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Test Monitoring Center

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

Fall 2020

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Heavy Duty Testing

Executive Summary

▶ Test Issues

- Alternate fuel supplier discussions and criteria discussions across test areas
- COAT to EOAT equivalency testing plan approved and testing started.
- ISB camshaft wear correction factor and reference oil targets updated.

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Calibrated Labs and Stands*

Test	Labs	Stands
1K	2	2
1N	3	3
1M-PC	0	0
1P	2	2
1R	1	1
C13	3	3
ISB	2	3
ISM	4	4
EOAT	1	1
RFWT	1	1
T-8/E	2	2
T-11	4	4
T-12/T-12A	4/4	4/4
T-13	3	4
COAT	2	2
DD13	3	3

*As of 09/30/2020

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1 K 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

1 K Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

1 K Lost Tests*

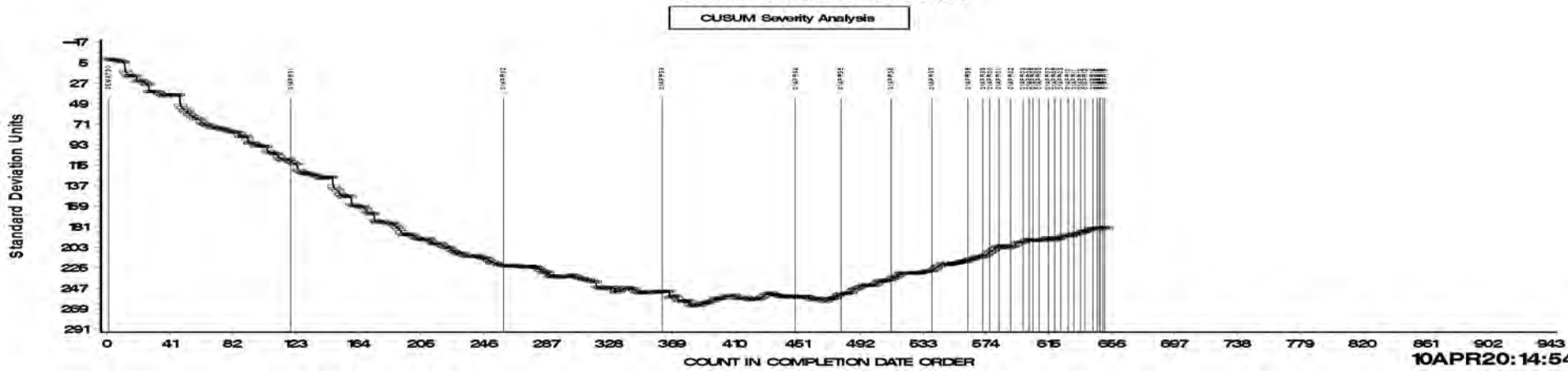
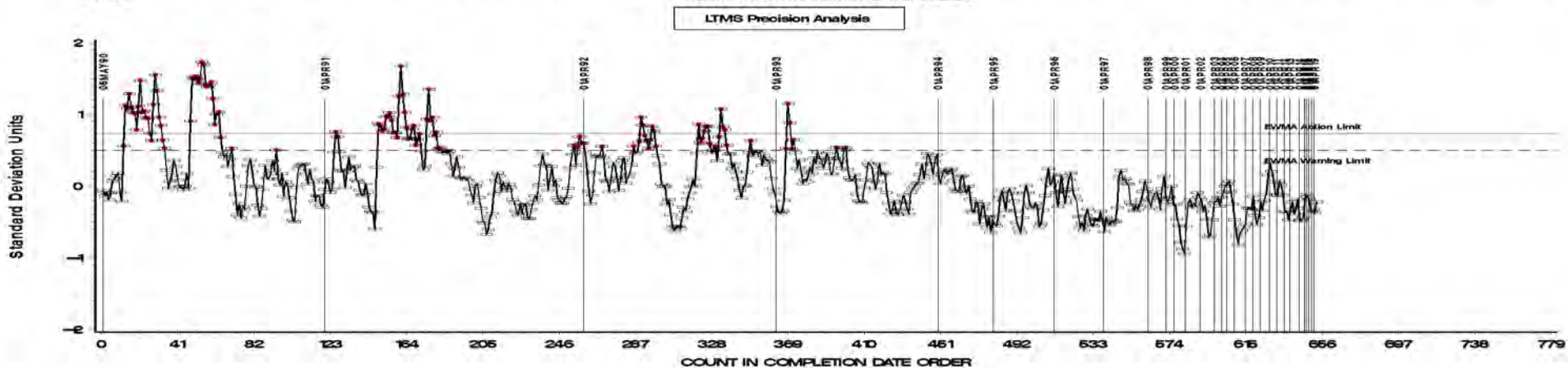
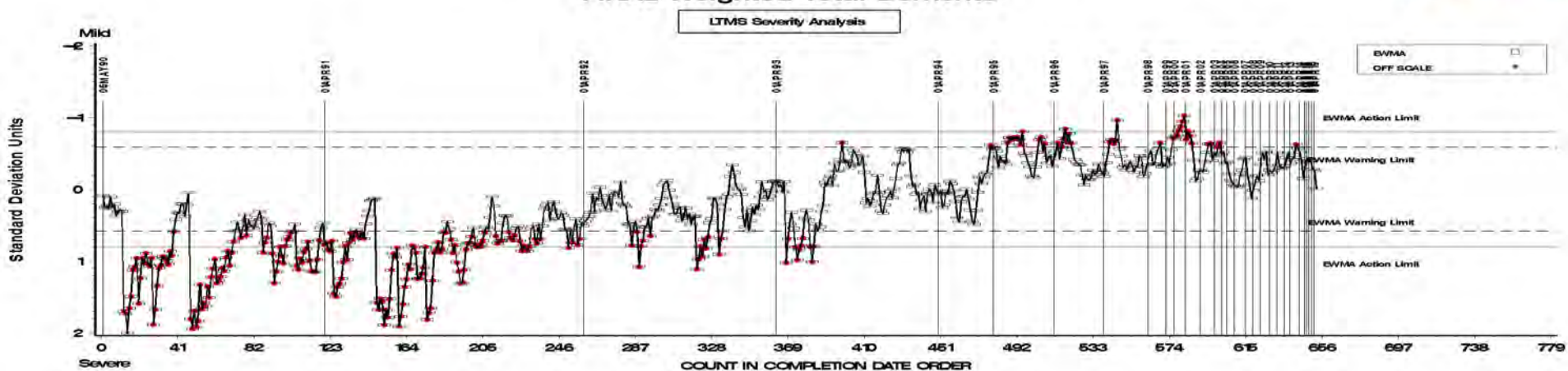
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

1 K Test Severity

- ▶ TGF is in warning alarm in the mild direction
- ▶ BSOC is in action alarm in the mild direction
- ▶ WDK, TLHC and EOTOC are in control

FINAL Weighted Total Demerits

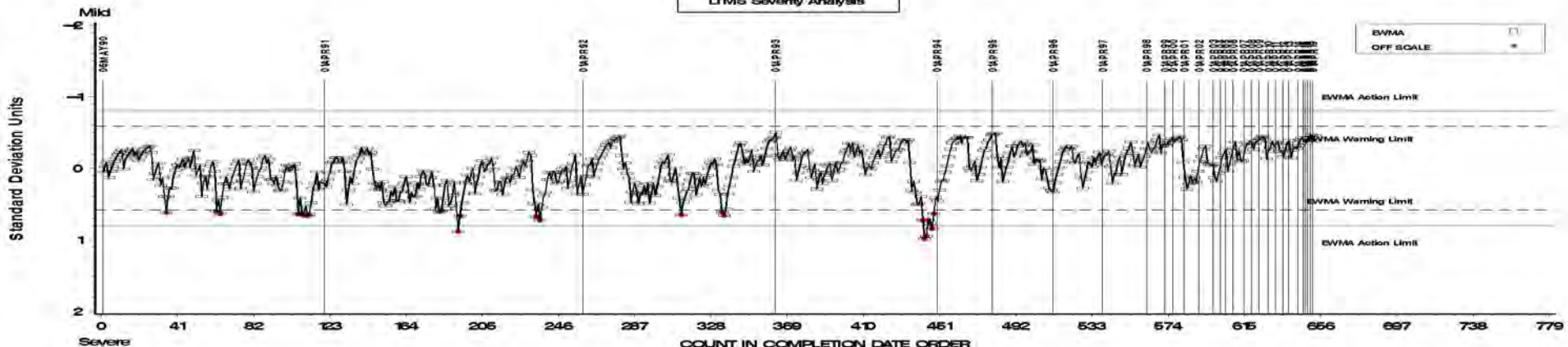


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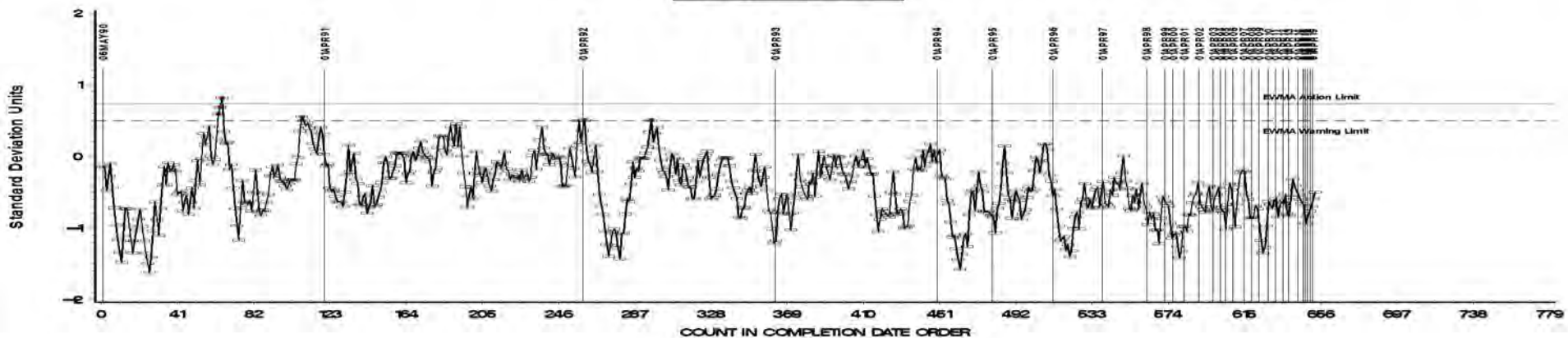


FINAL TLHC

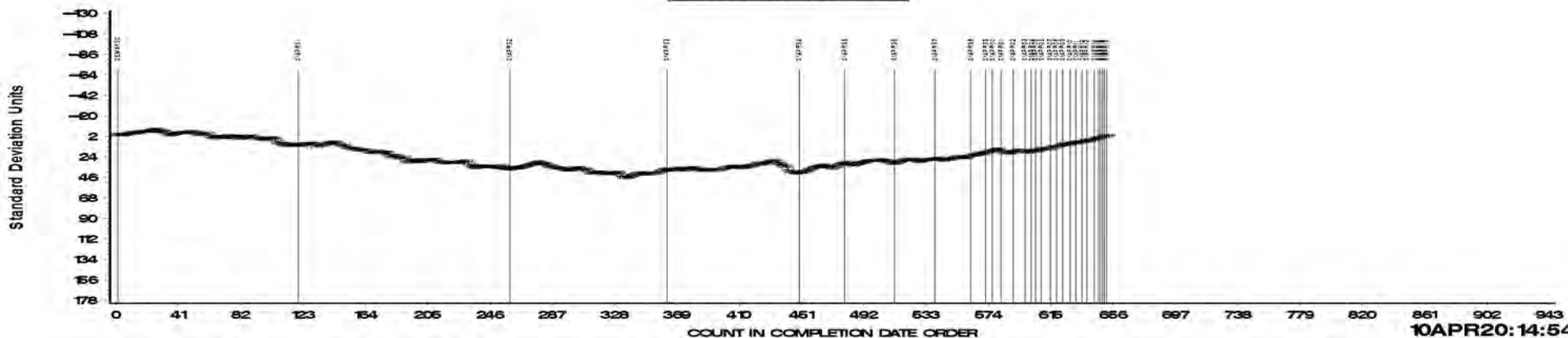
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

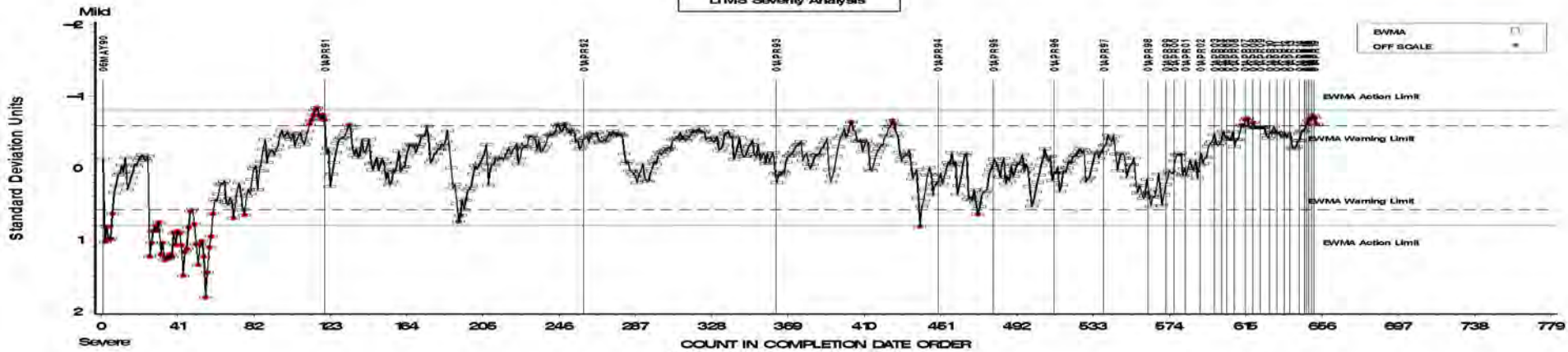


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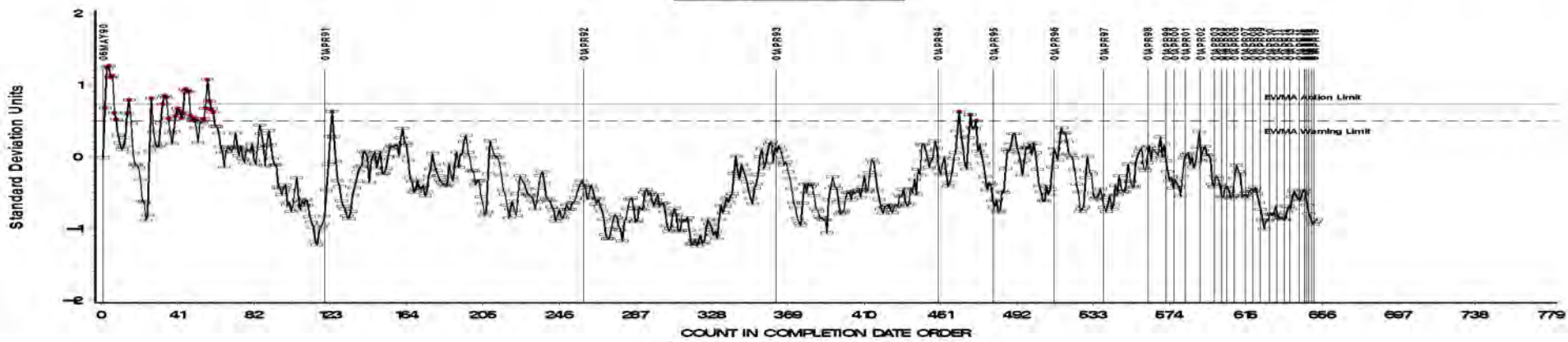


FINAL TGF

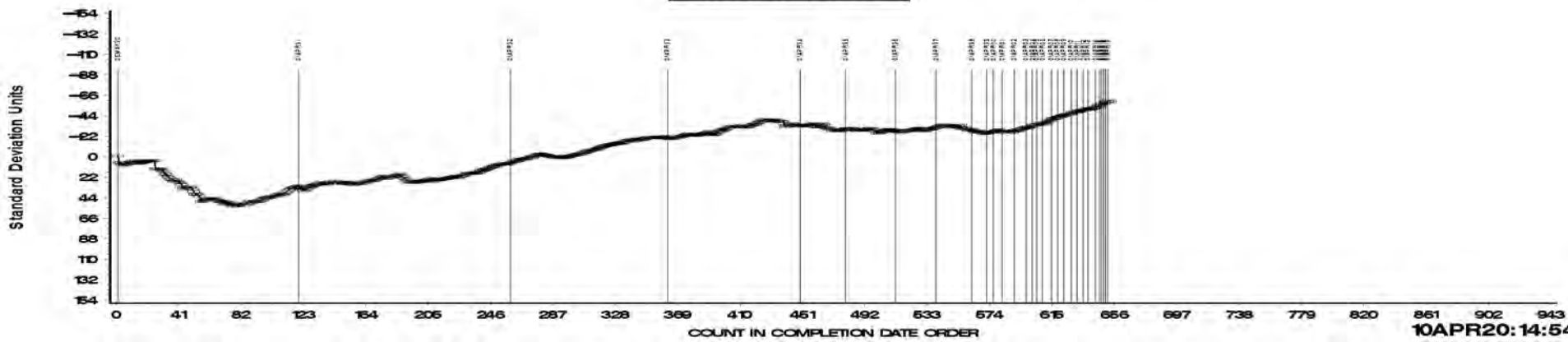
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

