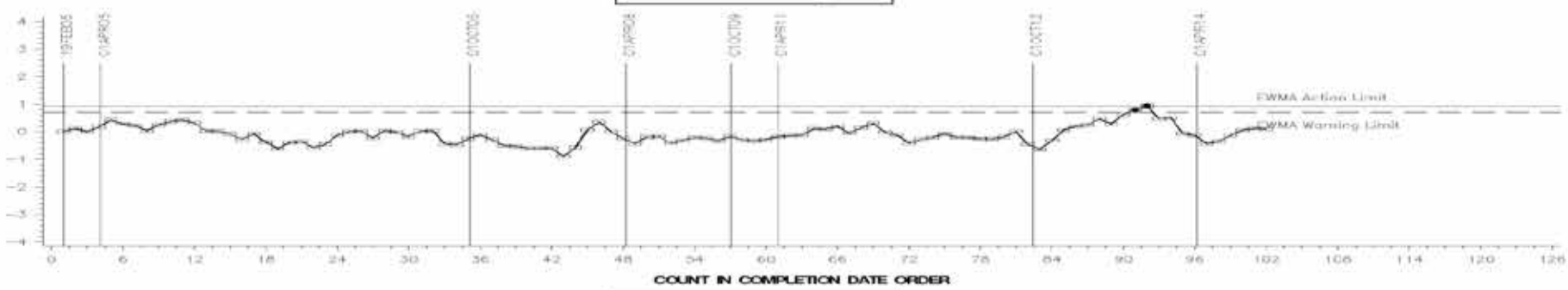
- } All parameters are in control.
 - CLW near precision alarm.

FINAL TRANS. RES. DELTA PB @ EOT

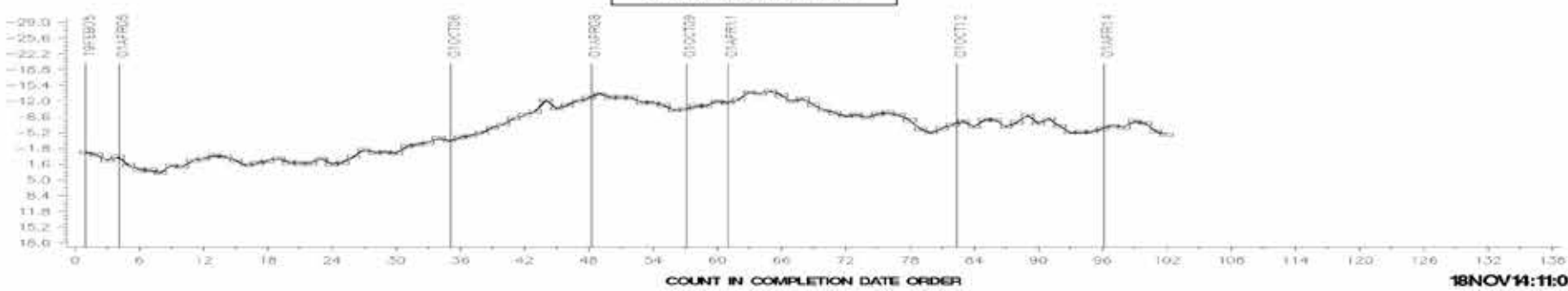
LTMS Severity Analysis



LTMS Precision Analysis



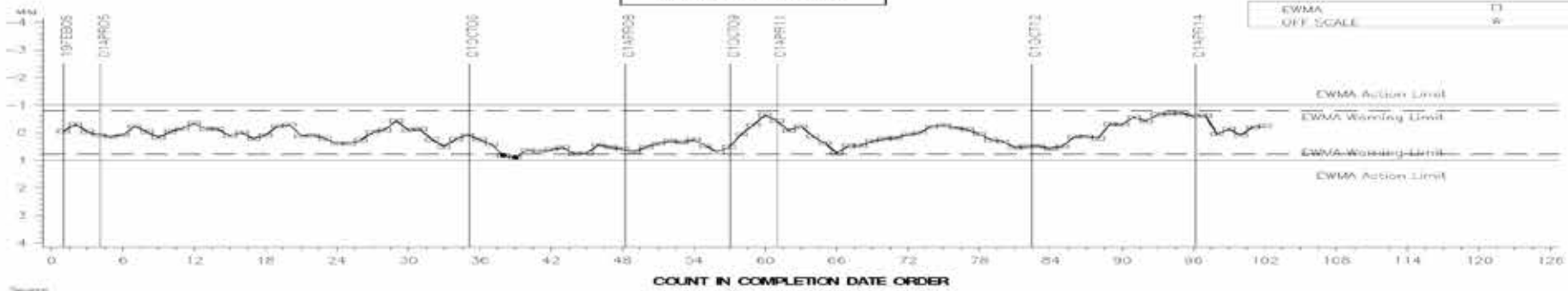
CUSUM Severity Analysis



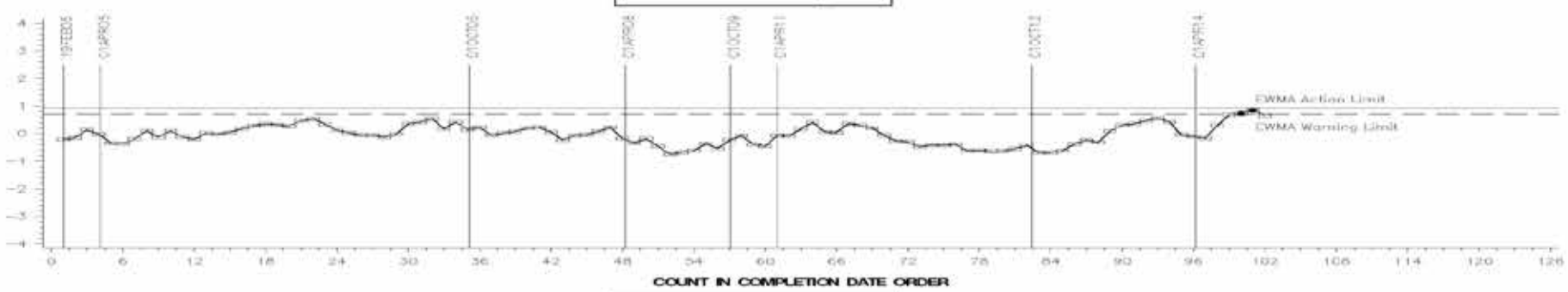
18NOV14:11:02

AVG. CYLINDER LINER WEAR (CLW)