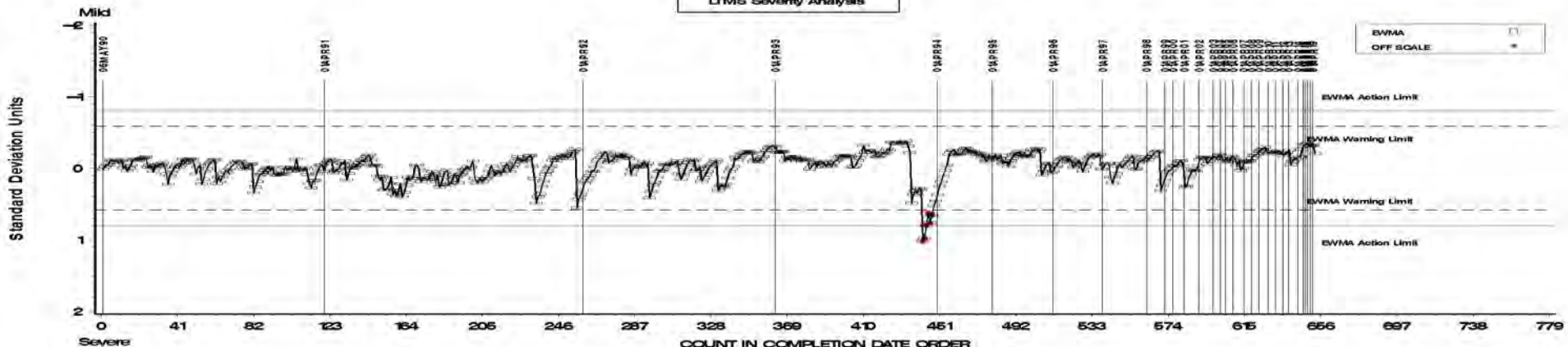


CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA

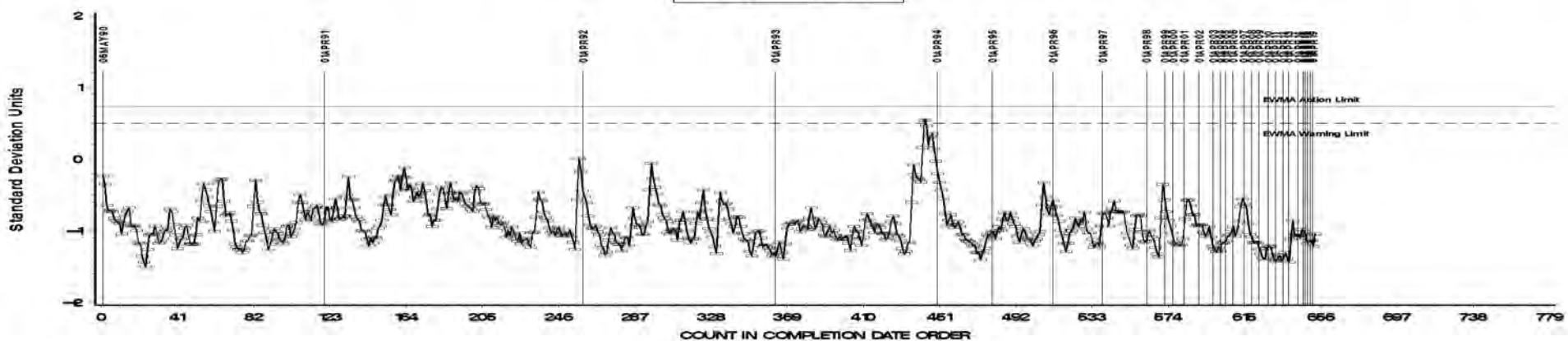


FINAL EOTOC

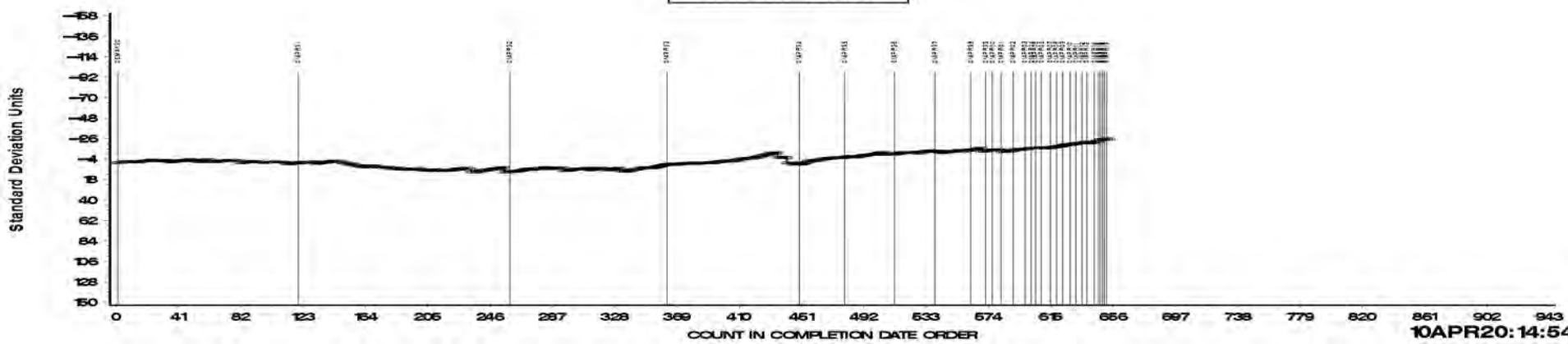
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

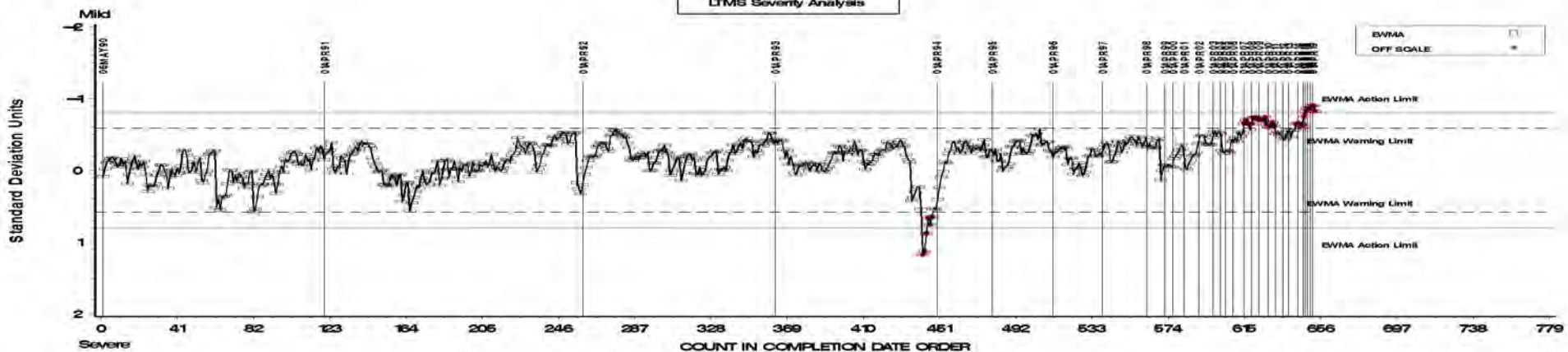


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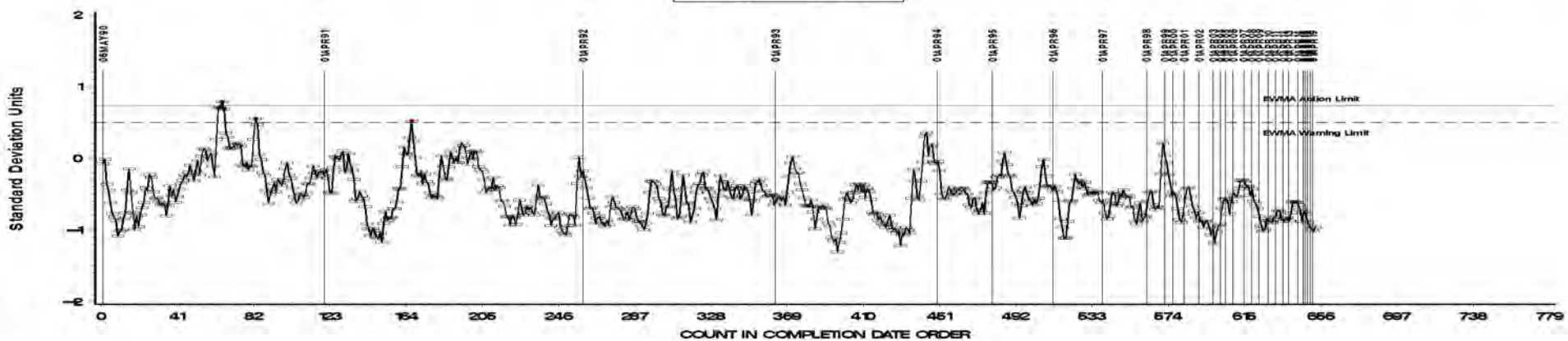


FINAL BSOC

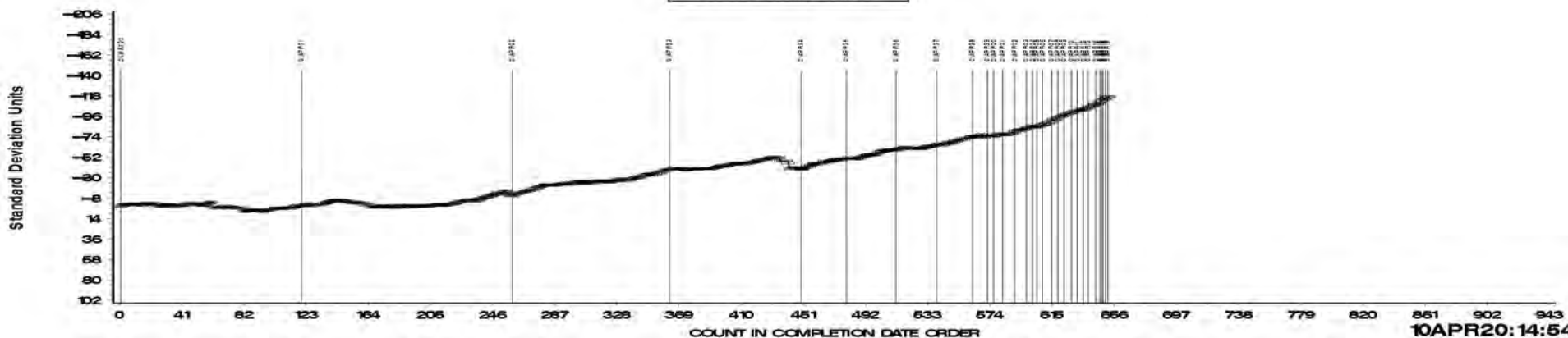
LTMS Severity Analysis



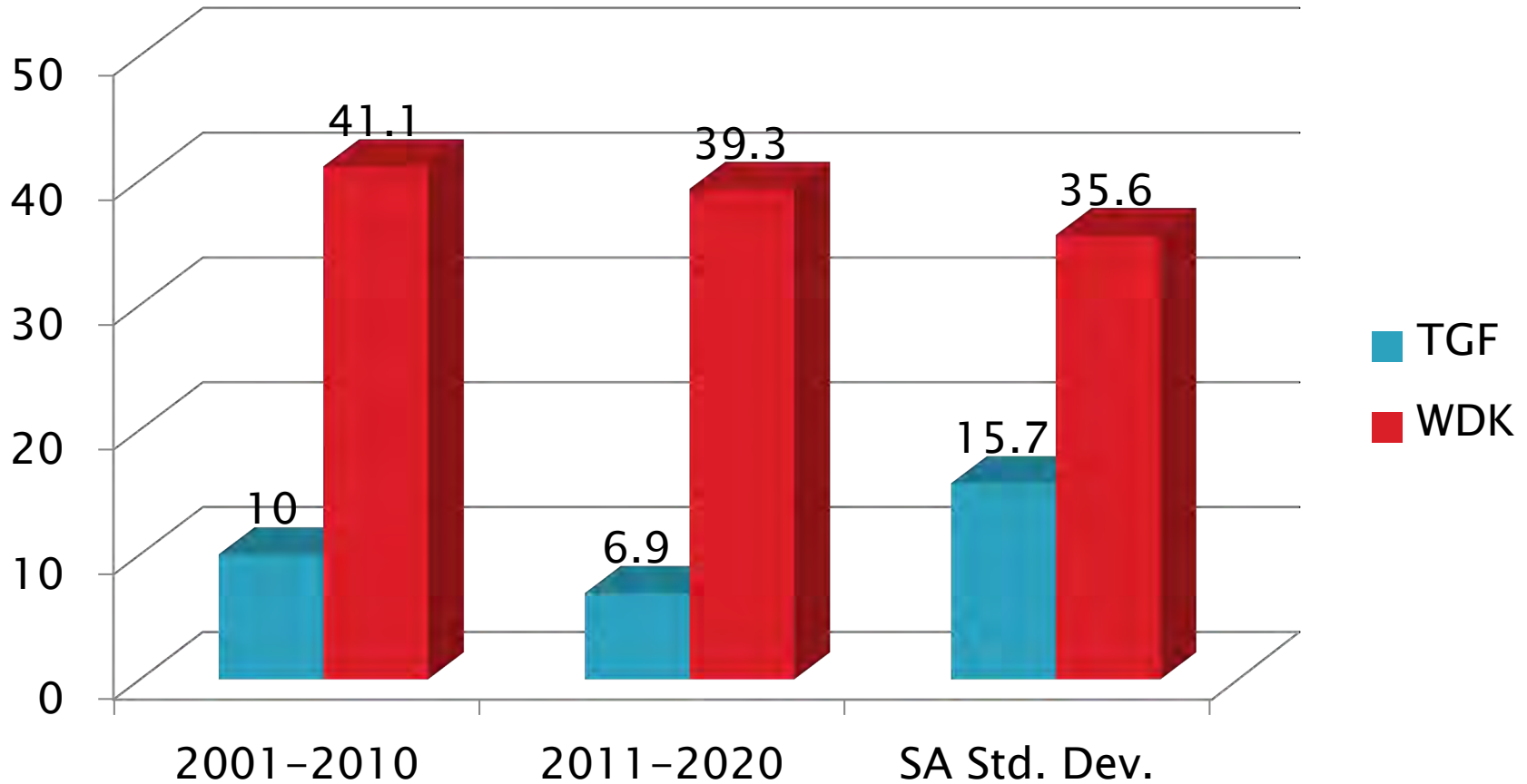
LTMS Precision Analysis



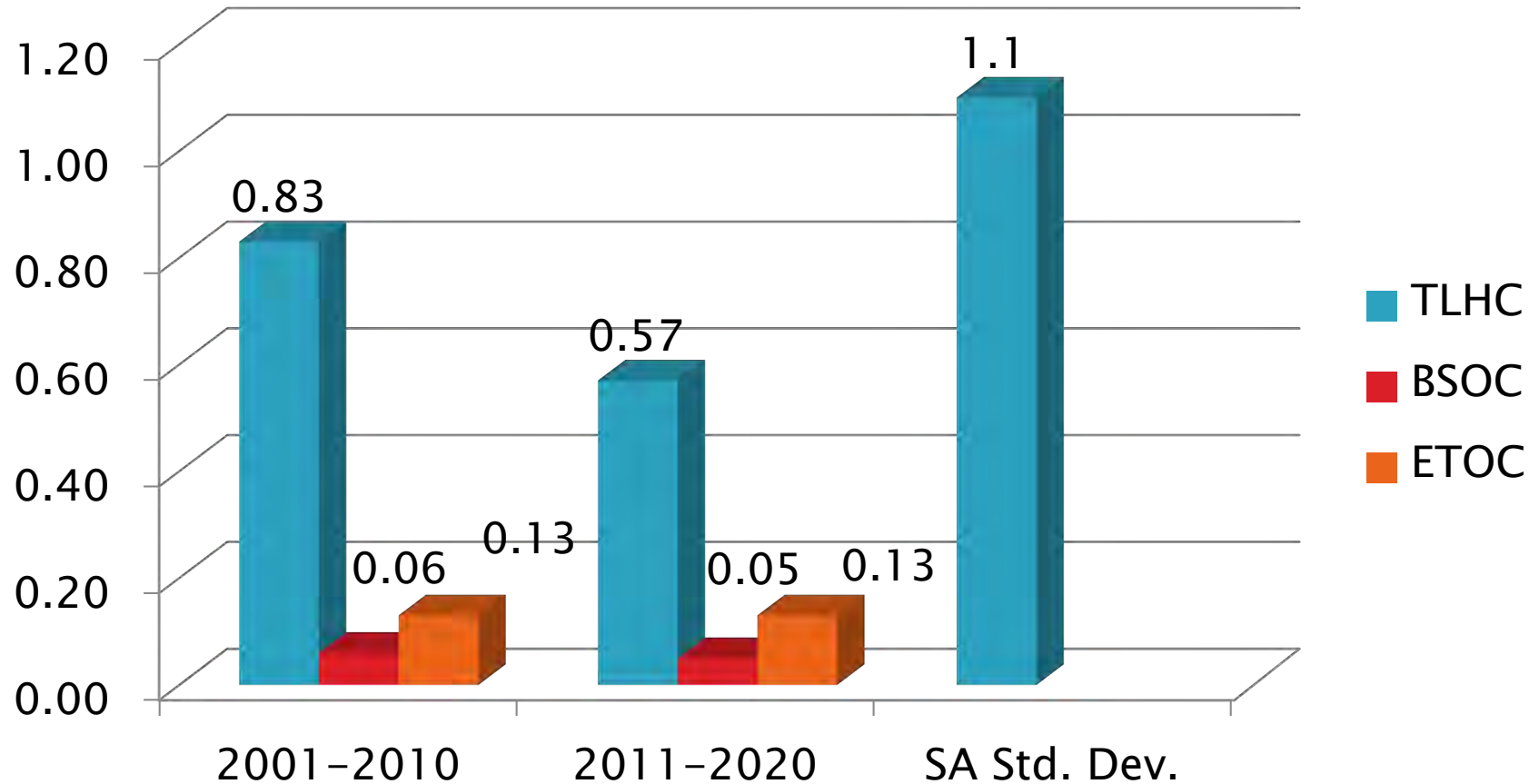
CUSUM Severity Analysis



1 K Precision Estimates



1 K Precision Estimates



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SCOTE 1N

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1 N Test Activity

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

1 N Failed Tests

Failed Parameter	Number of Tests
TGF Severe	1
Total	1

1 N Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

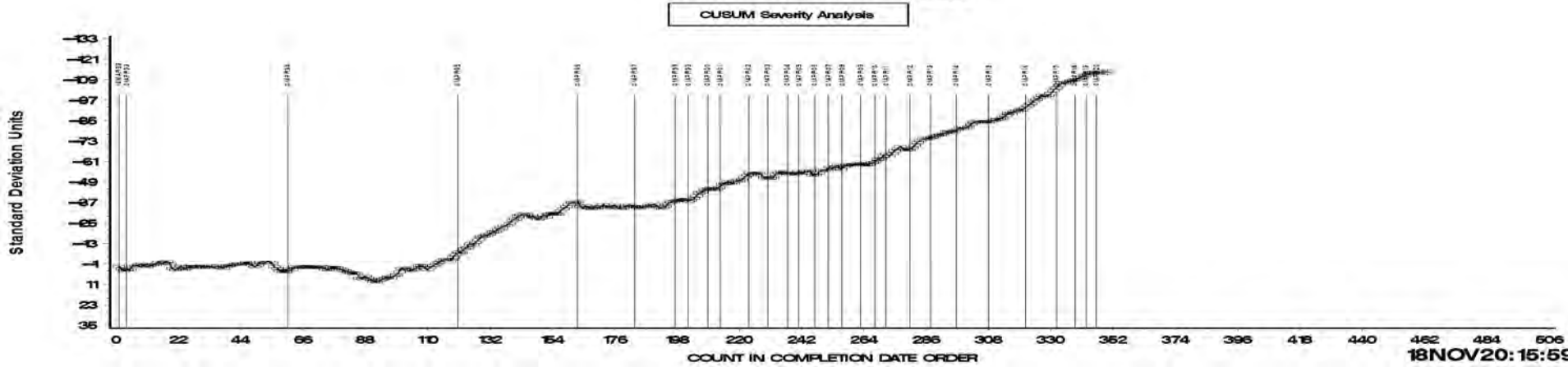
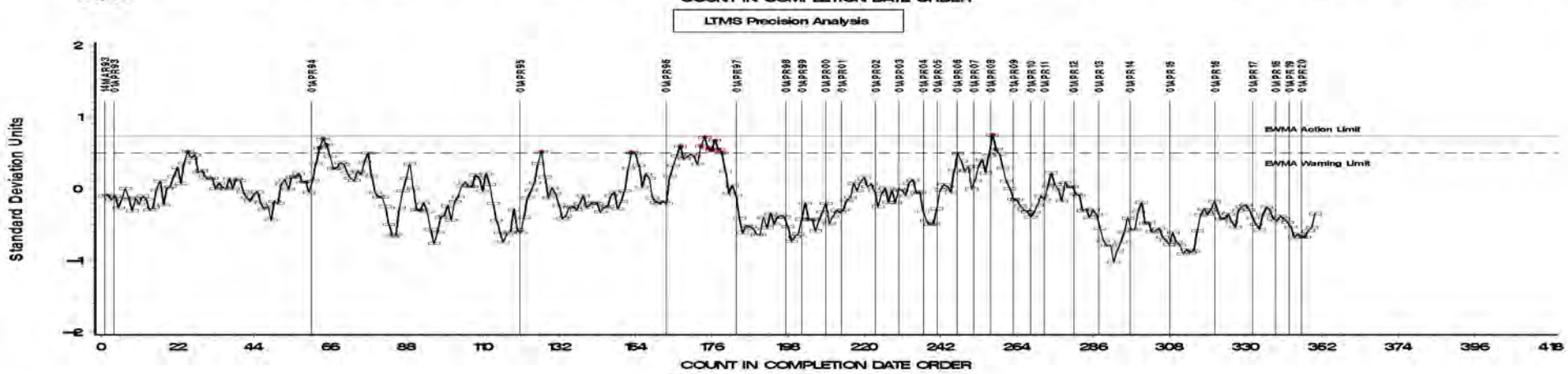
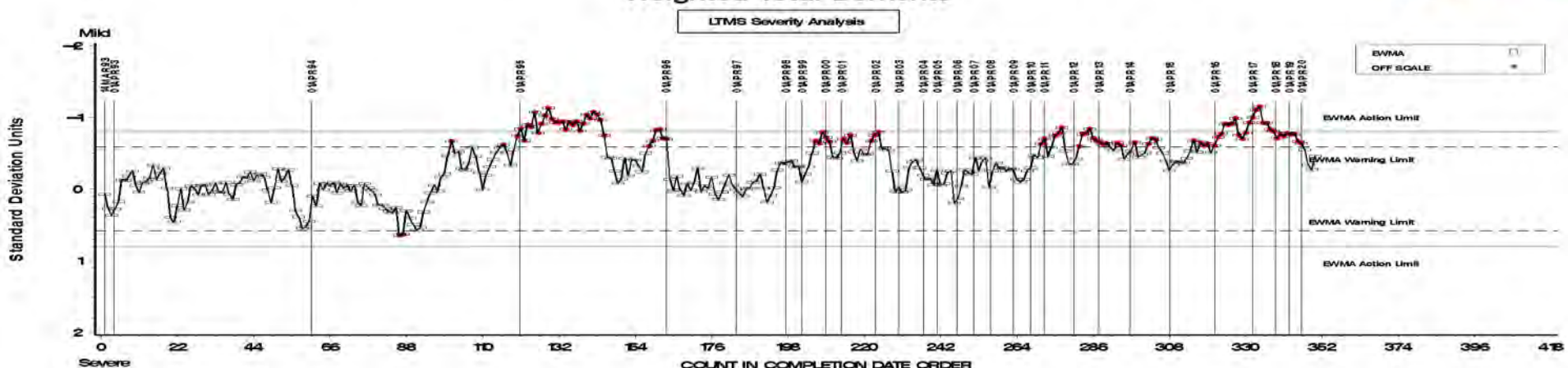
1 N Test Severity

- ▶ TGF in severity action alarm in severe direction.
- ▶ BSOC in severity action alarm in mild direction
- ▶ WDN and TLHC are in control
- ▶ Severity trends are being evaluated by surveillance panel

CATERPILLAR IN INDUSTRY OPERATIONALLY VALID DATA

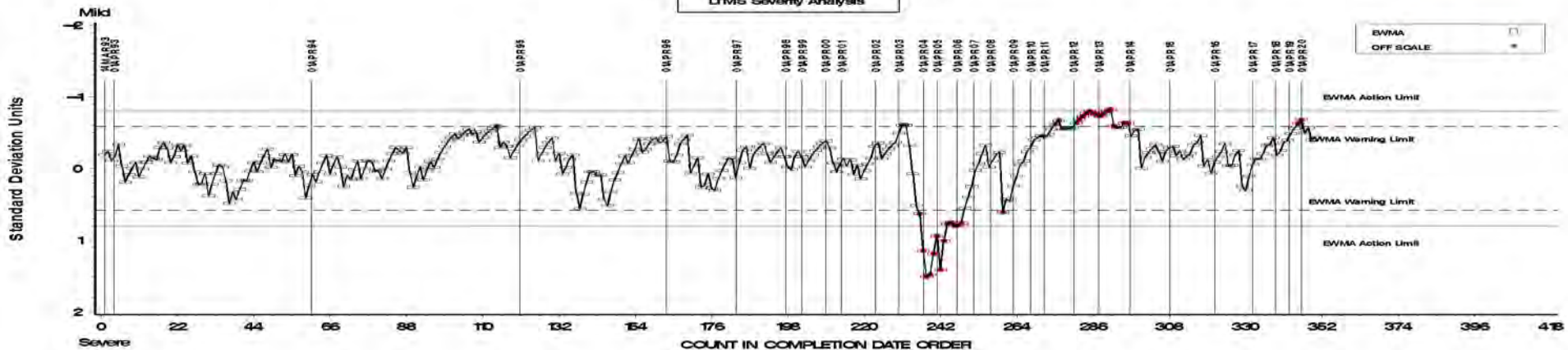


Weighted Total Demerits

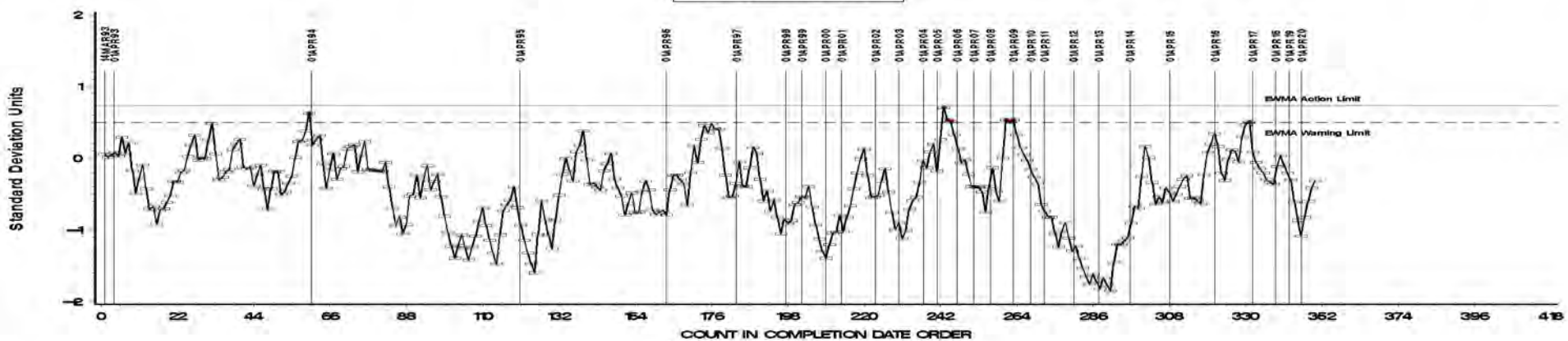


Top Land Heavy Carbon

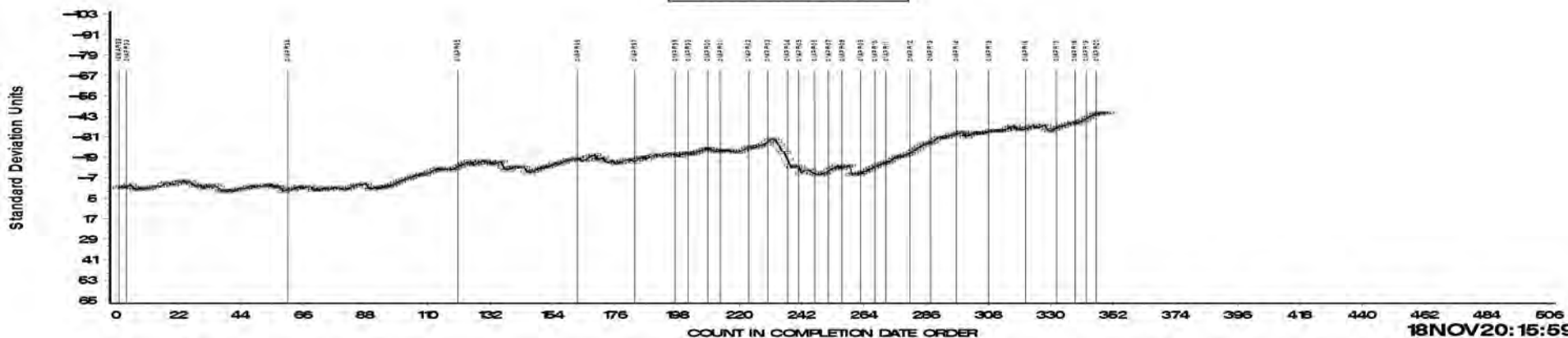
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

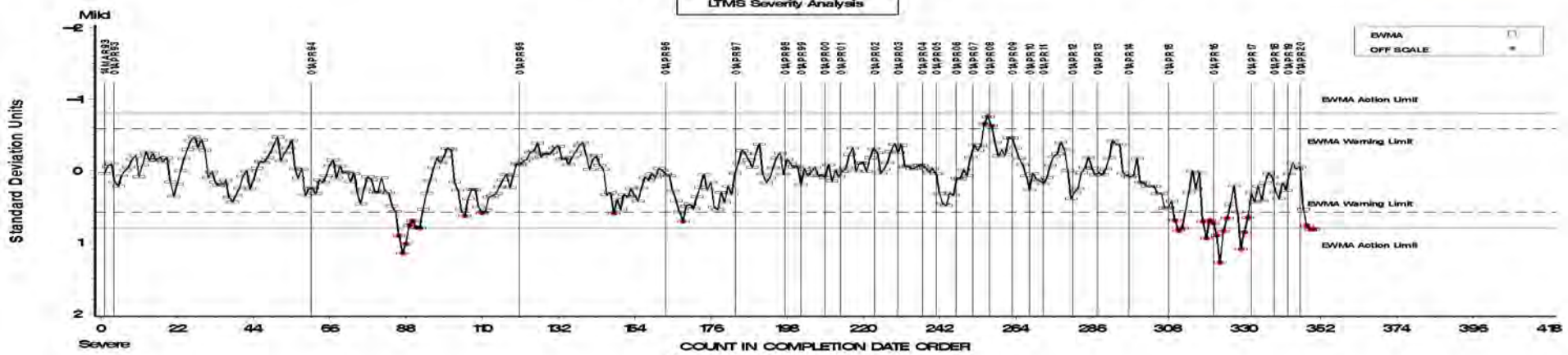


CATERPILLAR IN INDUSTRY OPERATIONALLY VALID DATA

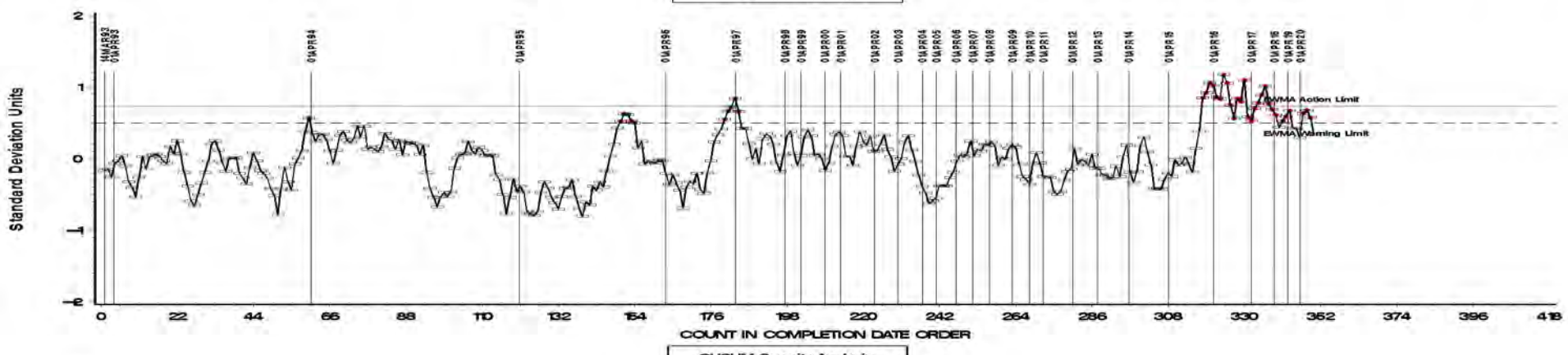


FINAL CORRECTED TGF

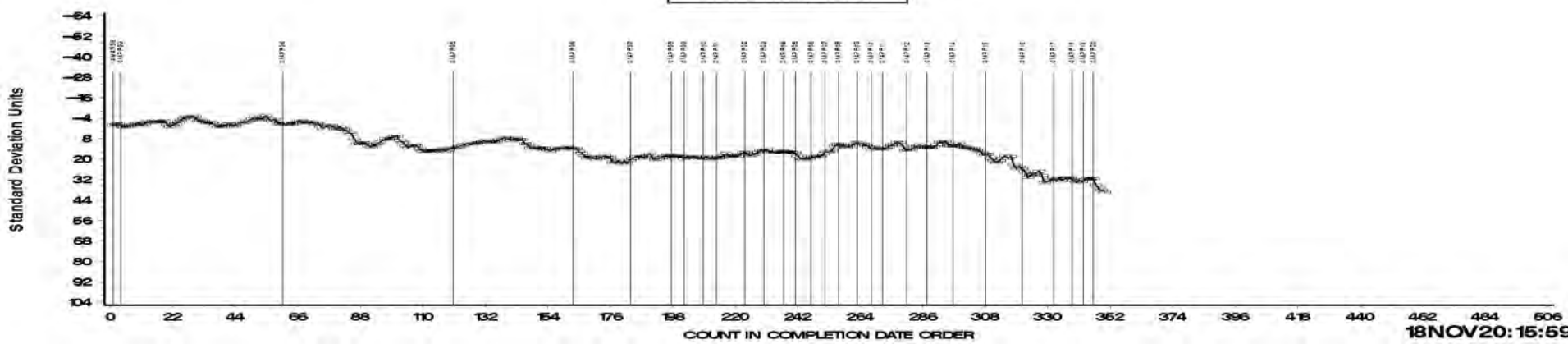
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