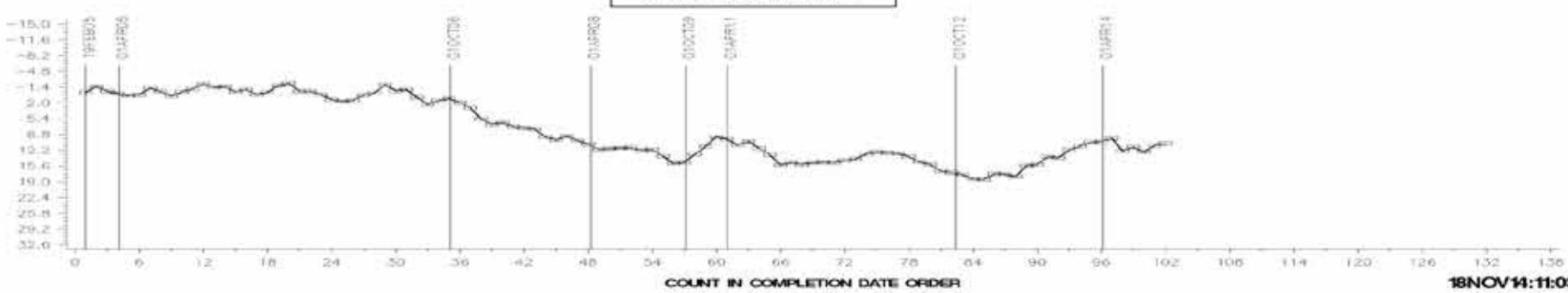
LTMS Severity Analysis



LTMS Precision Analysis



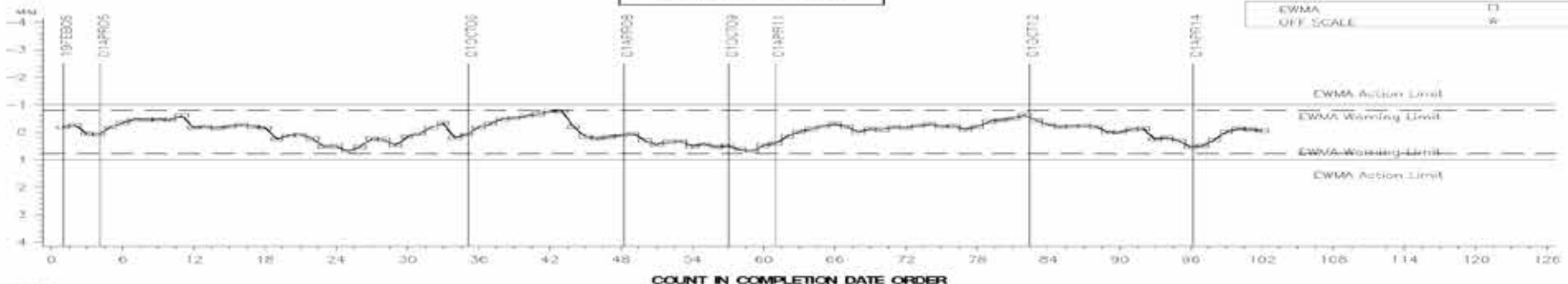
CUSUM Severity Analysis



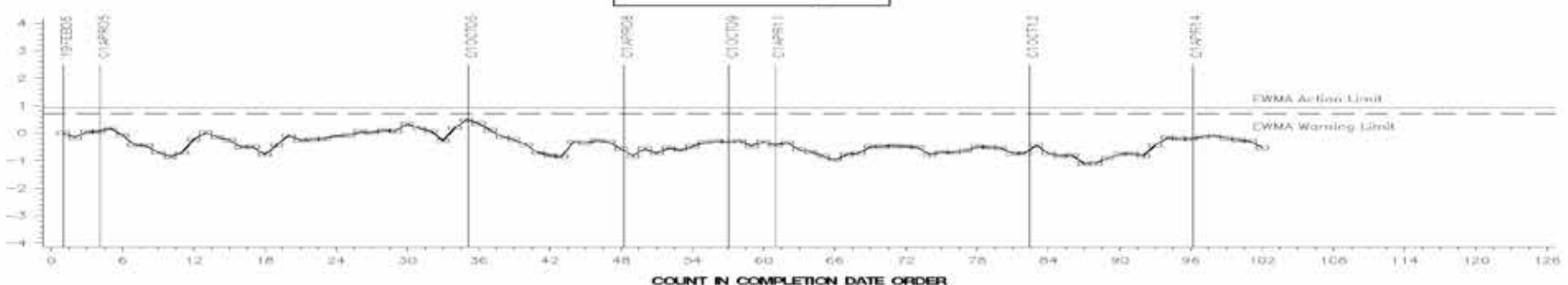
18NOV14:11:03

AVG. TOP RING WEIGHT LOSS (TRWL)