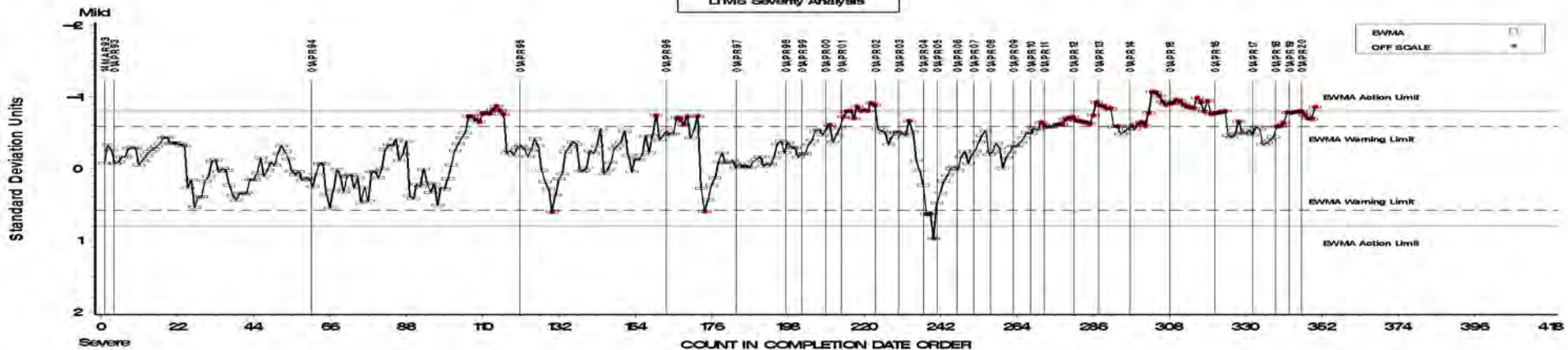


CATERPILLAR IN INDUSTRY OPERATIONALLY VALID DATA

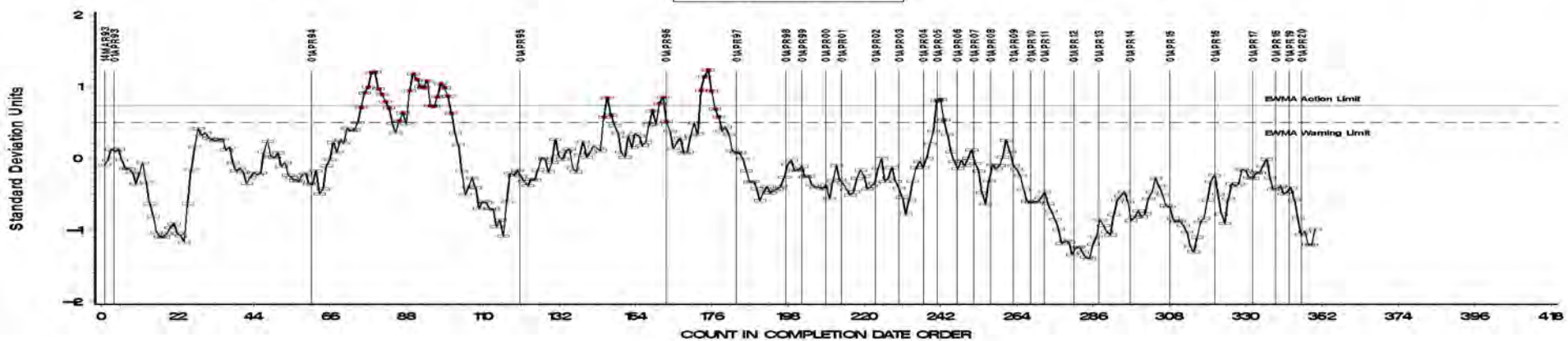


BSOC

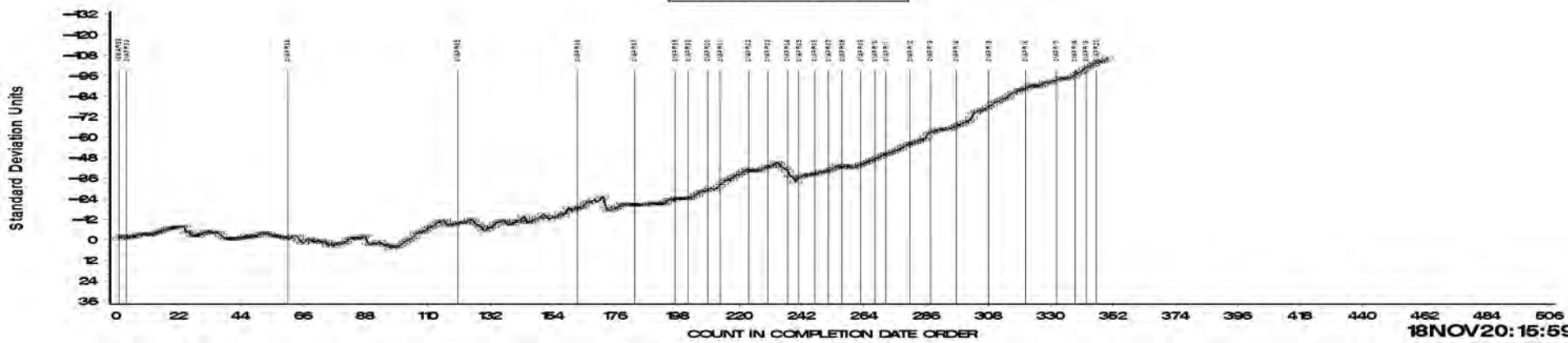
LTMS Severity Analysis



LTMS Precision Analysis

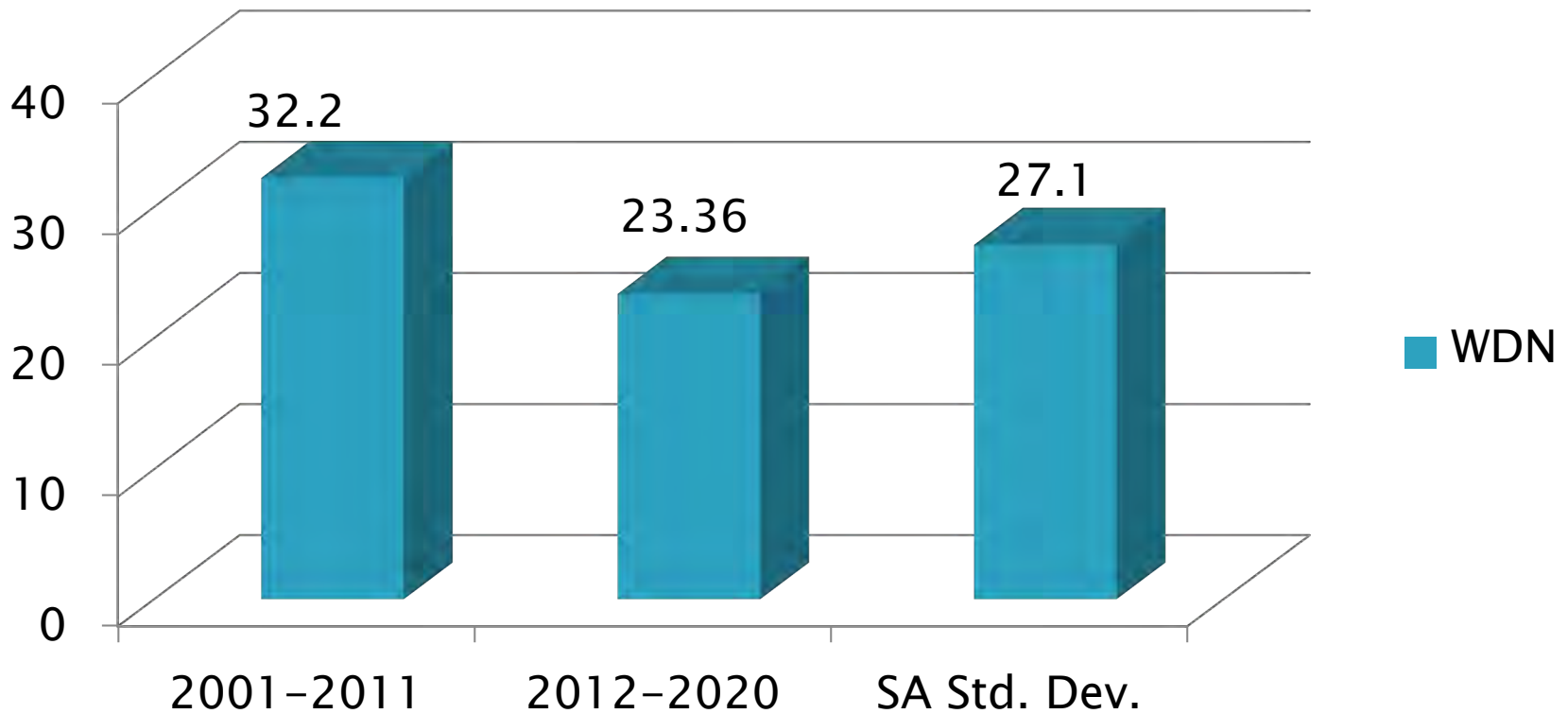


CUSUM Severity Analysis

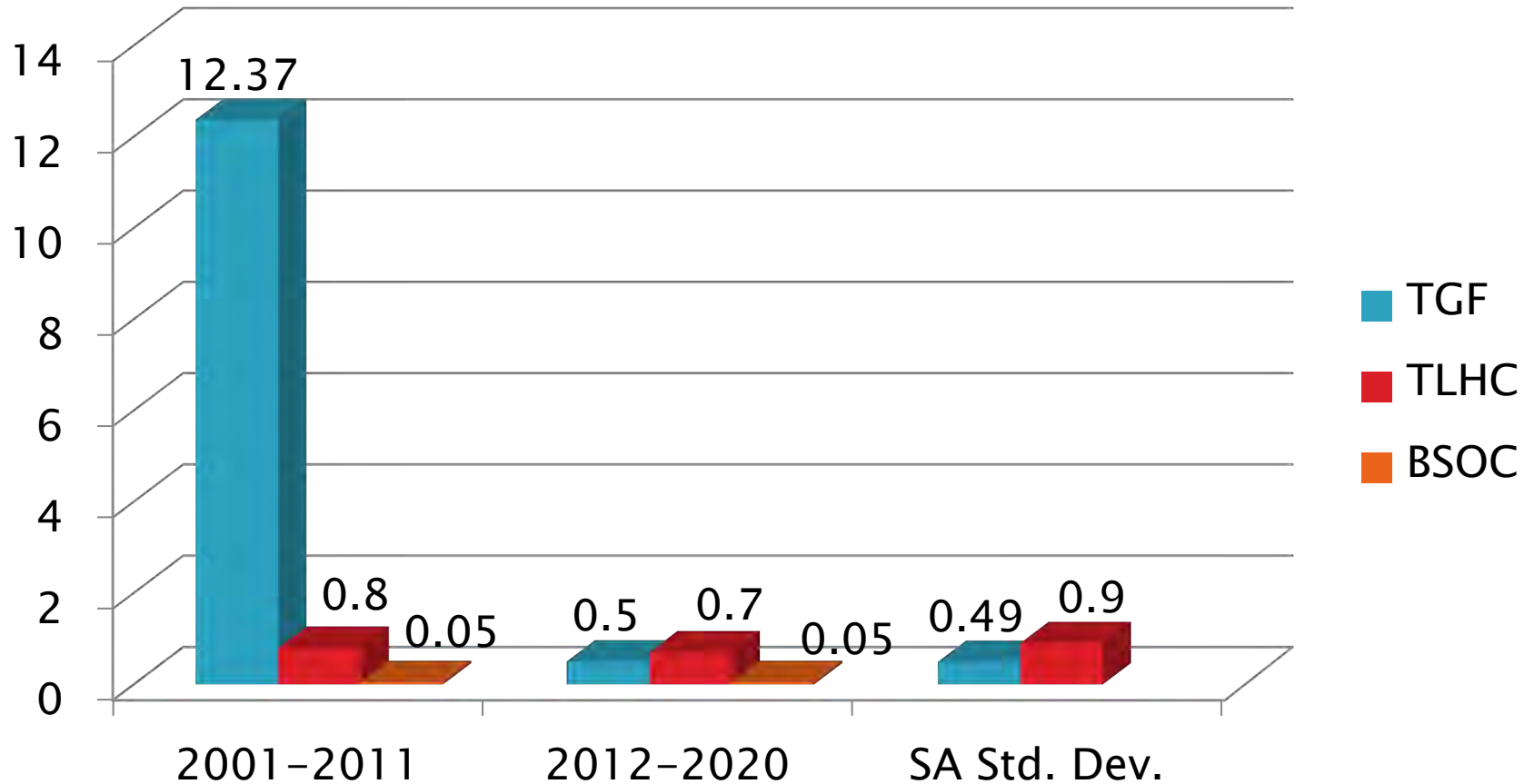


1 N Precision Estimates

WDN



1N Precision Estimates



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1 M-PC Test Activity

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

1 M-PC Failed Tests

Failed Parameter	Number of Tests
No Failed Test	0
Total	0

1 M-PC Lost Tests*

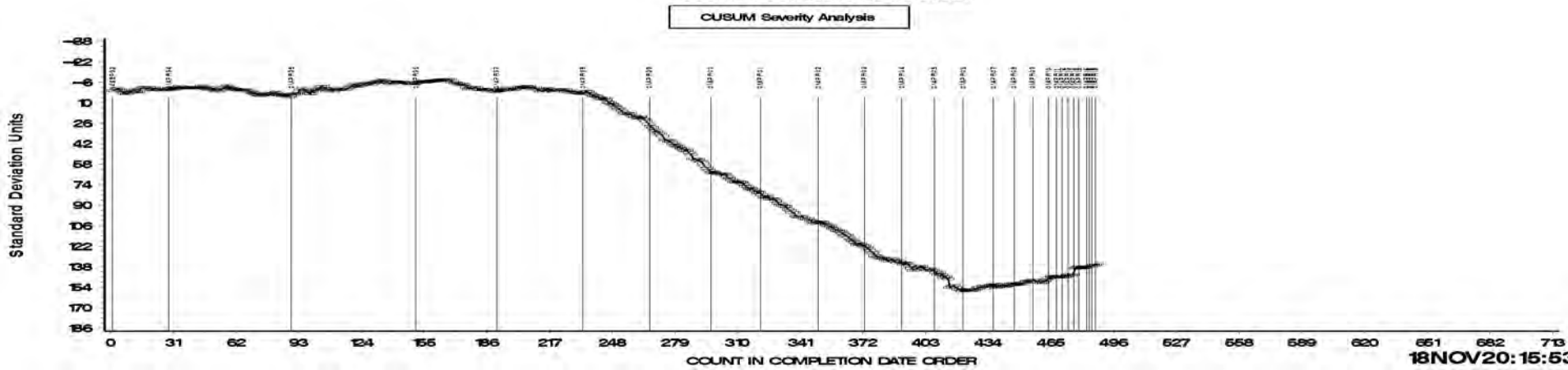
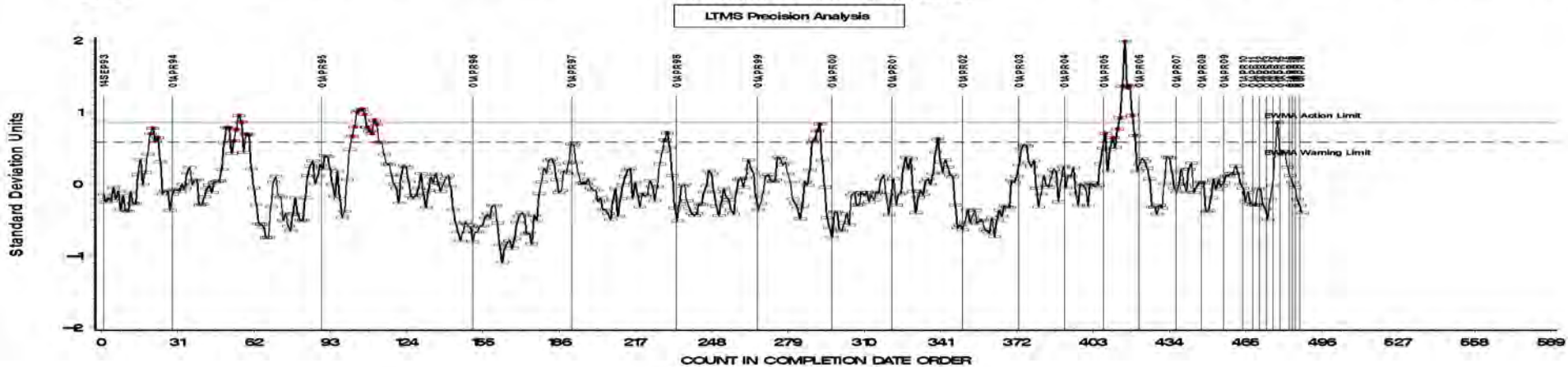
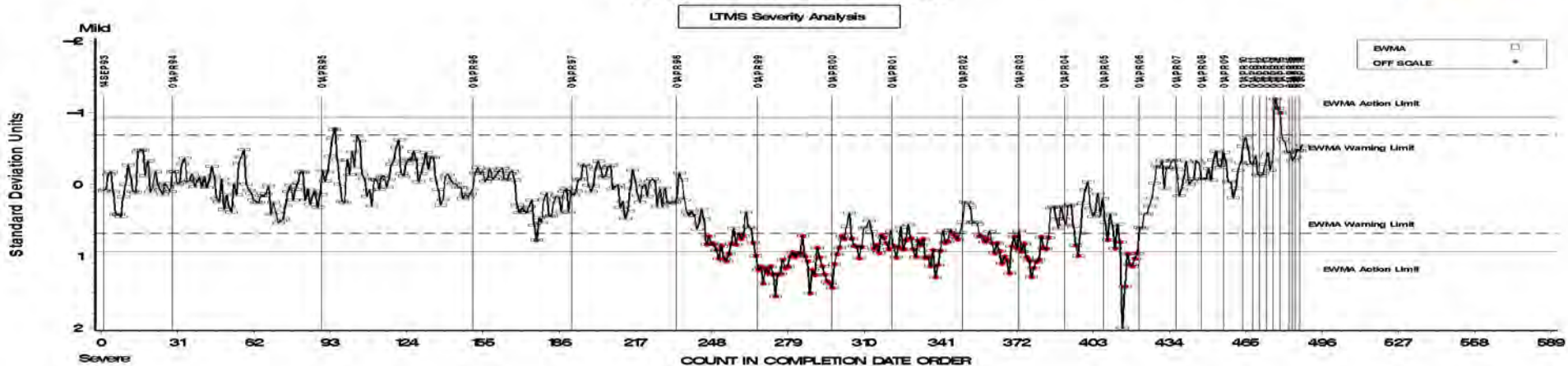
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

1 M-PC Test Severity

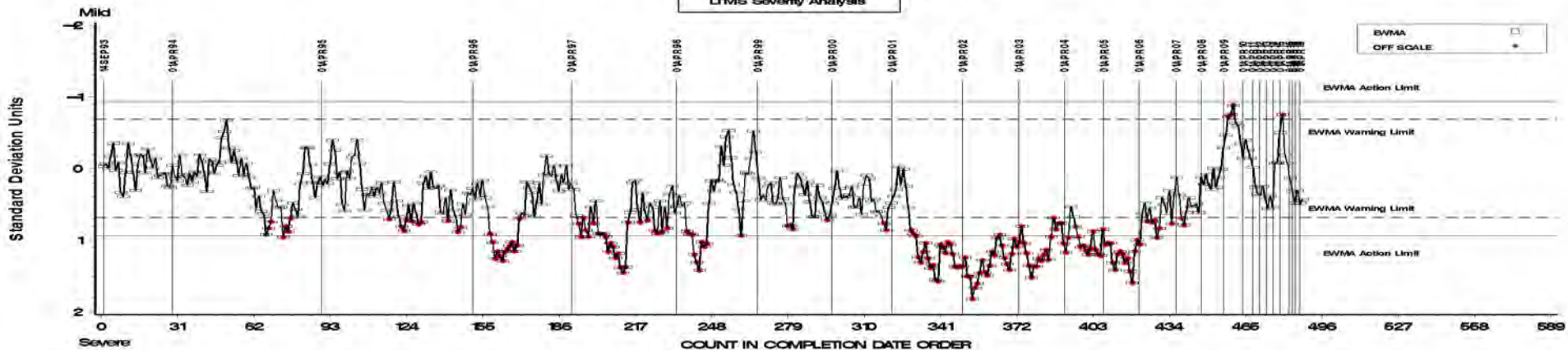
- ▶ As no 1 M-PC tests were run during this period no statement about test severity can be made.

Weighted Total Demerits

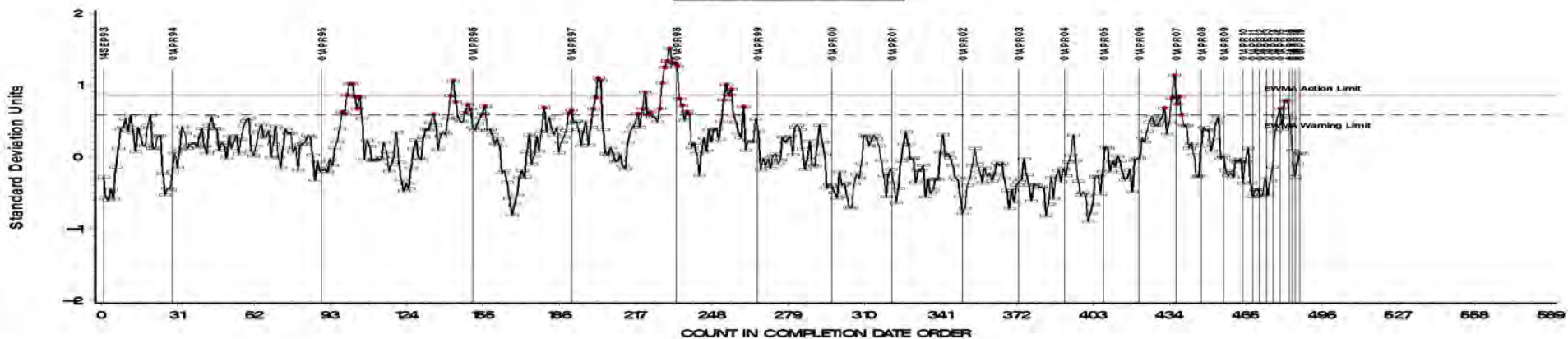


FINAL TOP GROOVE FILLING

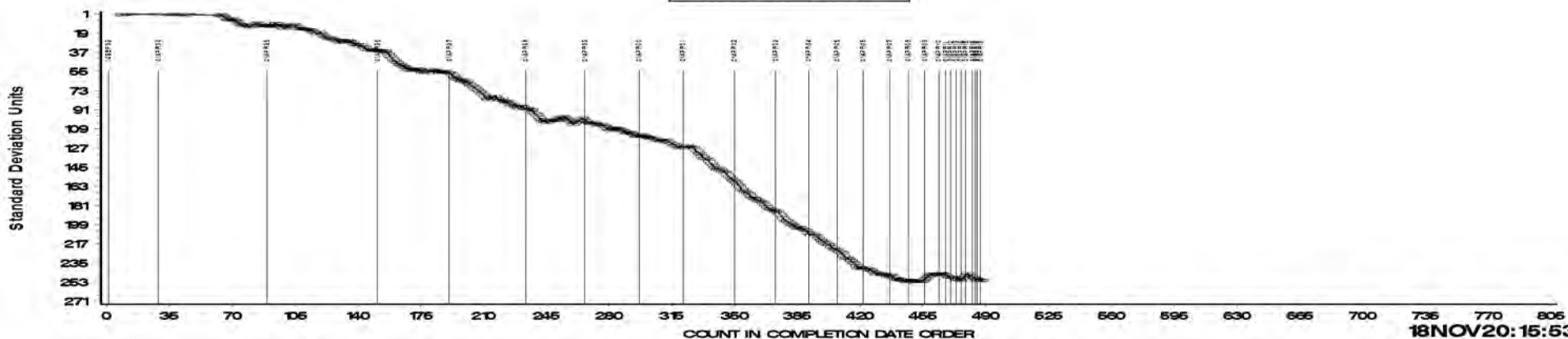
LTMS Severity Analysis



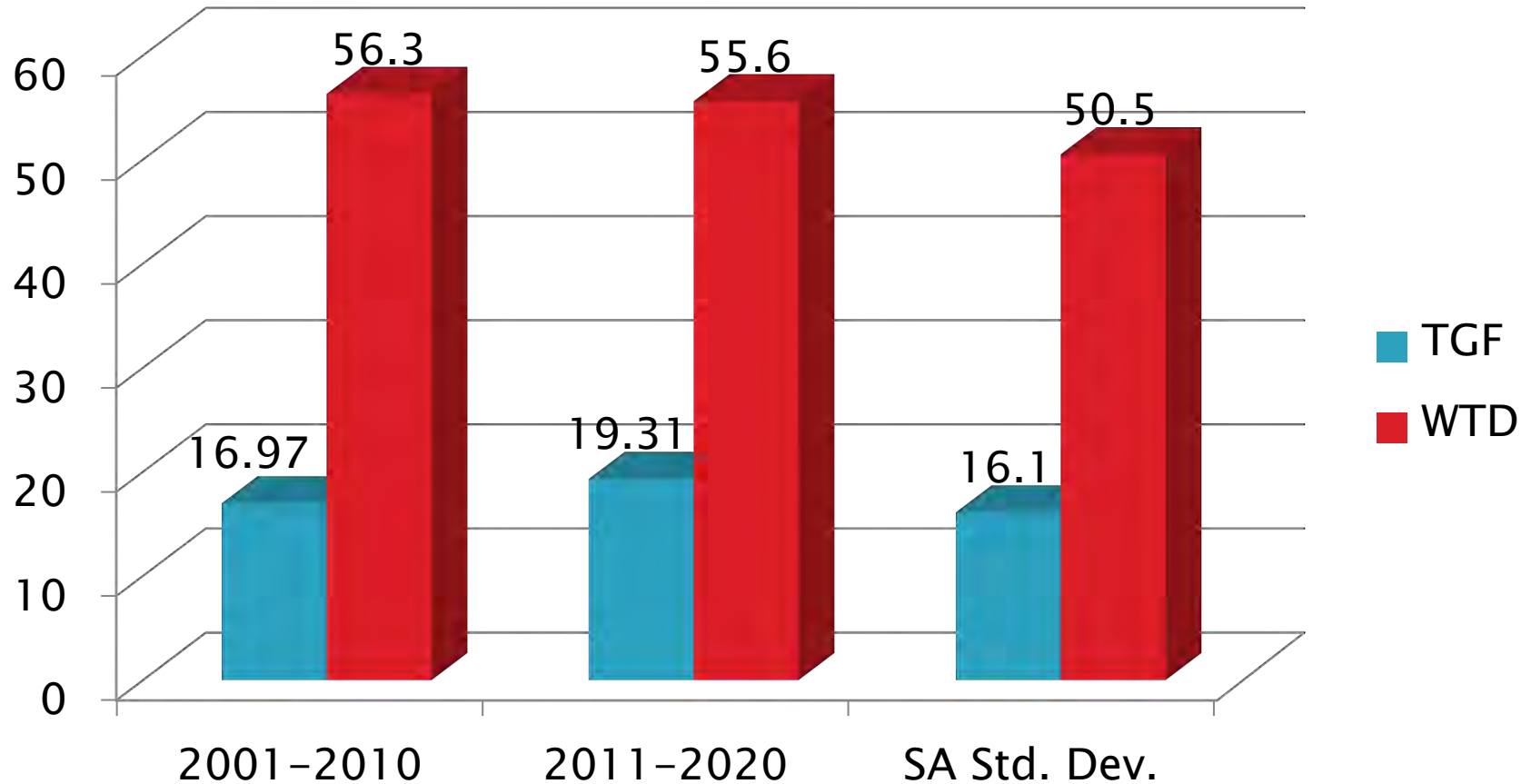
LTMS Precision Analysis



CUSUM Severity Analysis



1 MPC Precision Estimates



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1P 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 P Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

1P Lost Tests*

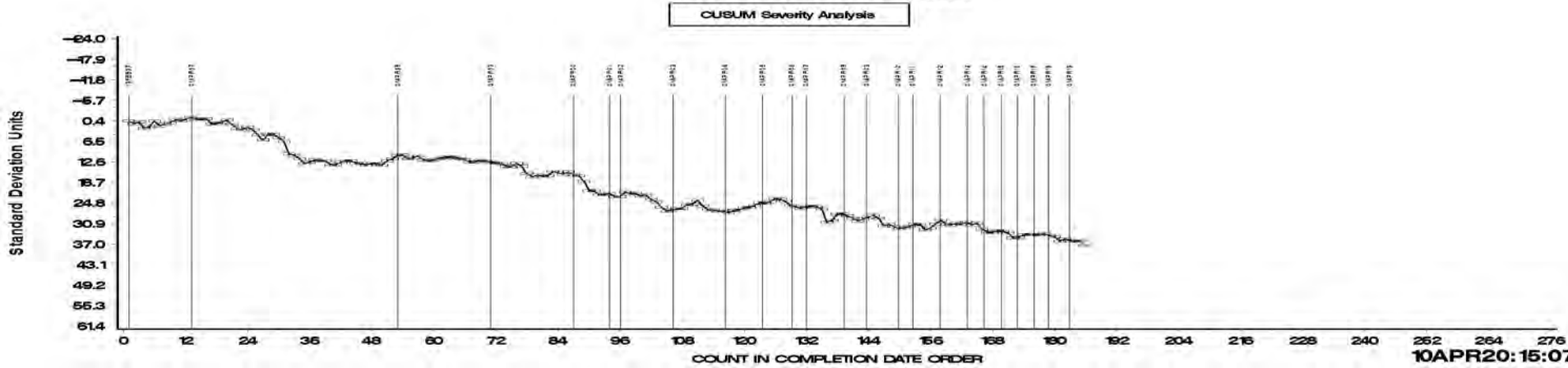
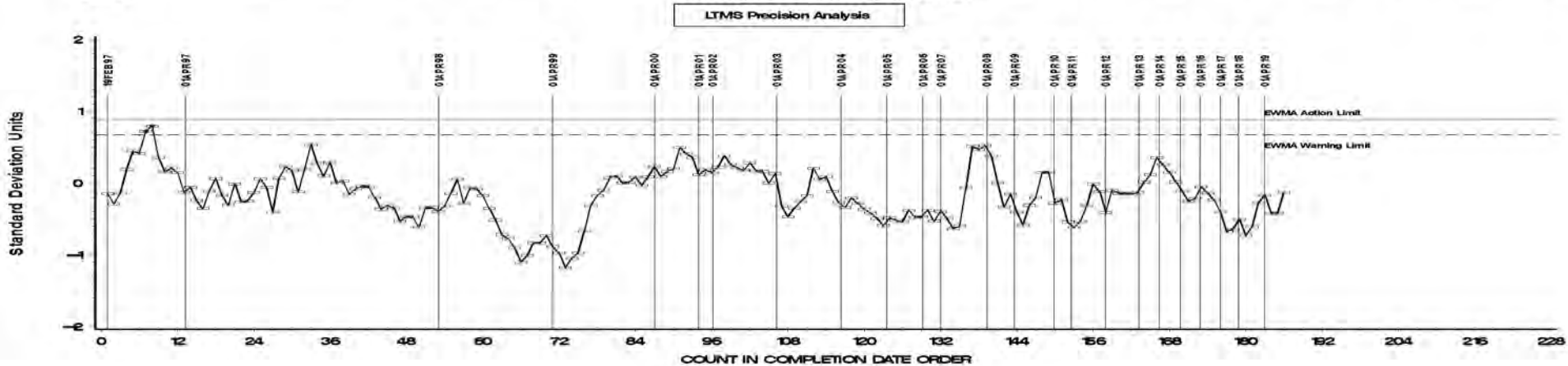
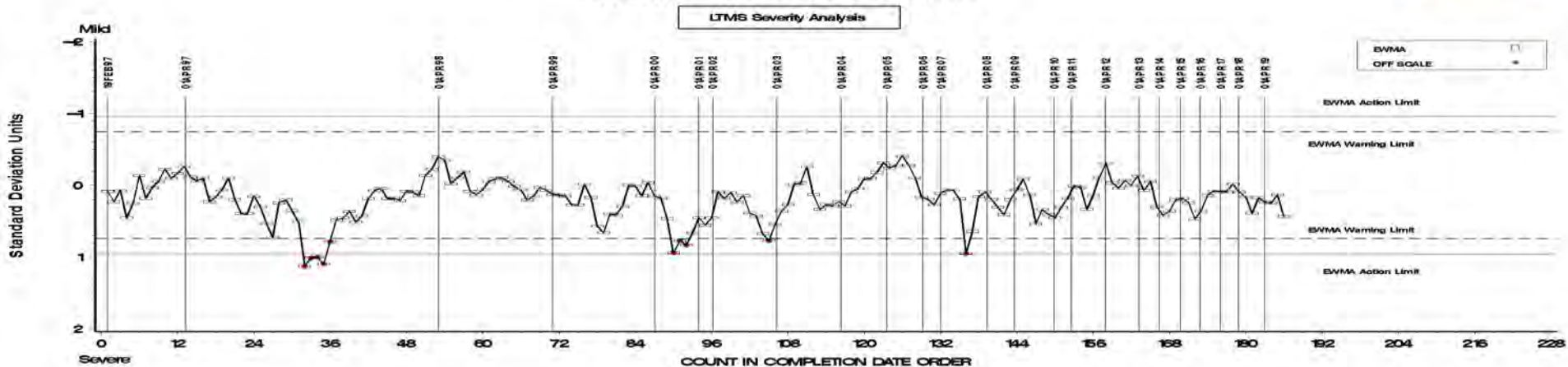
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

1 P Test Severity

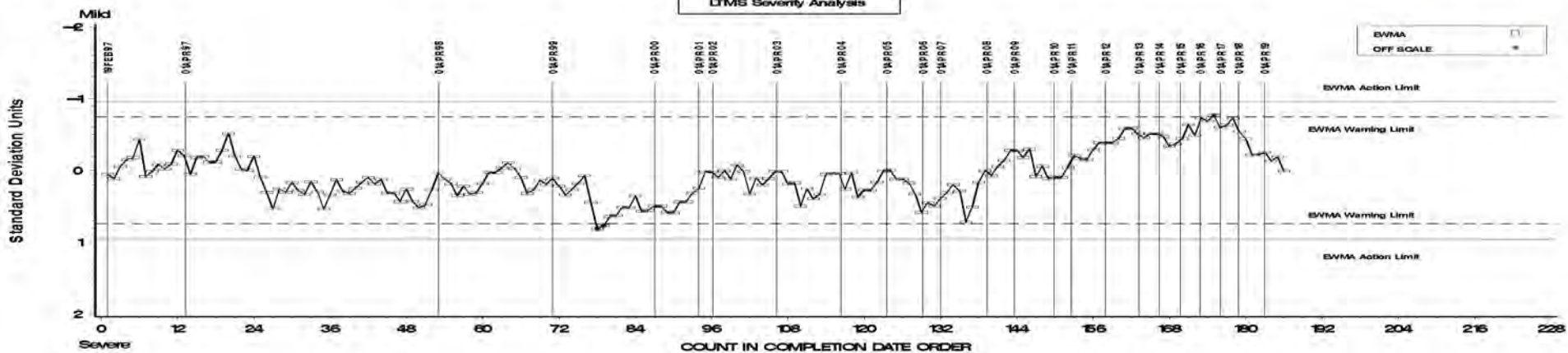
- ▶ As no 1P tests were run during this period no statement about test severity can be made.