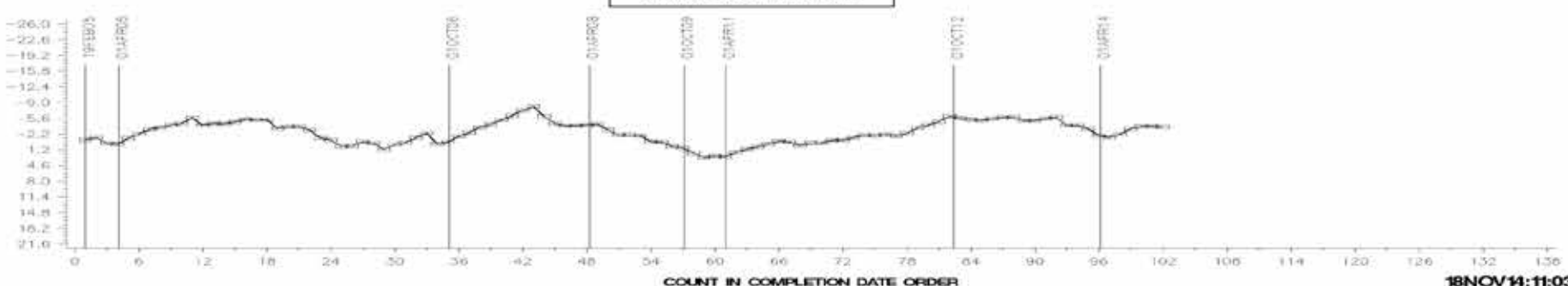
LTMS Severity Analysis



LTMS Precision Analysis



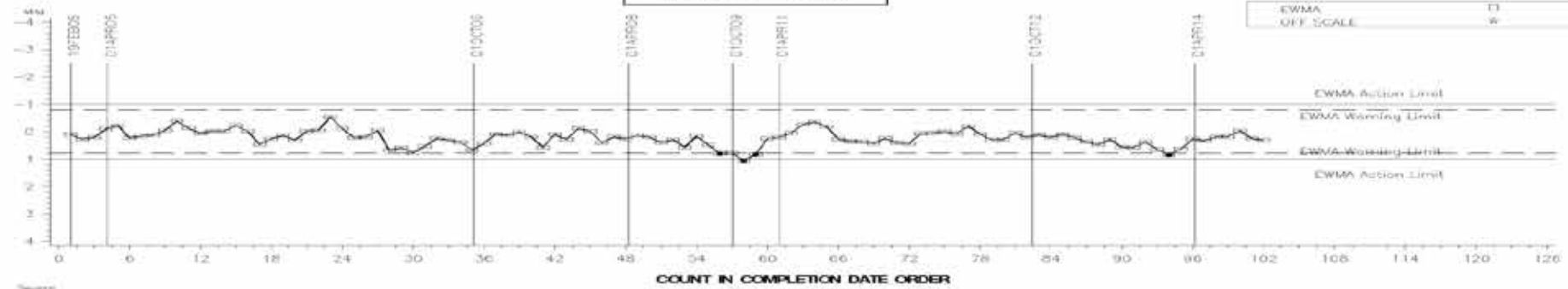
CUSUM Severity Analysis



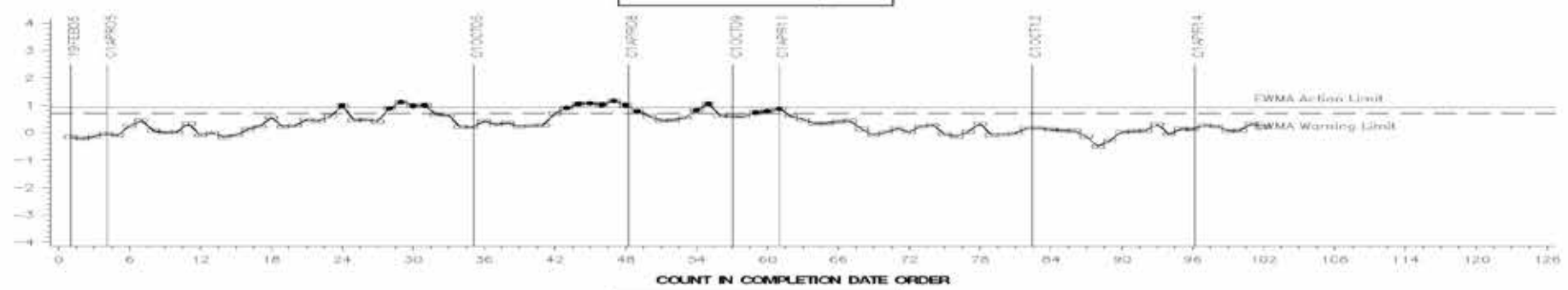
18NOV14:11:03

FINAL TRANS. RES. OIL CONSUMPTION

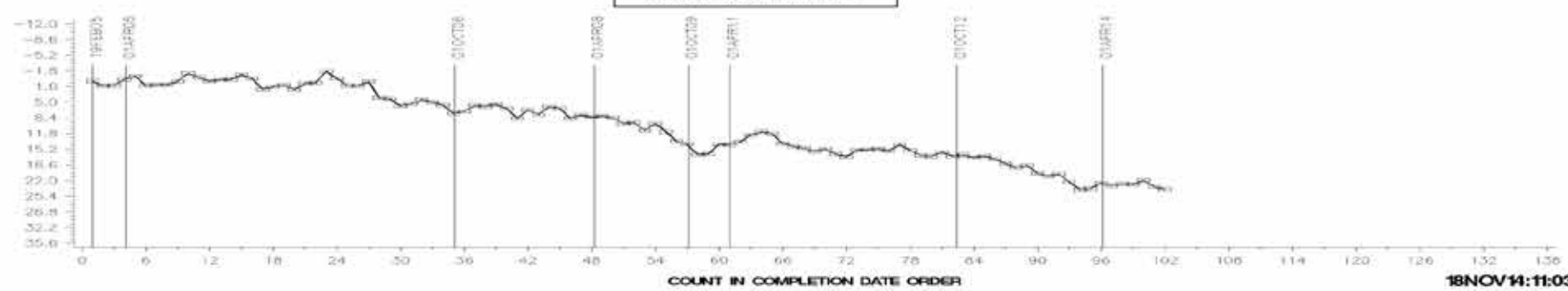
LTMS Severity Analysis



LTMS Precision Analysis



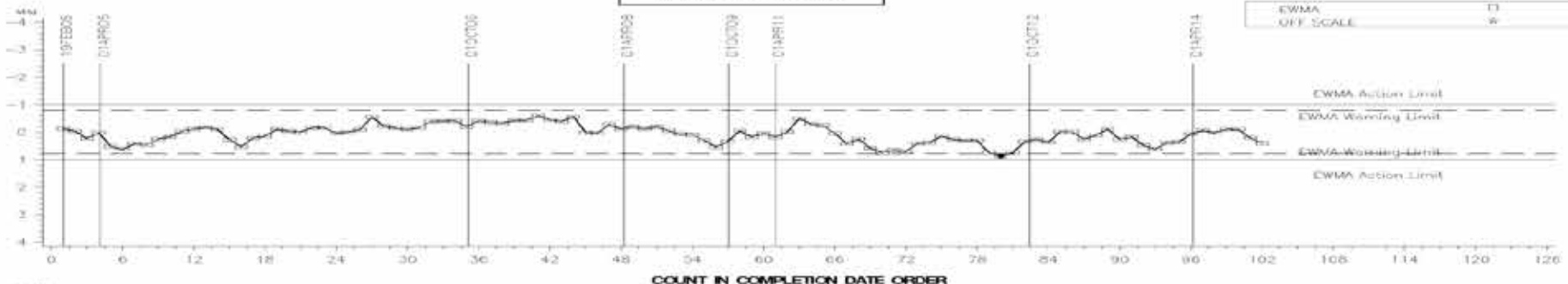
CUSUM Severity Analysis



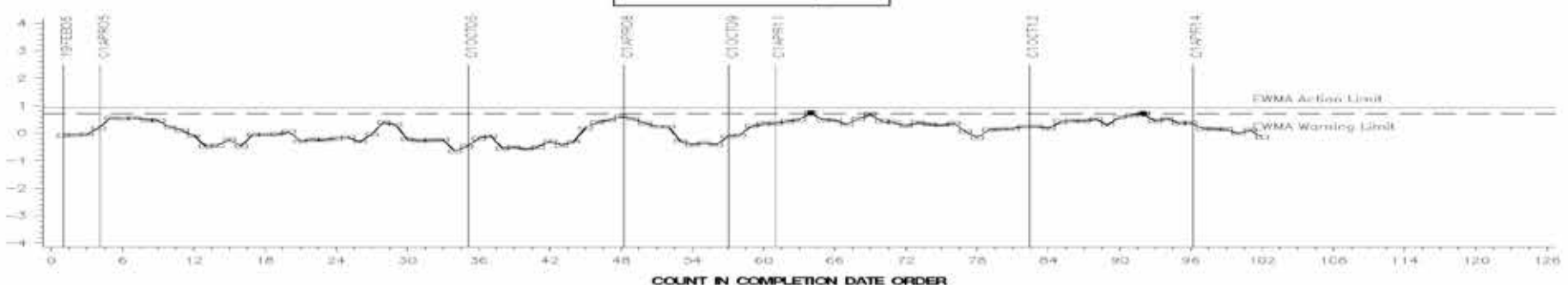
18NOV14:11:03

FINAL TRANS. RES. DELTA PB 250-300H

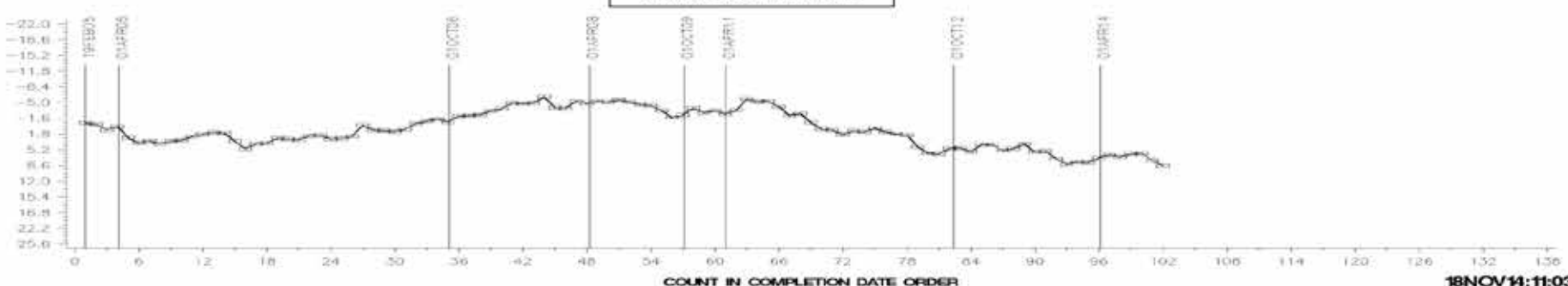