WEIGHTED TOTAL DEMERITS

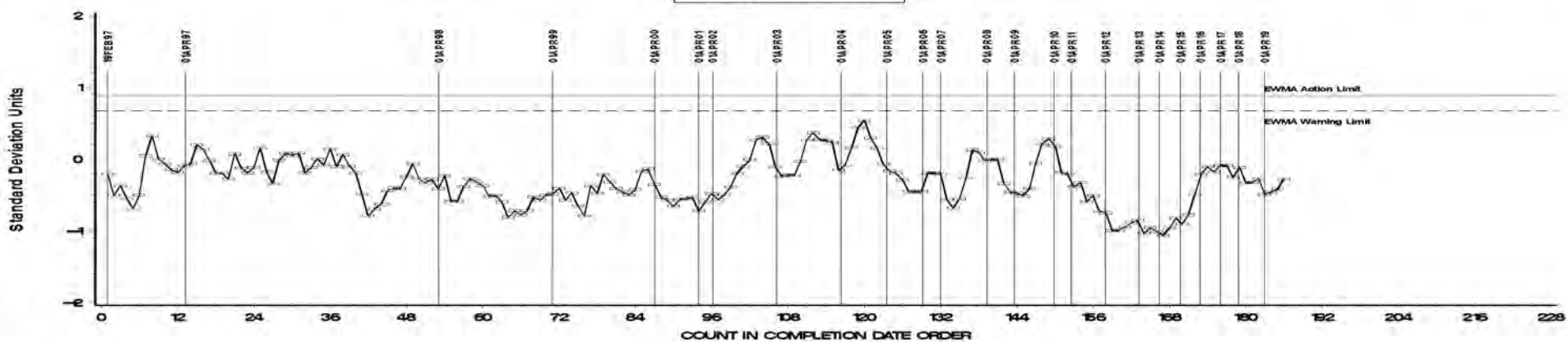


TOP LAND CARBON

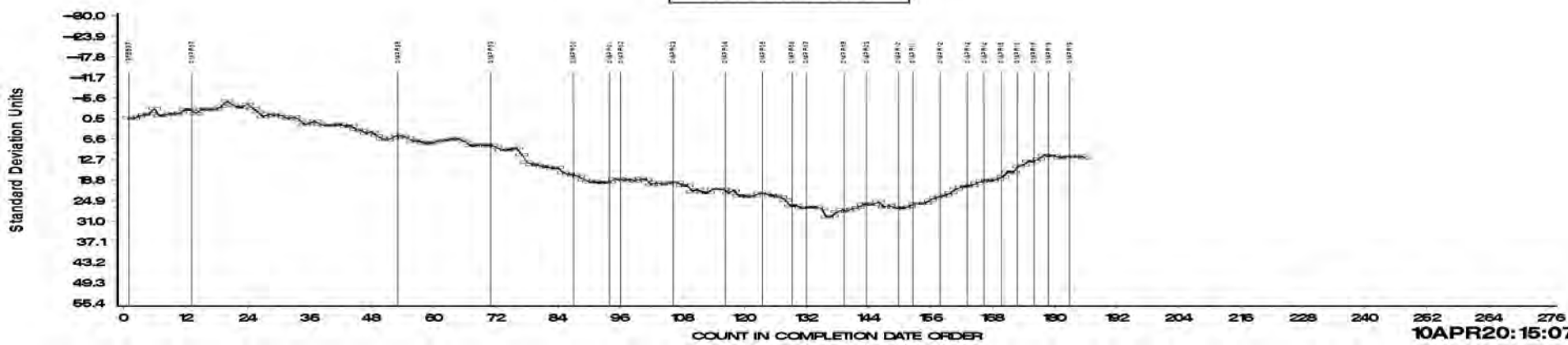
LTMS Severity Analysis



LTMS Precision Analysis

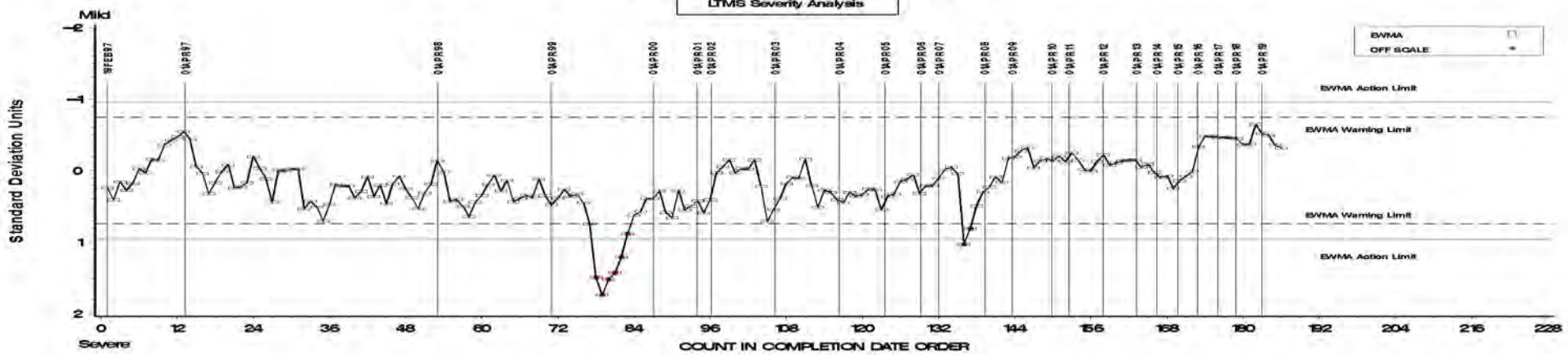


CUSUM Severity Analysis

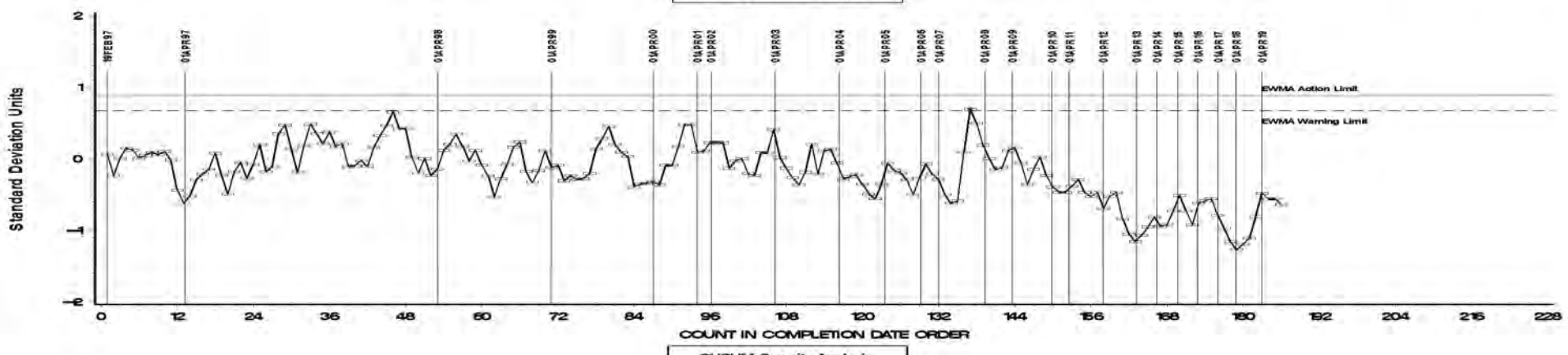


TOP GROOVE CARBON

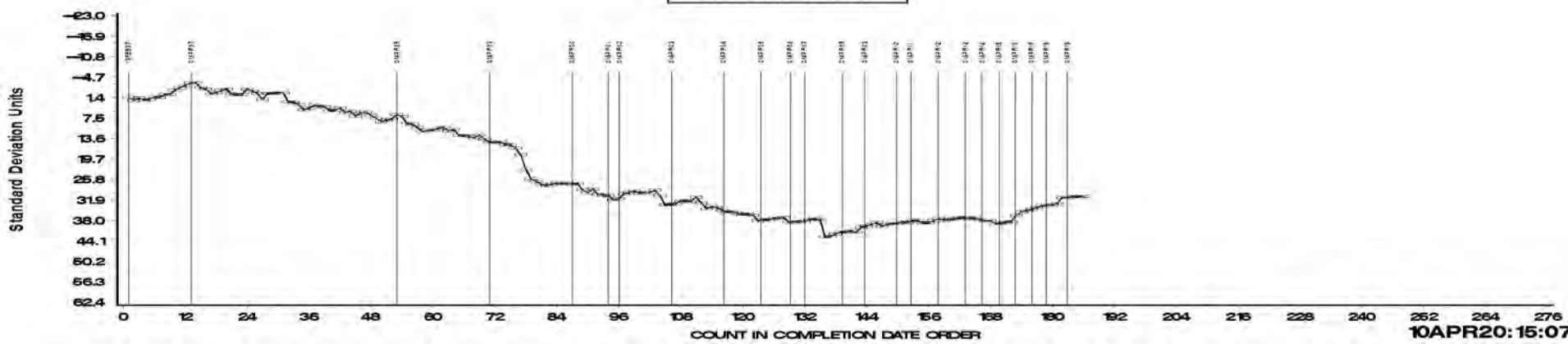
LTMS Severity Analysis



LTMS Precision Analysis



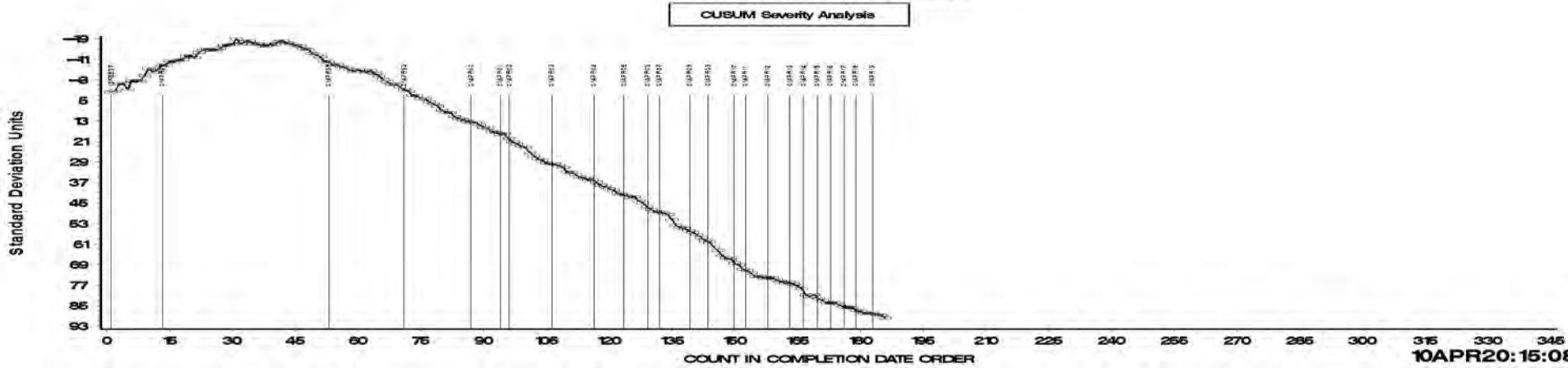
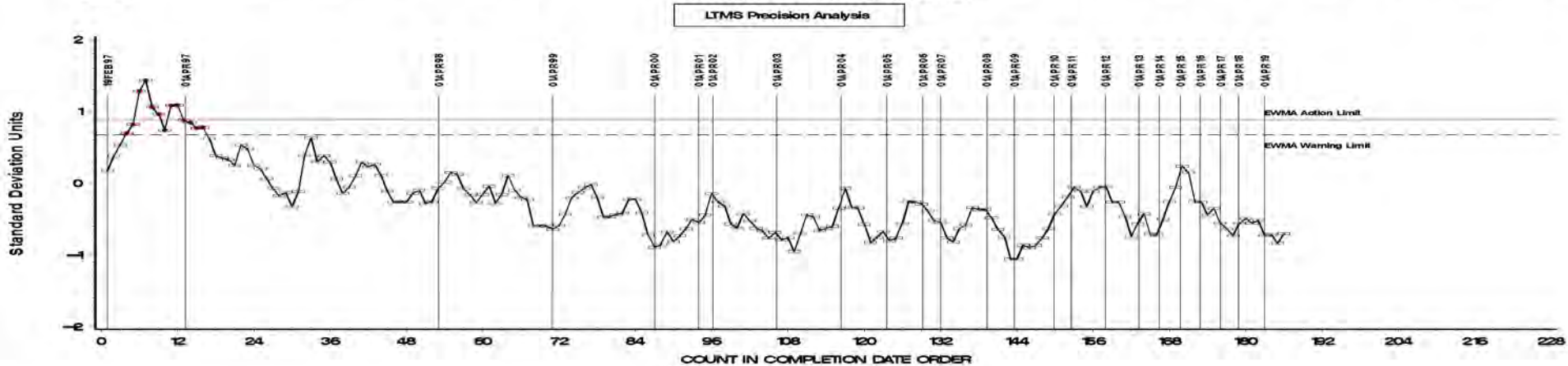
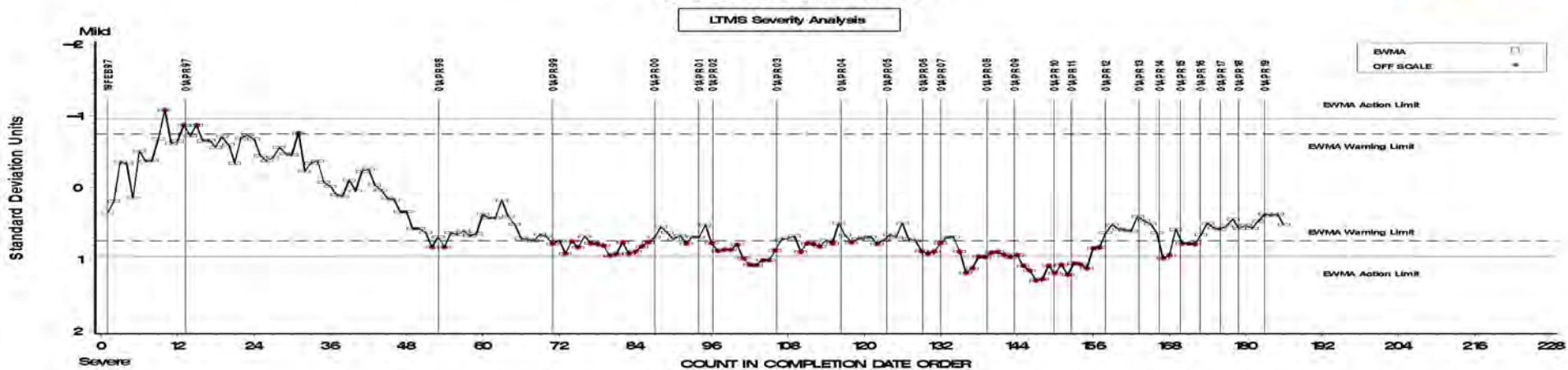
CUSUM Severity Analysis



CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



OIL CONSUMPTION

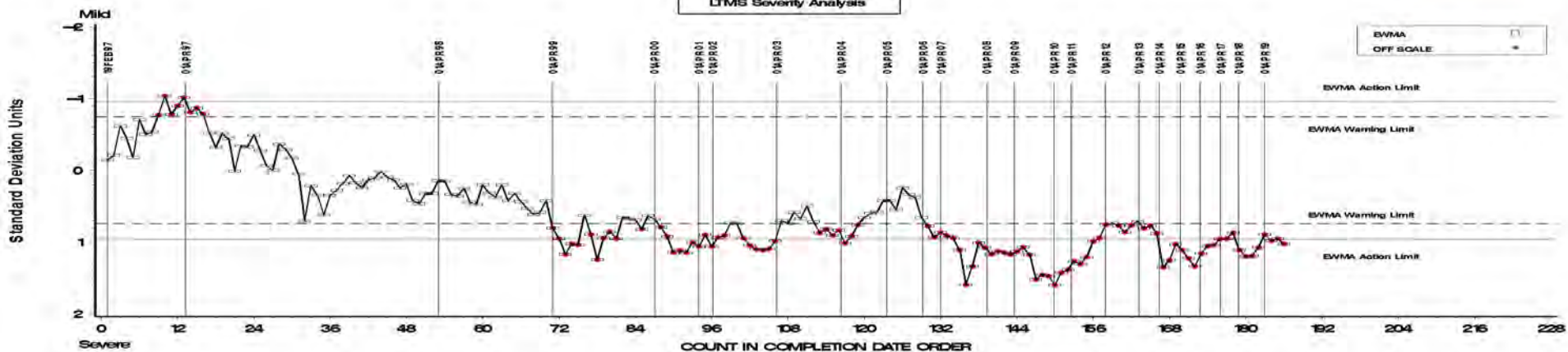


CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA

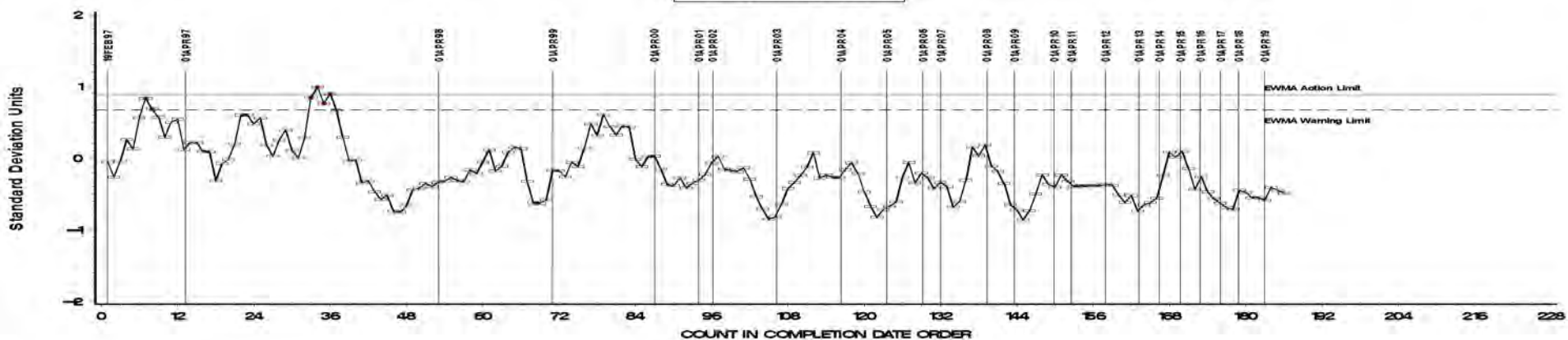


EOTOC

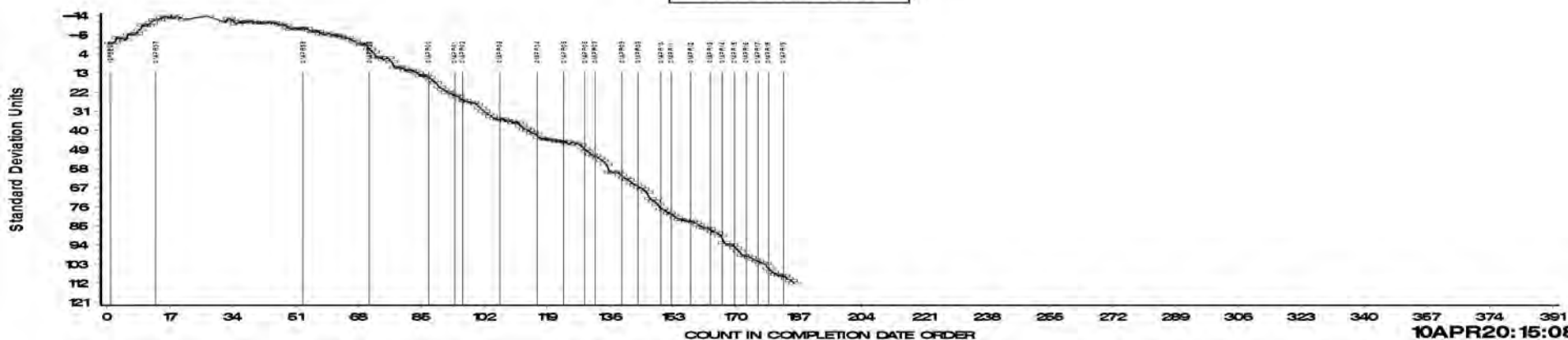
LTMS Severity Analysis



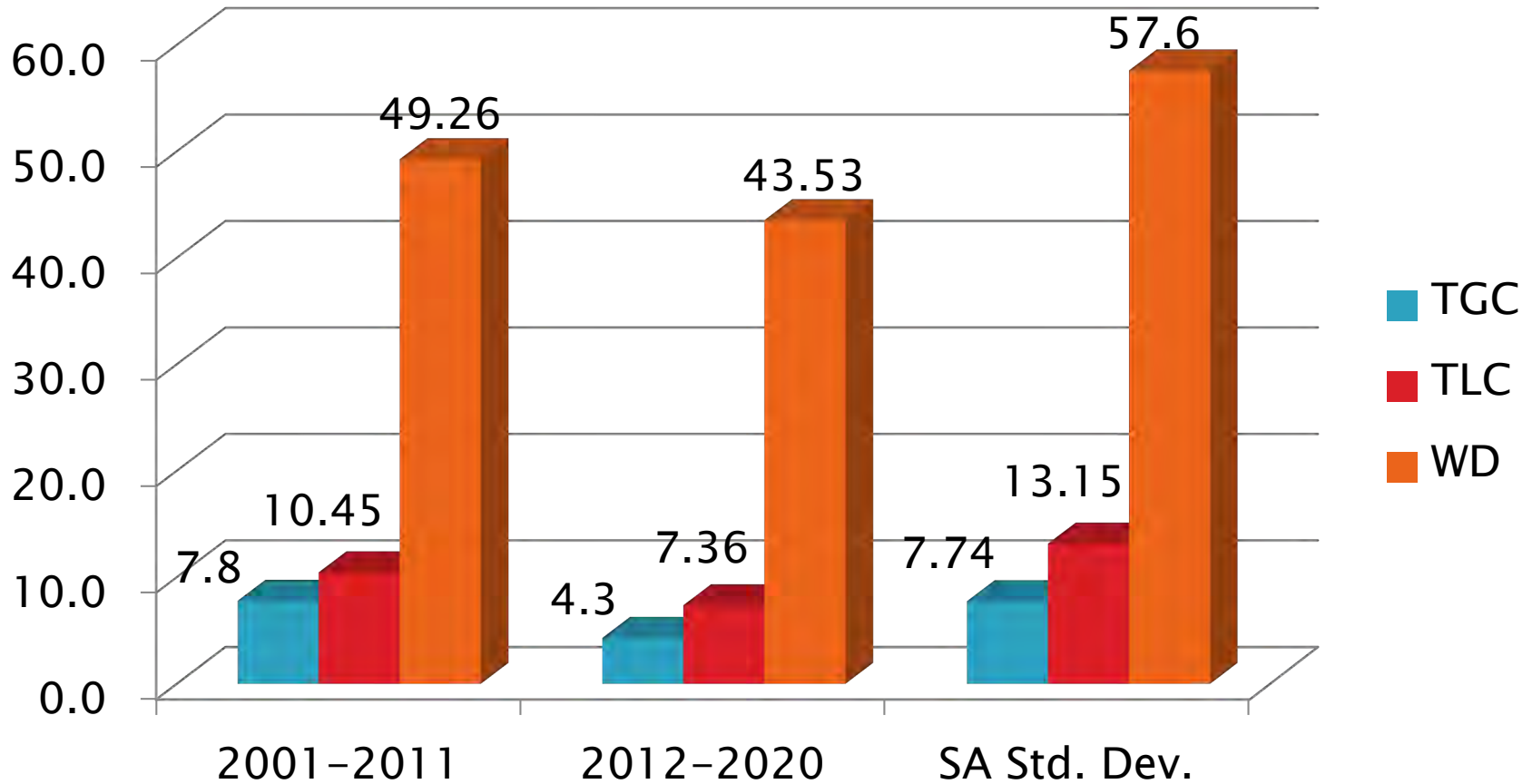
LTMS Precision Analysis



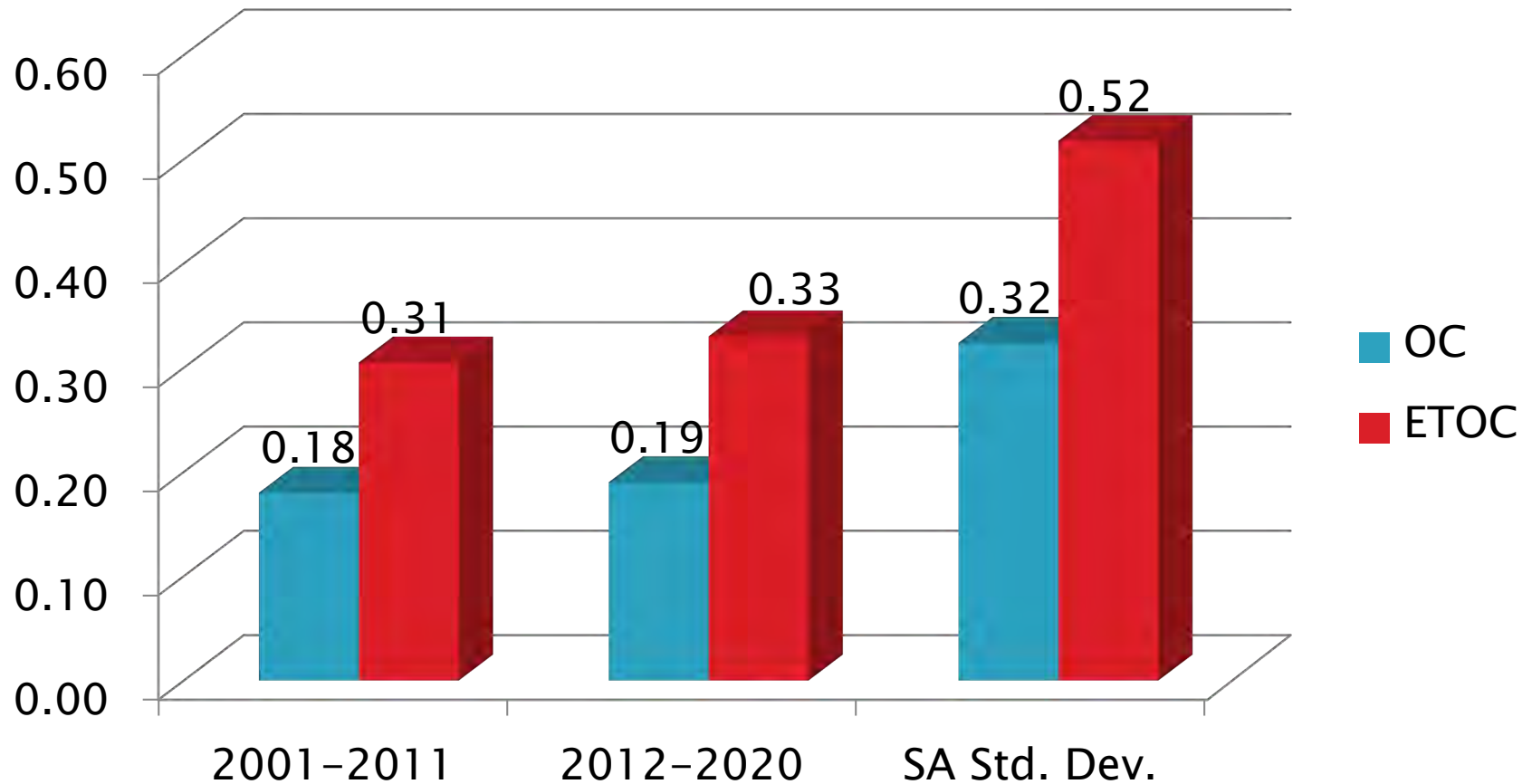
CUSUM Severity Analysis



1P Precision Estimates



1P Precision Estimates



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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
No failed tests	0
Total	0