LTMS Severity Analysis



LTMS Precision Analysis

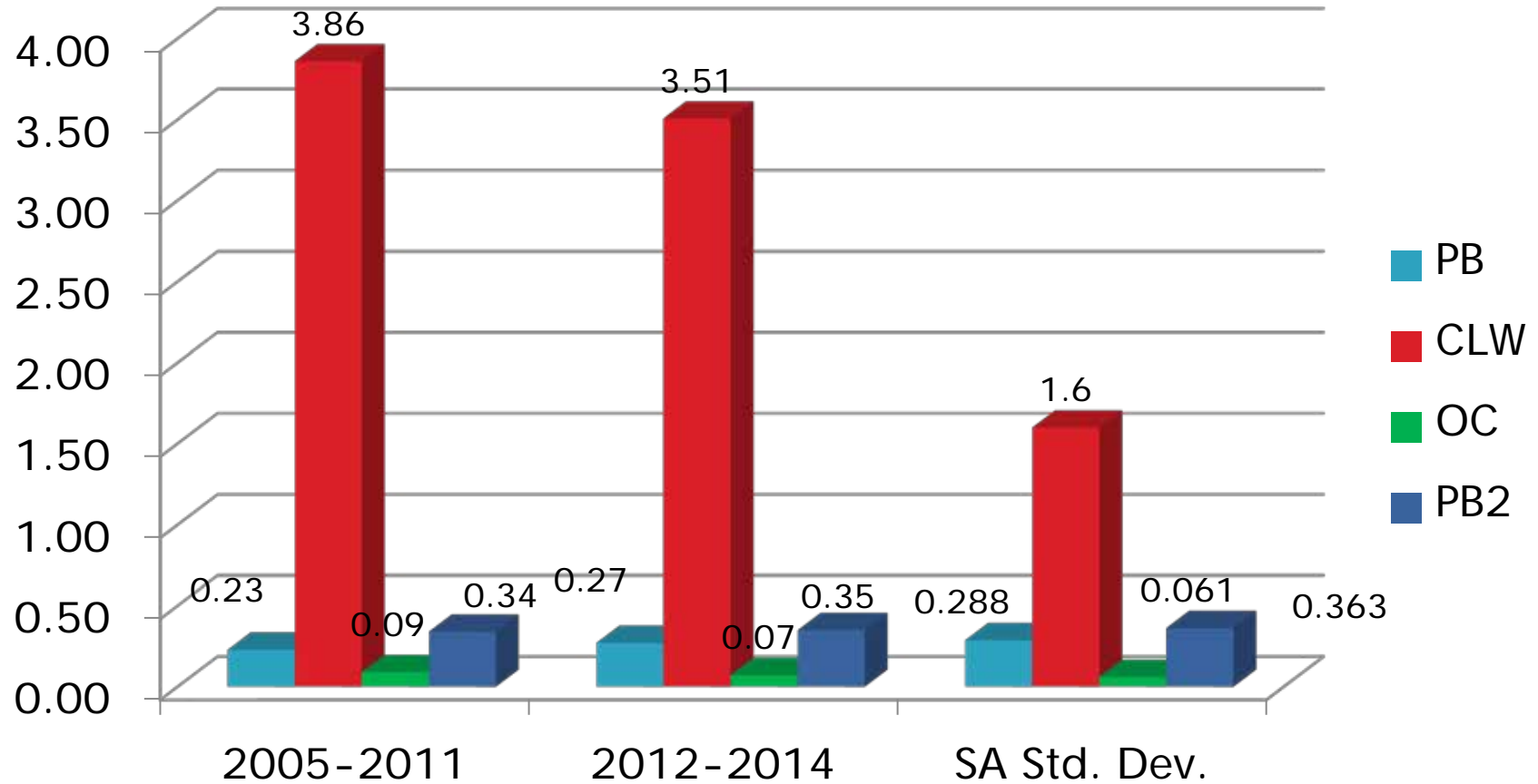


CUSUM Severity Analysis



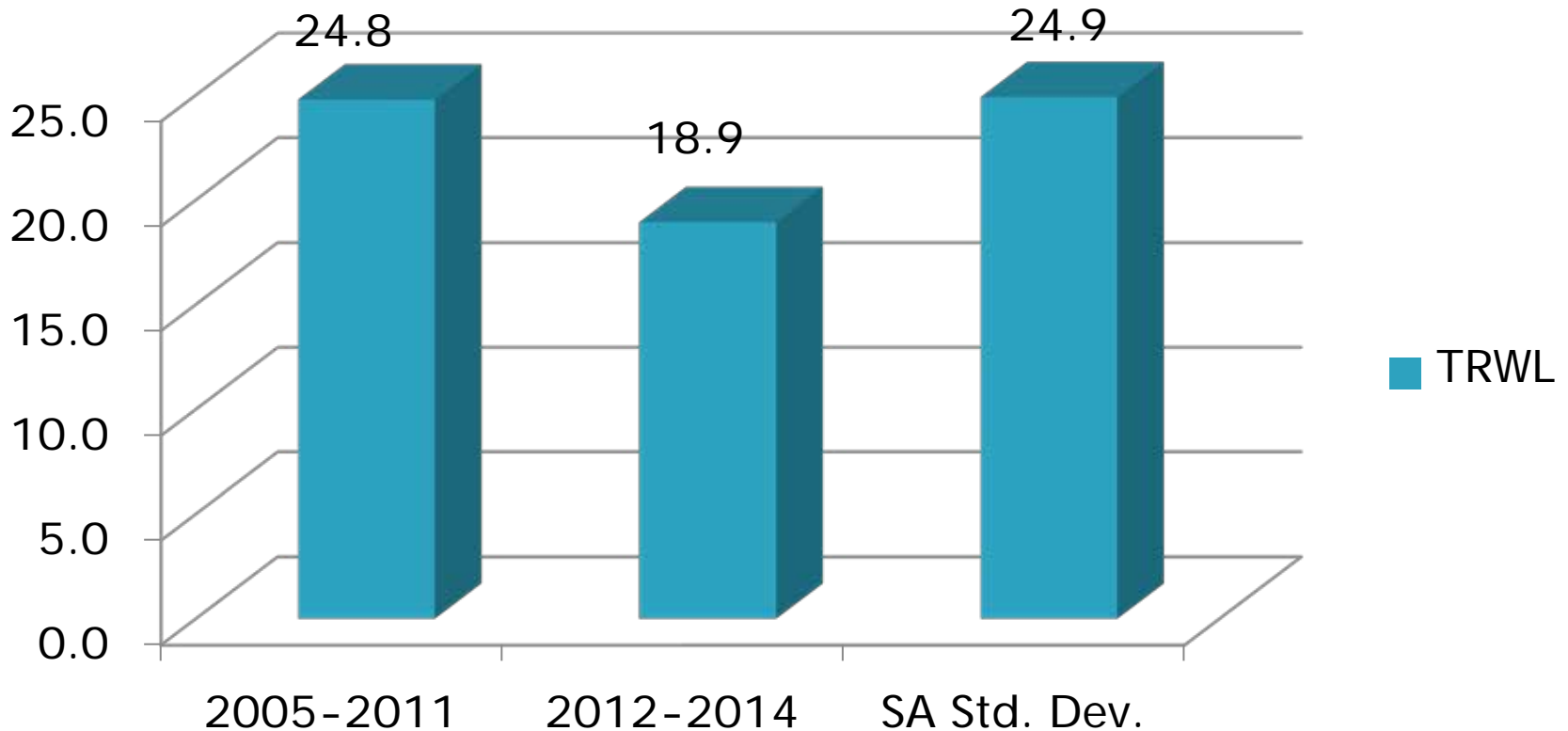
18NOV14:11:03

T-12 Precision Estimates



T-12 Precision Estimates

TRWL



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Mack T-12A

»» October 2014

Test Monitoring Center

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T-12A Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	5
Failed Calibration Test	OC	0
Operationally Invalid	LC	1
Aborted	XC	2
Total		8

T-12A Failed Tests

Failed Parameter	Number of Tests
Total	0

T-12A Lost Tests*

Status	Cause	#
Invalid	Missed Soot Window	1
Aborted	Stuck intake valve	1
Aborted	Internal engine failure at startup	1
Total		3

*Invalid and aborted tests

T-12A Test Severity

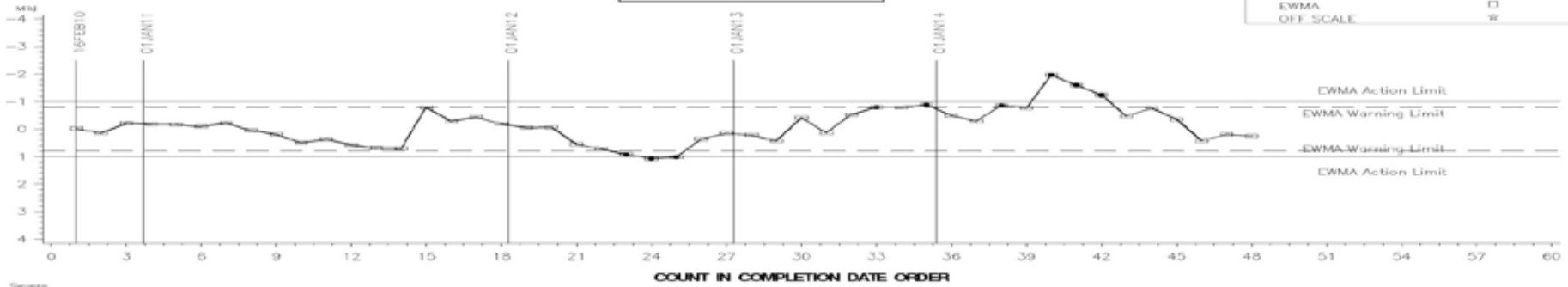
} MRV is in a precision action alarm.

MACK T-12A INDUSTRY OPERATIONALLY VALID DATA

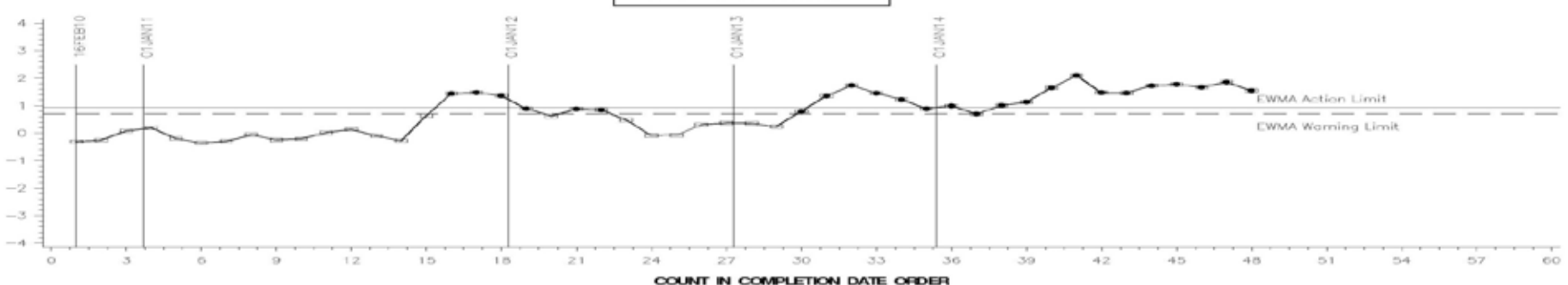


FINAL ORIGINAL UNIT MRV VISCOSITY [NM, SOLID, FROZEN, <, >]

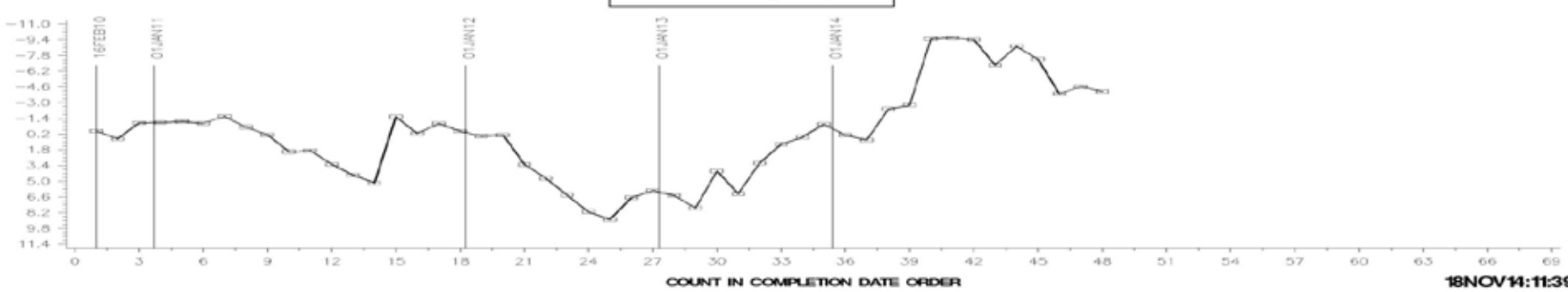
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