1 R Lost Tests*

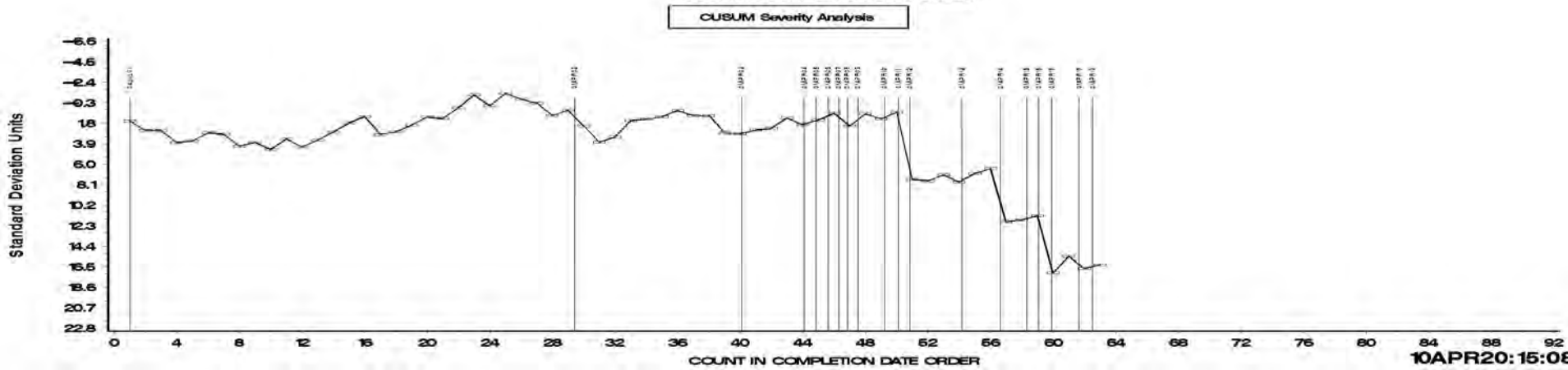
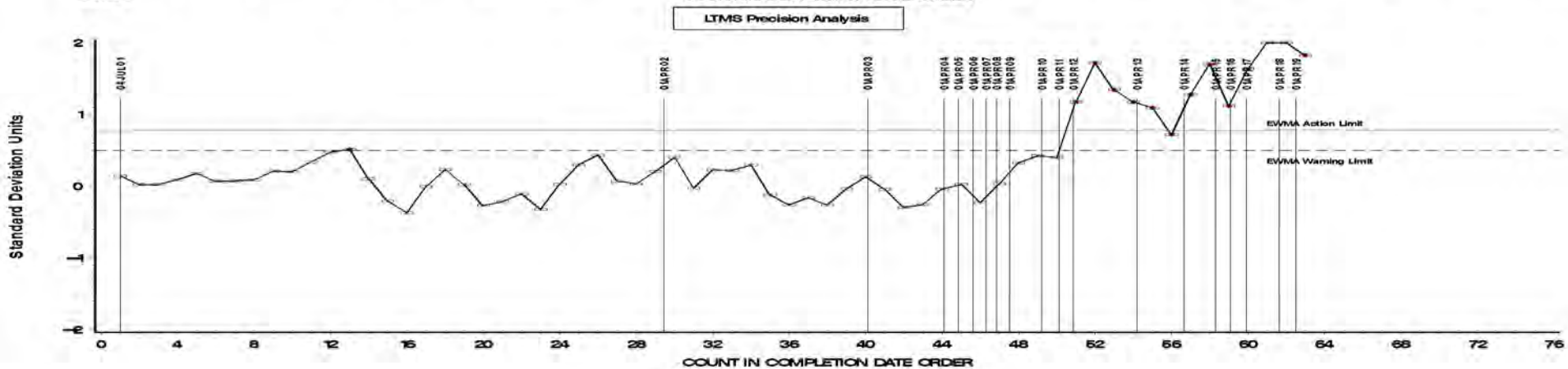
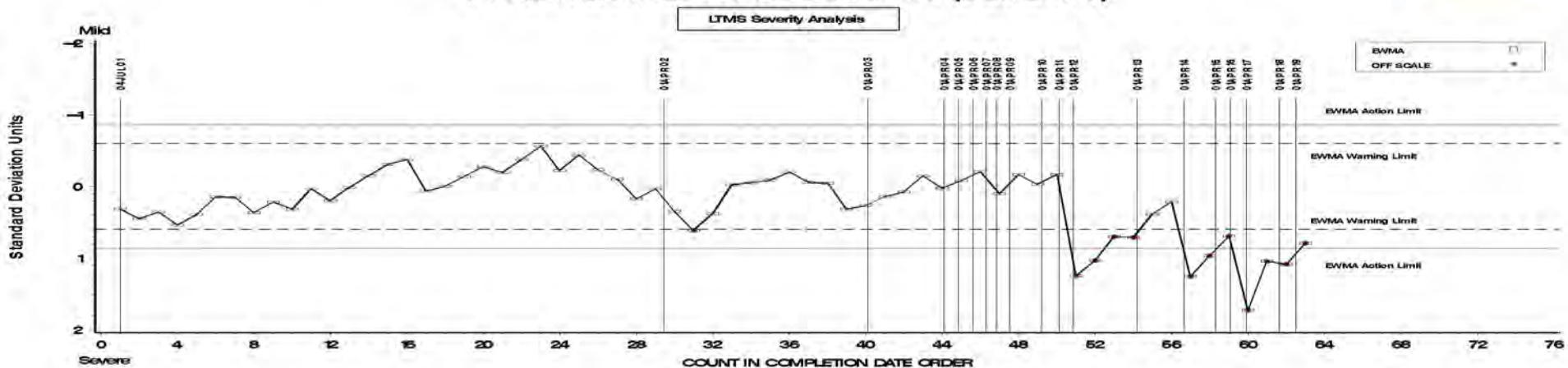
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

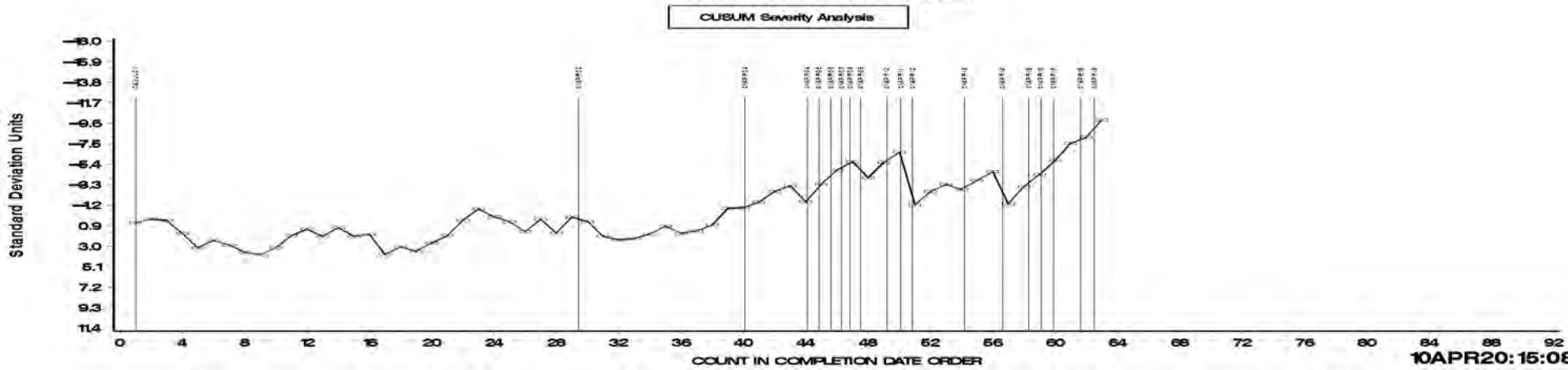
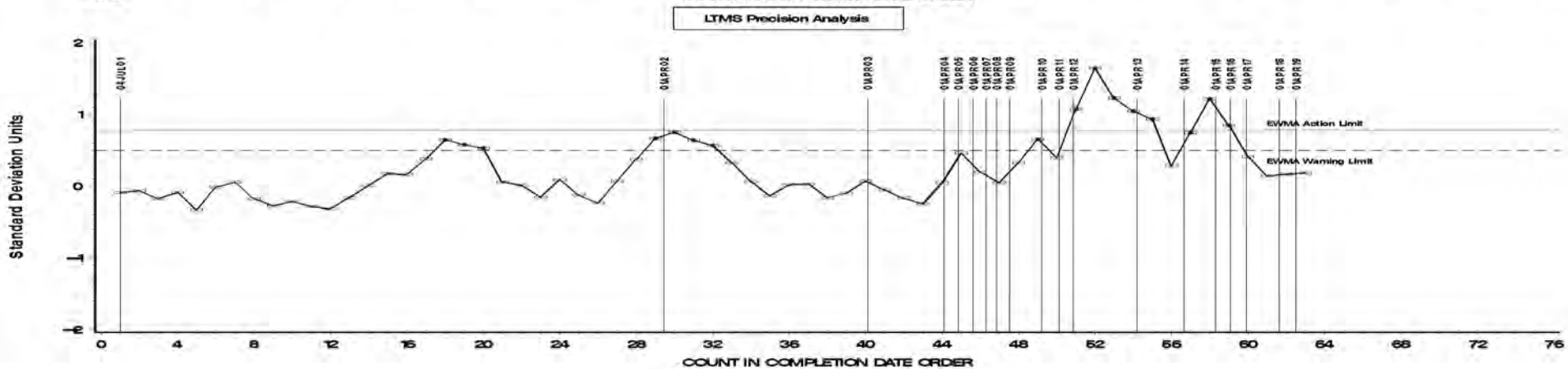
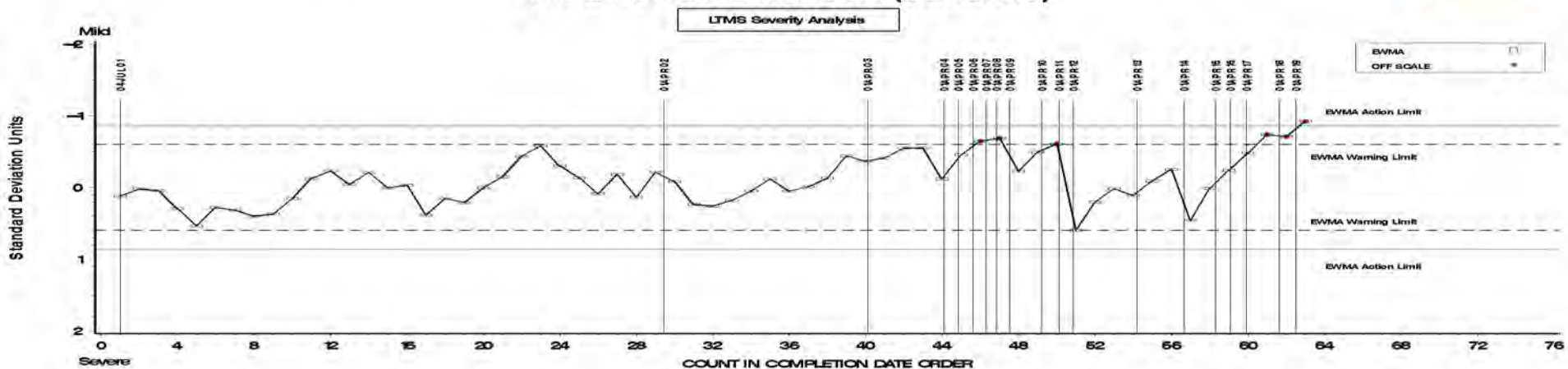
1R Test Severity

- ▶ As no 1R tests were run during this period no statement about test severity can be made.

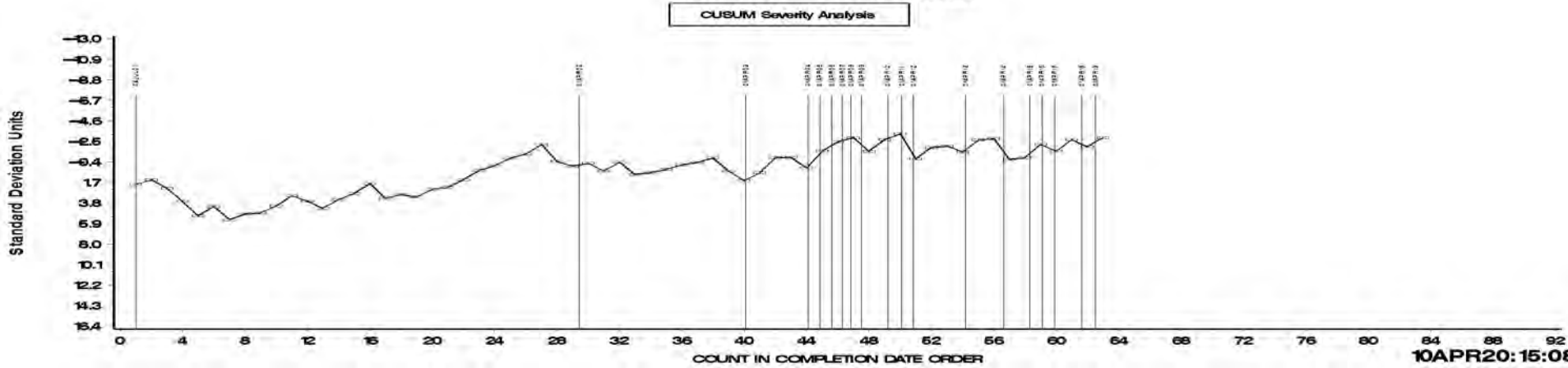
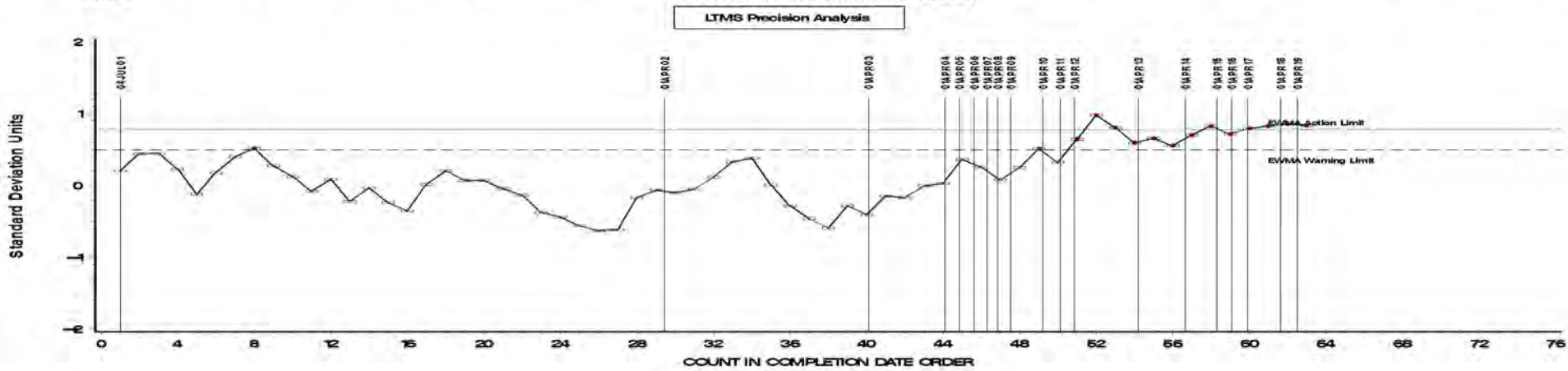
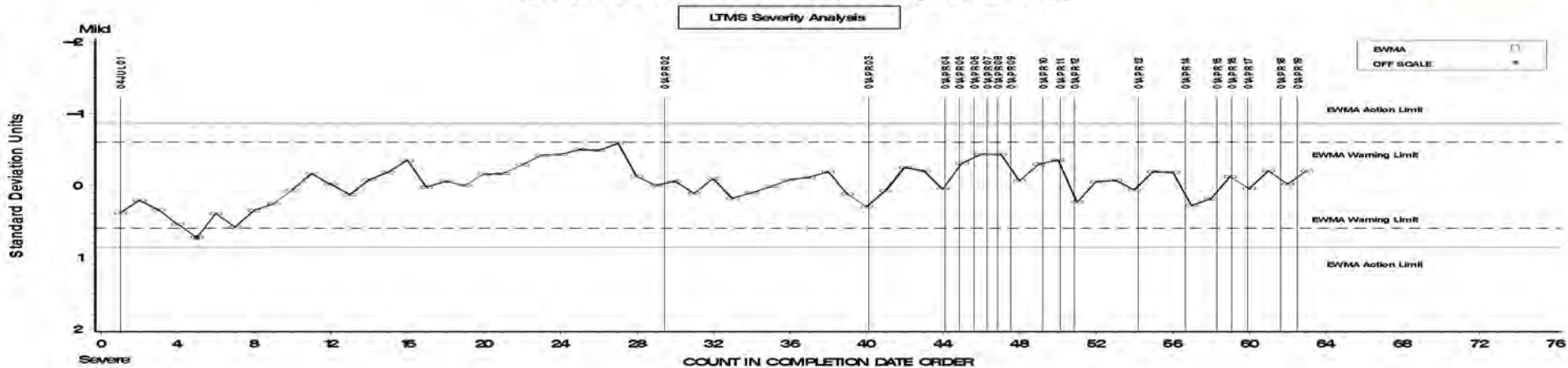
FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)



FINAL TOP LAND CARBON (DEMERITS)



FINAL TOP GROOVE CARBON (DEMERITS)

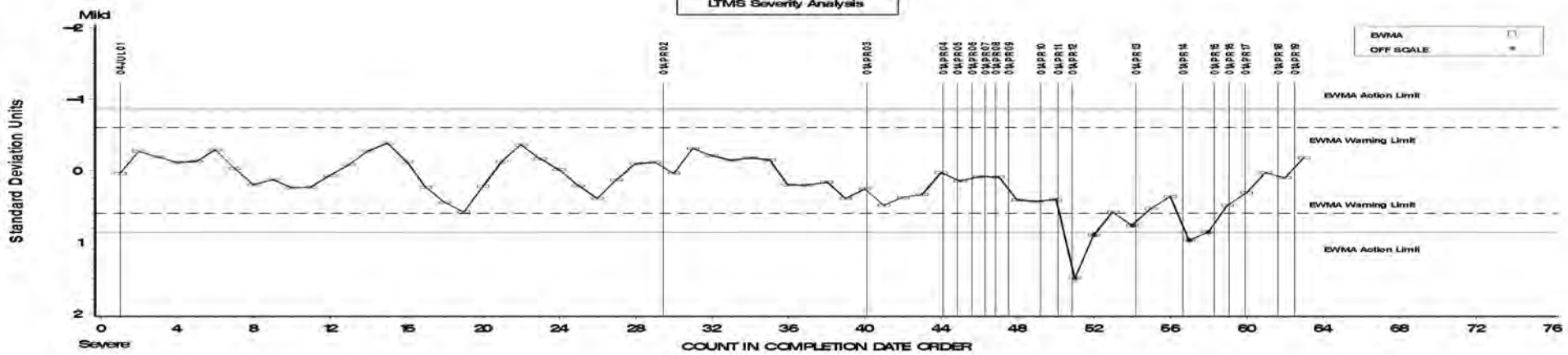


CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

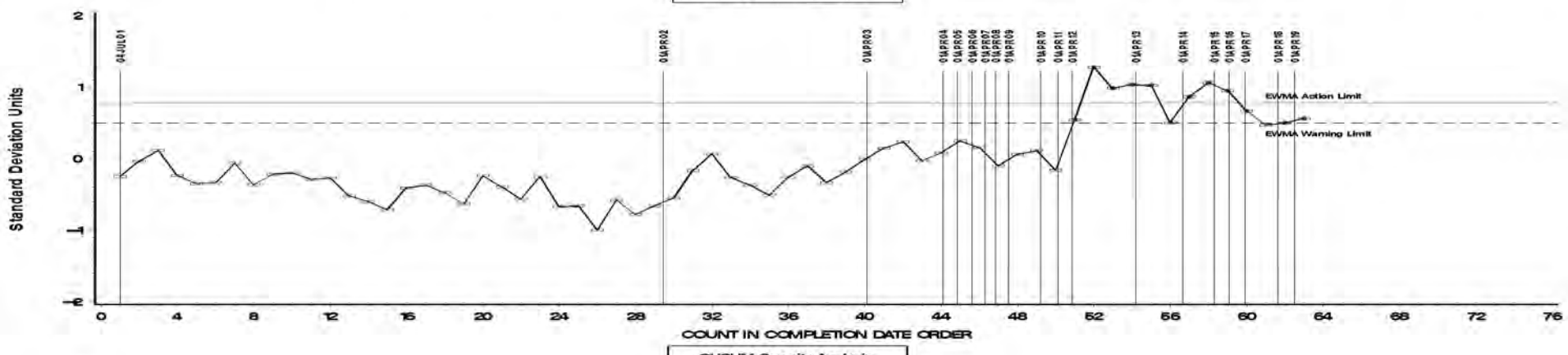


FINAL EOTOC (g/h)