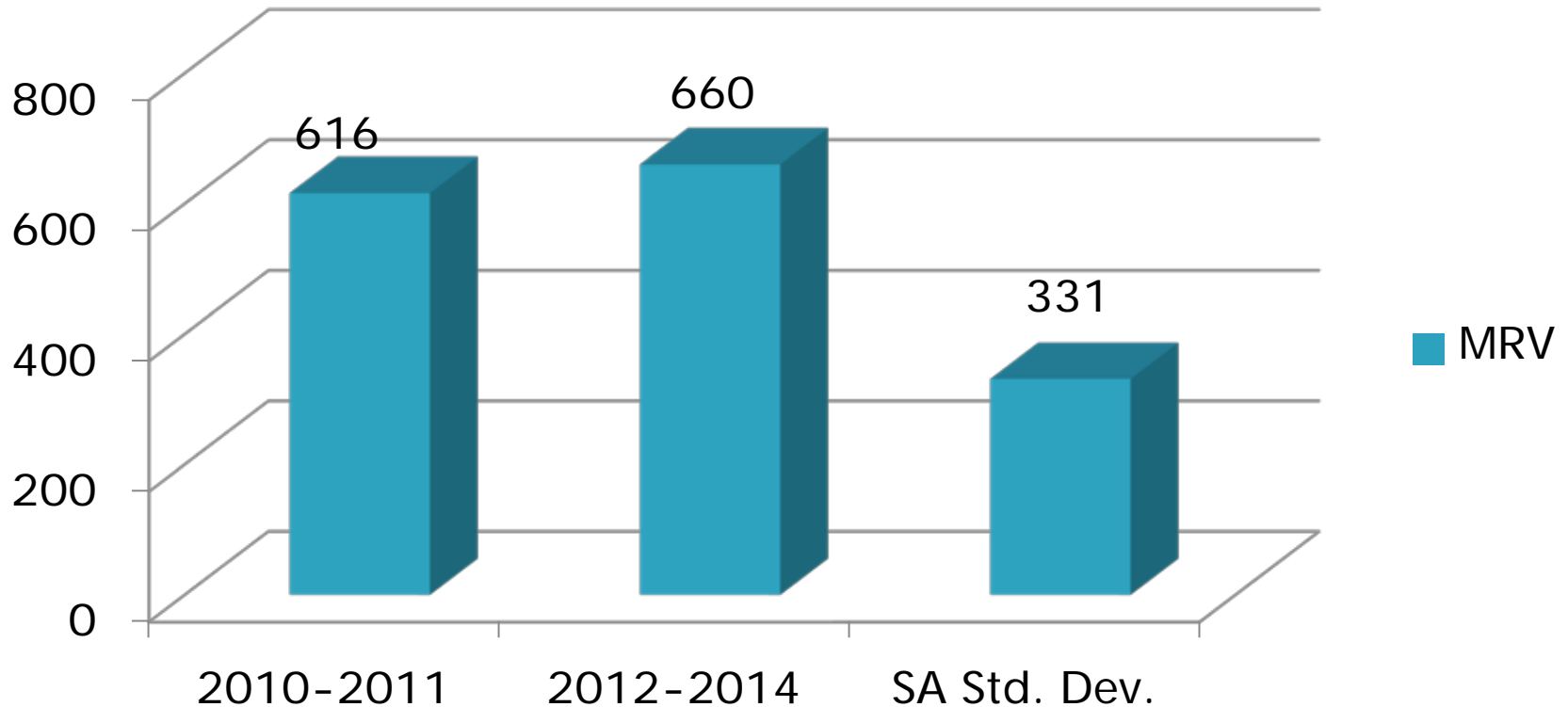


18NOV14:11:39



T-12A Precision Estimates

MRV



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Information Letters

»» April 1, 2014 –
September 30, 2014

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Information Letters*

Test	Date	IL	Topic
T12	5/6/2014	14-2	Clarification of Auxiliary Oil System Line Sizes
C13	5/20/2014	14-1	Change to Piston Second Ring Cleaning Procedure
1K/1N	8/20/2014	14-1	Revision to fuel dilution test validity criteria and removal of reference oil 810
1P	8/28/2014	14-1	Revision to 1P Oil Weigh Bucket Pump and Motor Requirements Removal of Procedure for Verification of Oil Scale Pump Flows
T-12	9/9/2014	14-3	Updated VUXO Hardware Correction Factors
T-8	9/16/2014	14-2	T-8 Timing Changes

*Available from TMC Website

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Reference Oil Inventory

»» Actions, Re-blends, Inventories
and Estimated Life

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Reference Oil Reblends

- } 1005-4 Re-blend should be available for shipment to labs by January 1.

Reference Oil Inventory Estimated Life

Oil	Tests	Original Blend Amount	Quantity Shipped in last 6 months	TMC Inventory	Lab Inventory	Estimated Life
809-1	1K, 1N	9134	50	2359	136	5+ years
811-2	1K, 1N	1732	70	1132	50	5+ years
822-2	1R, T-10A, T-11	4386	140	3881	196	5+ years
821-3	T-12	1500	340	94	50	~.1 years
821-4	T-12	4495	350	4045	150	5+ years
830-2	ISM	3786	150	501	276	1.8 years
831-1	C13, ISB	1300	0	0	51	~ .5 years
831-2	C13, ISB	880	125	300	195	5+ years
873-2	1M-PC	1650	40	177	50	5+ years
1005-3	1P, 1R, EOAT, RFWT, T-8/E	2000	7	8	91	~ 1 year
1005-4	1P, 1R, EOAT, RFWT, T-8/E	2000	507	250	341	2.5 years

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LTMS Deviations

»» April 1, 2014 –
September 30, 2014

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LTMS Deviations

- No LTMS Deviations in Current Period

Historical Count of HD LTMS Deviations

Test	LTMS Deviations
1M-PC	2
1N	2
T-8/E	2
T-10A	1
T-12	1

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Quality Index Deviations

»» April 1, 2014 –
September 30, 2014

Test Monitoring Center

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Quality Index Deviations

} No deviations during this reporting period.

Quality Index Deviations

Historical Count of HD Quality Index Deviations

Test	Qi Deviations
1P	12
1R	1
ISM	3
C13	1
T-10A	1
T-11	3
T-12	5

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TMC Laboratory Visits

»» April 1, 2014 –
September 30, 2014

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TMC Lab Visits

- } No HD lab visits during the reporting period.

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Test Area Timelines

»» April 1, 2014 –
September 30, 2014

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Test Area Timeline Additions*

Test	Date	Topic	IL/Memo
T12	20140506	CLARIFICATION OF AUXILIARY OIL SYSTEM LINE SIZES	14-2
T12	20140827	UPDATED VUXO HARDWARE CORRECTION FACTORS	14-3

*As of 9/30/2014

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Rating Workshop Data

»» 2013 Heavy Duty Workshop

Test Monitoring Center

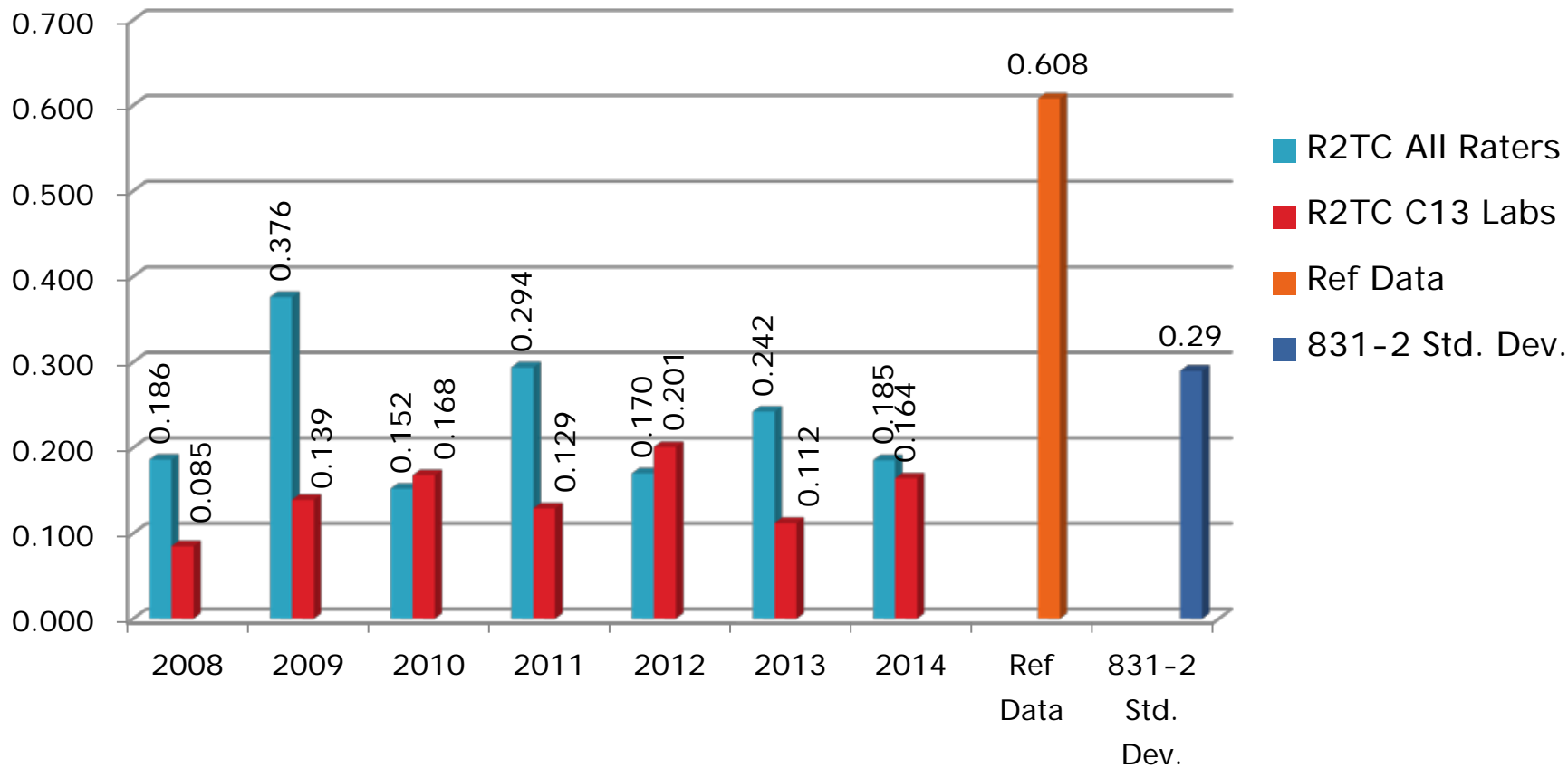
<http://astmtmc.cmu.edu>



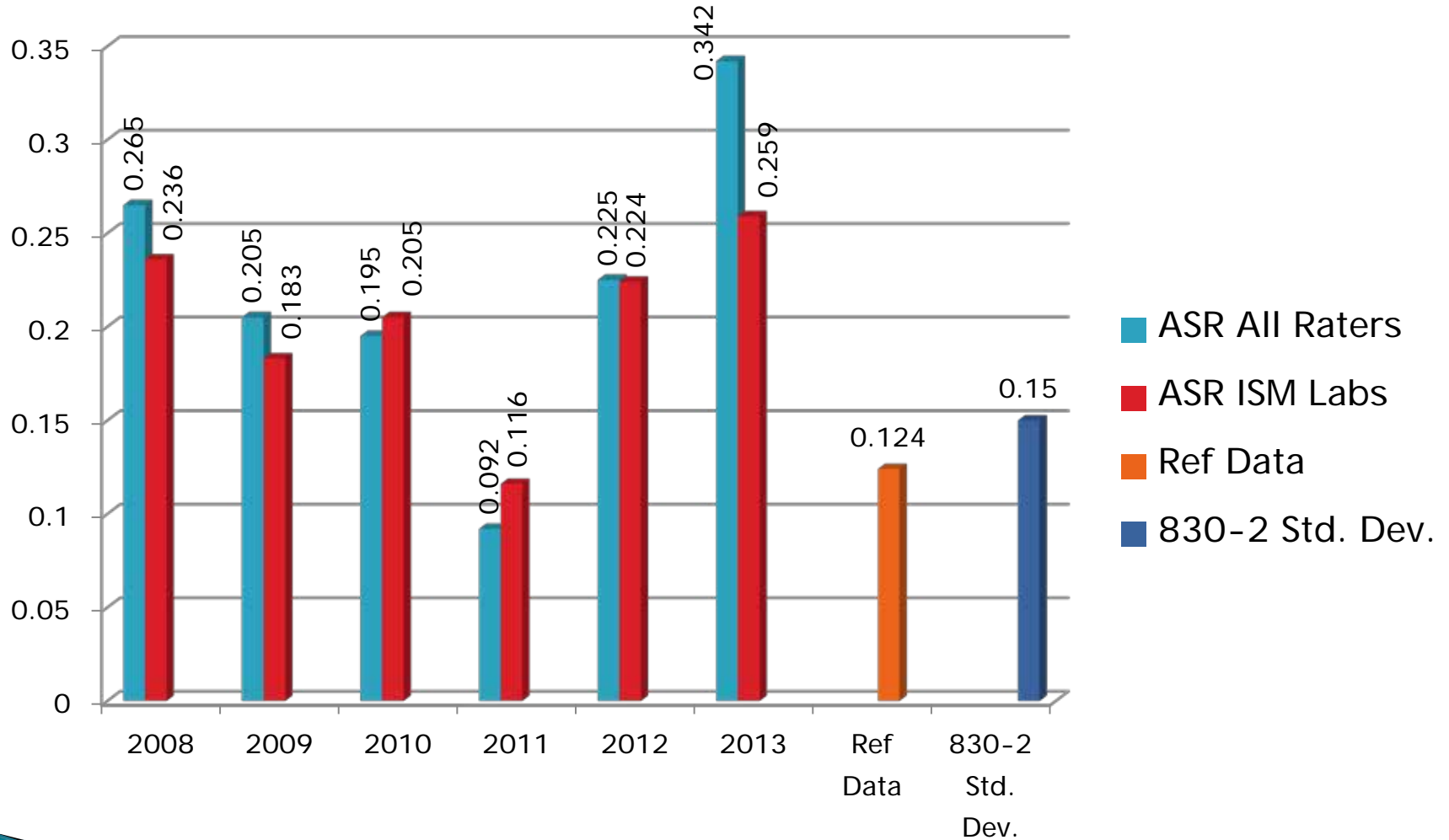
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C13 2nd Ring Carbon Precision – Rating Workshop Data

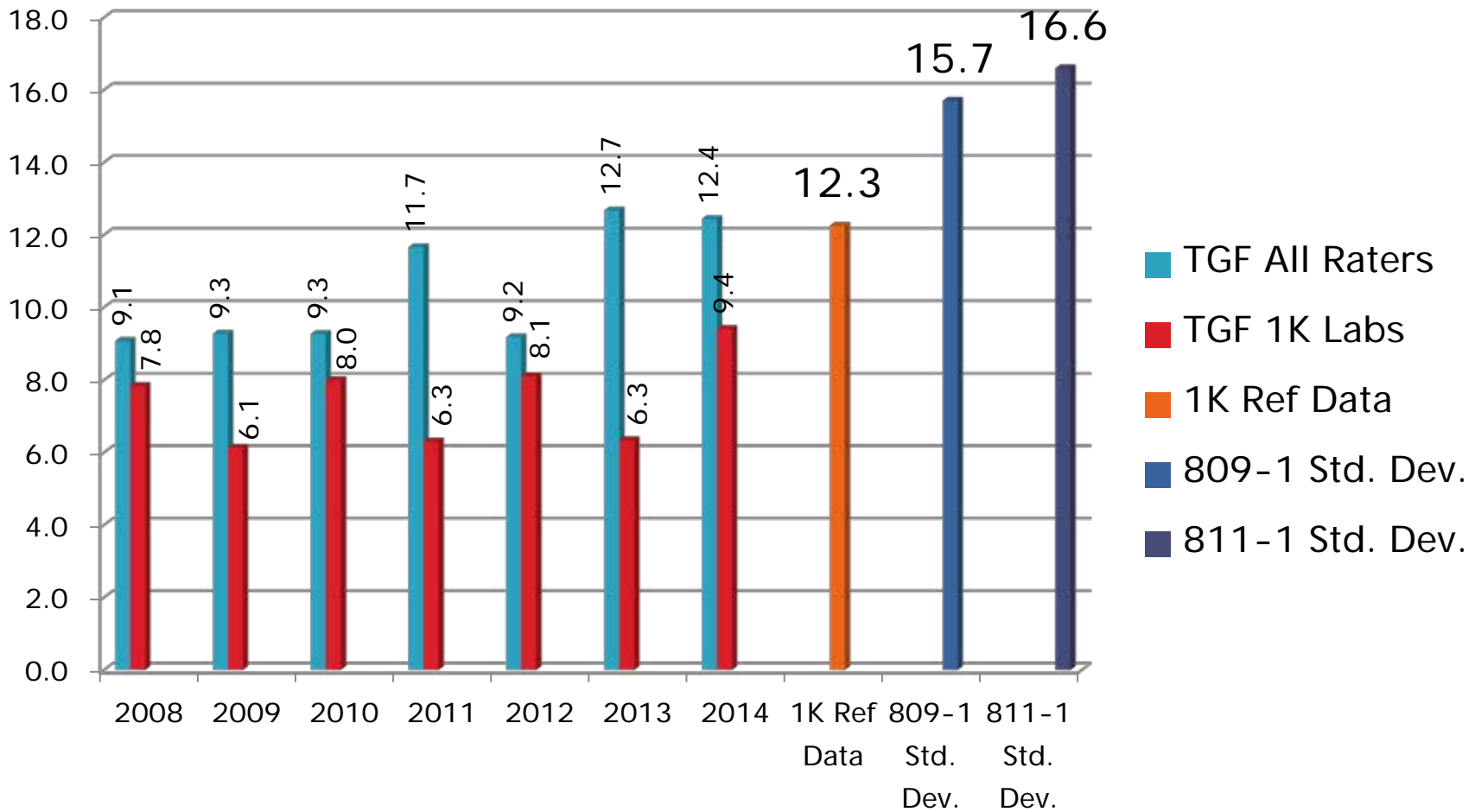
R2TC



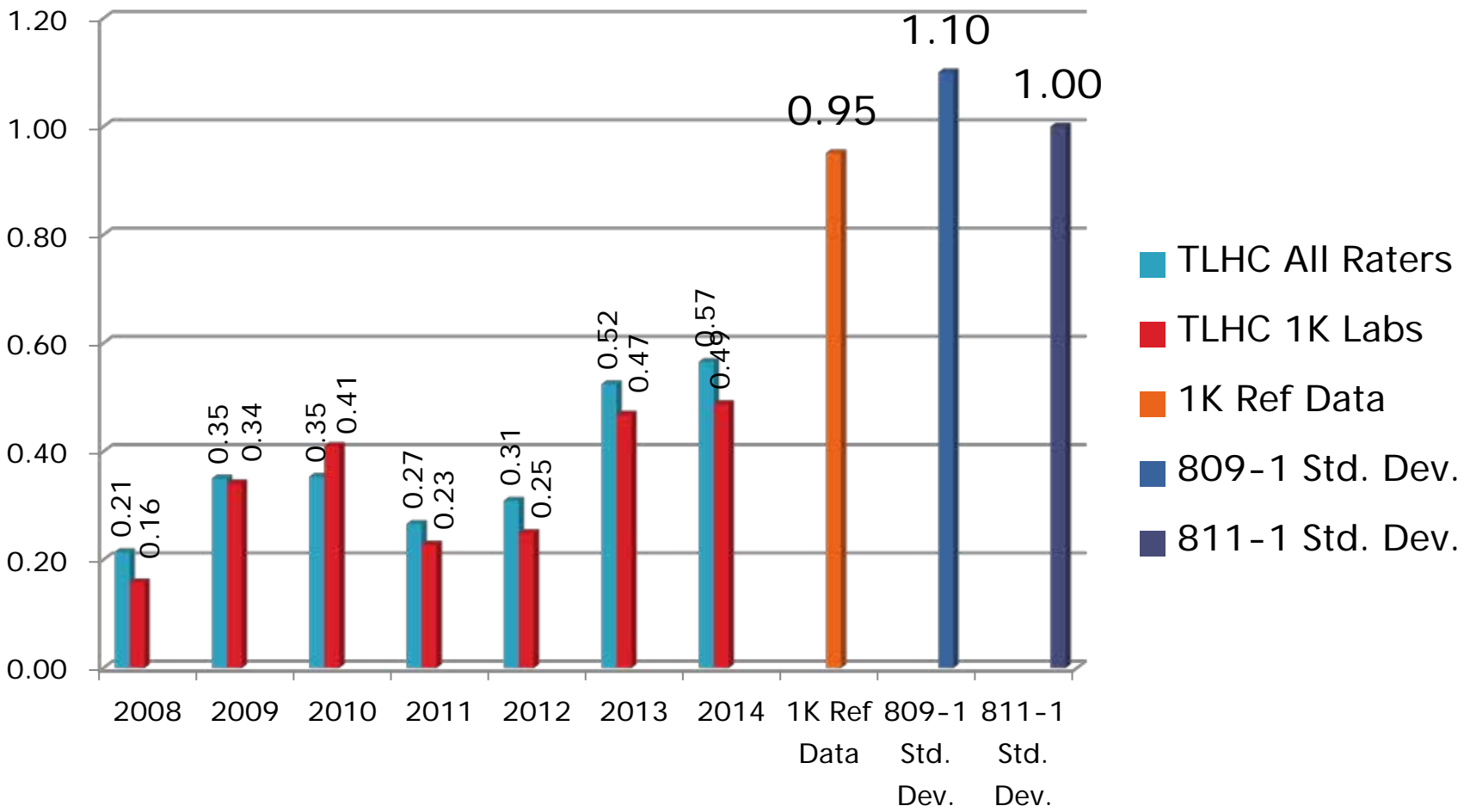
ISM Sludge Rating Precision – Rating Workshop Data



Deposit Rating Precision - Rating Workshop Data



Deposit Rating Precision - Rating Workshop Data



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Miscellaneous Information

- } Available on TMC Website:
 - Oil Assignment Request and Test File Upload
 - Live Reference Test Data Bases
 - Surveillance Panel Meeting Minutes
 - Test Area Alarm Logs
 - Complete Test Area Timelines
 - LTMS Manual

- } www.astmtmc.cmu.edu

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