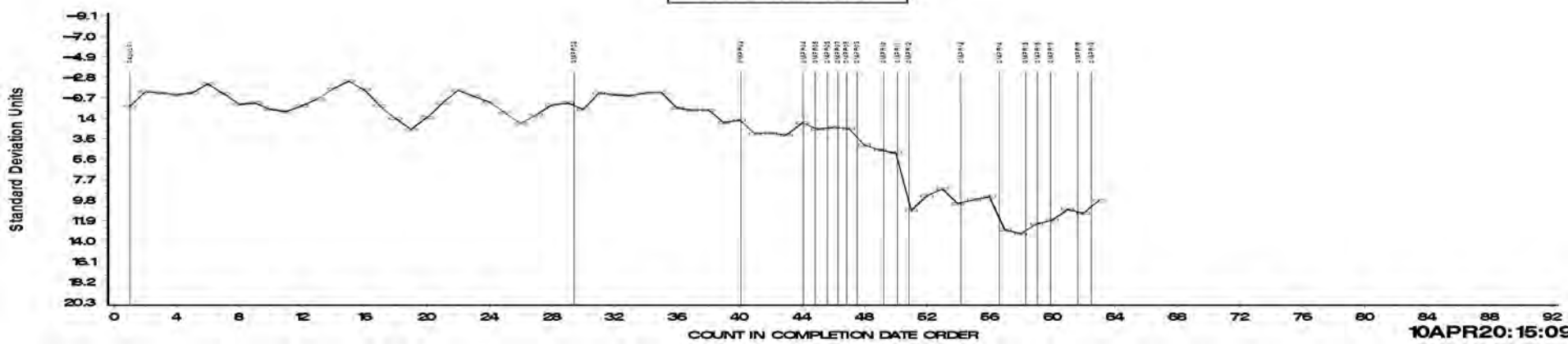
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

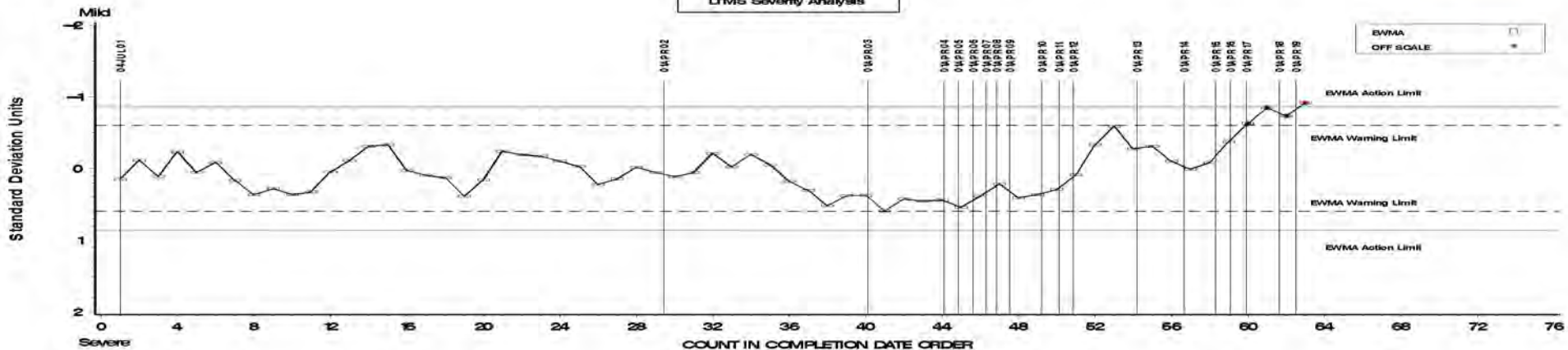


CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

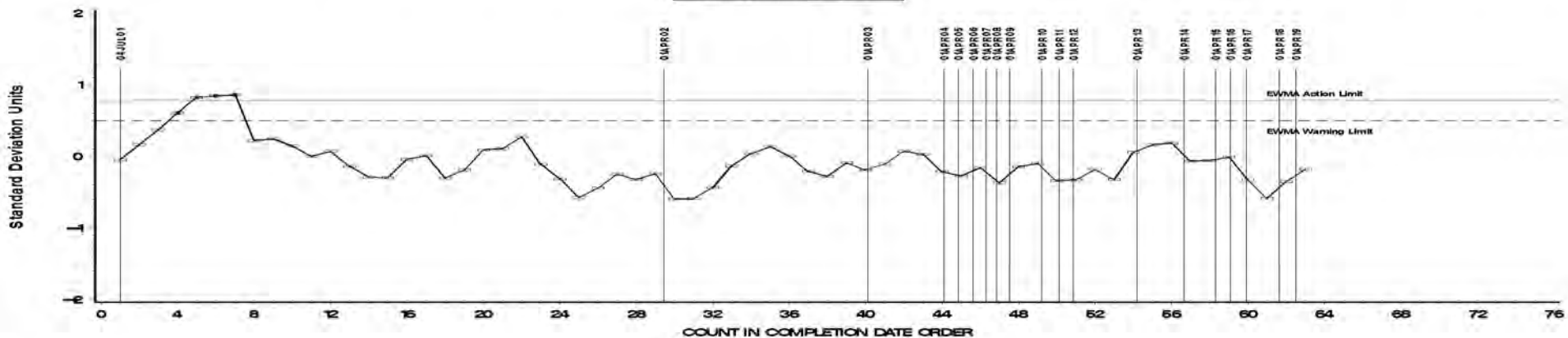


FINAL BOTOC

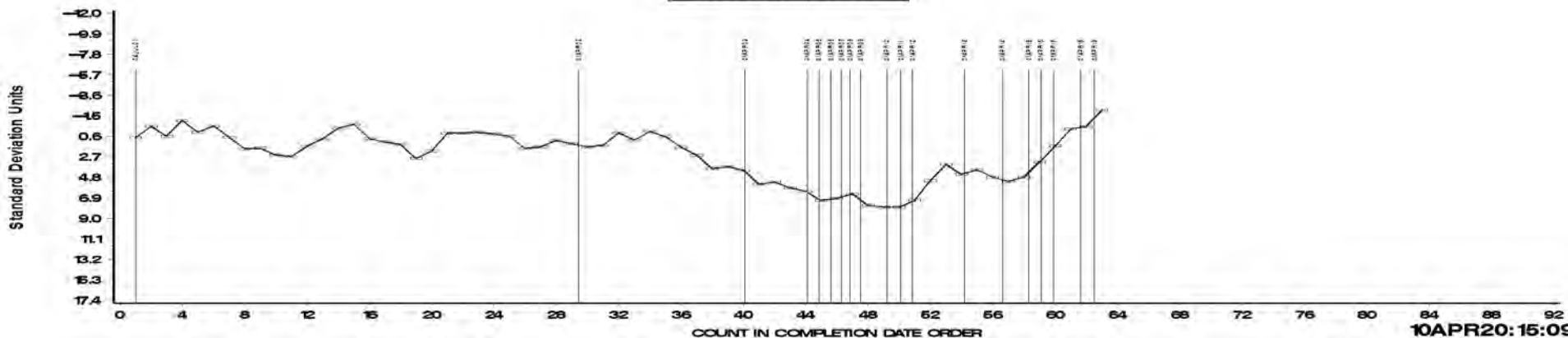
LTMS Severity Analysis



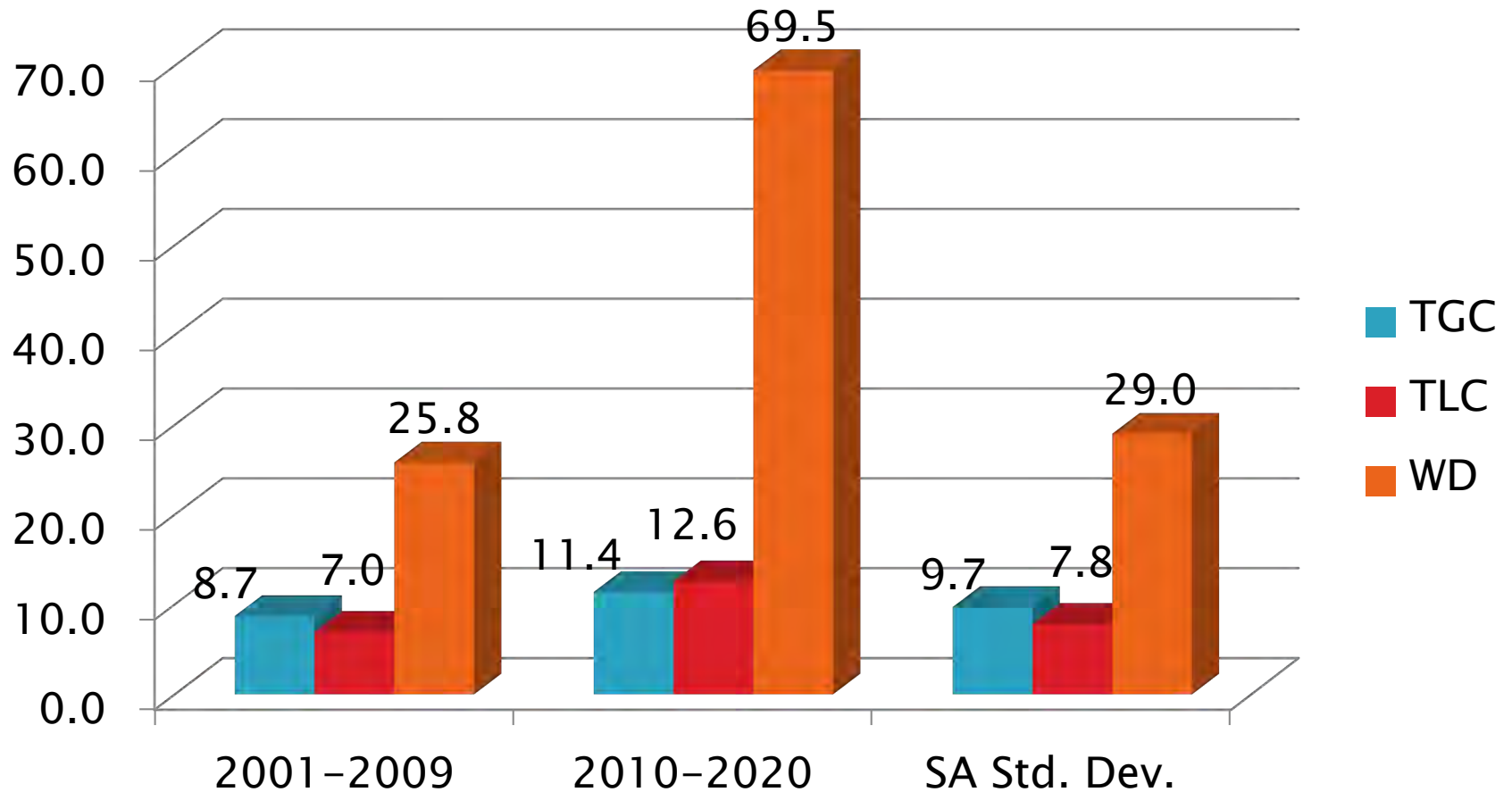
LTMS Precision Analysis



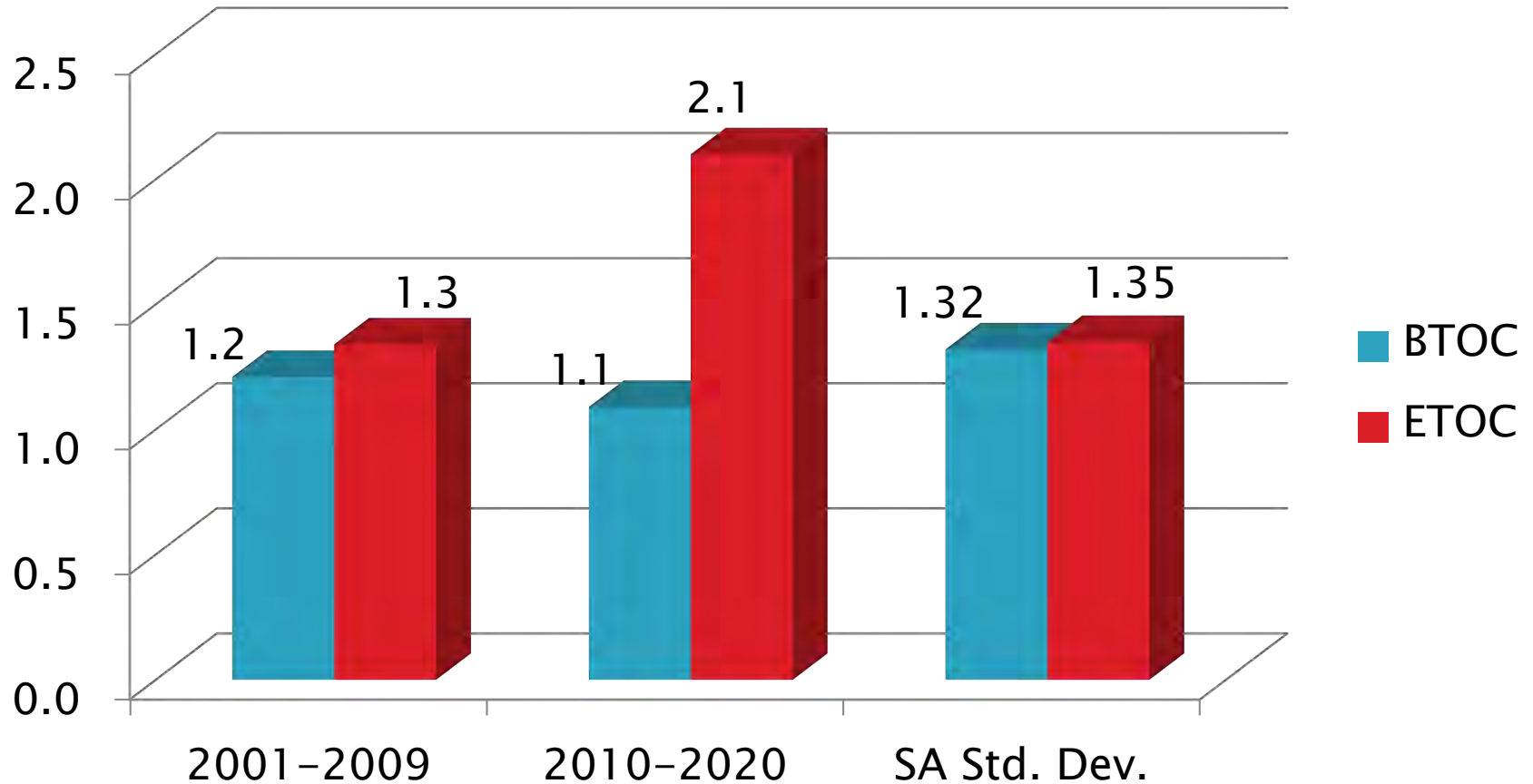
CUSUM Severity Analysis



1R Precision Estimates



1 R Precision Estimates



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Test Monitoring Center

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CAT C13

»» October 2020

C13 Test Activity

Test Status	Validity Code	C13
Acceptable Calibration Test	AC	2
Failed Calibration Test	OC	0
Operationally Invalid	LC	0
Aborted	XC	1
Total		3

C13 Failed Tests

Failed Parameter	Number of Tests
No Failed Tests	0
Total	0

C13 Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	Aborted due to incorrect oil addition	1
Total		1

*Invalid and aborted tests

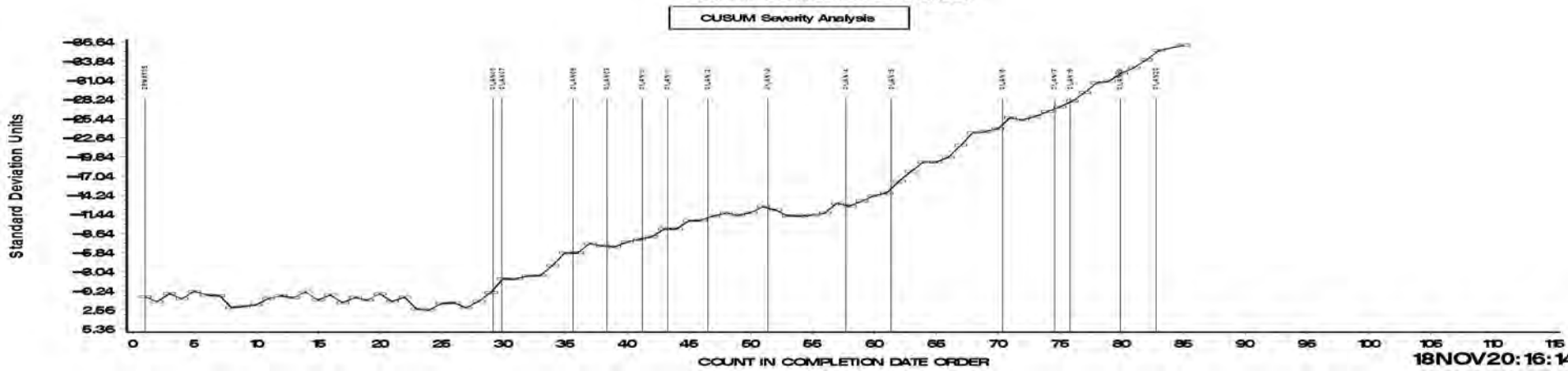
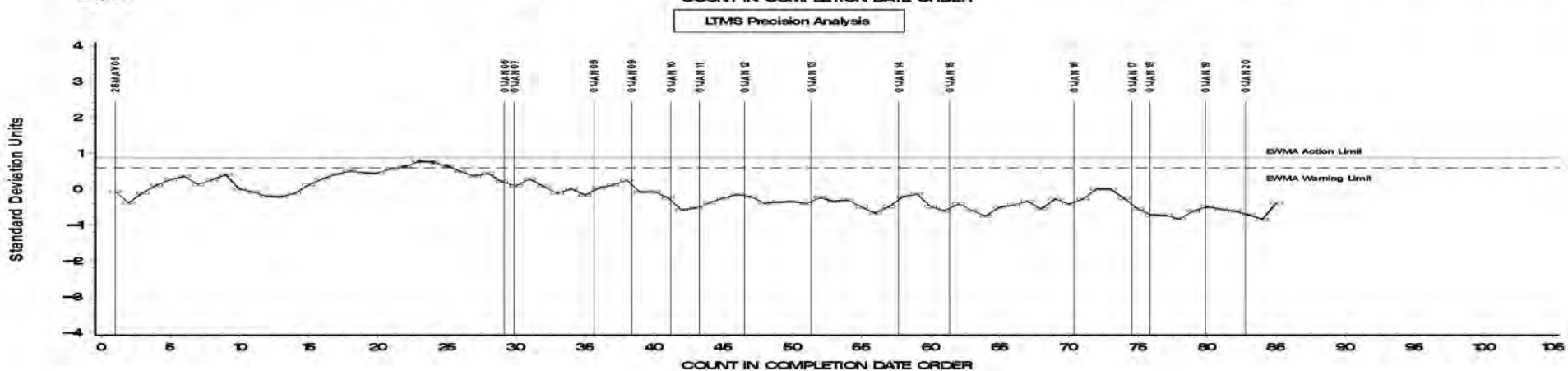
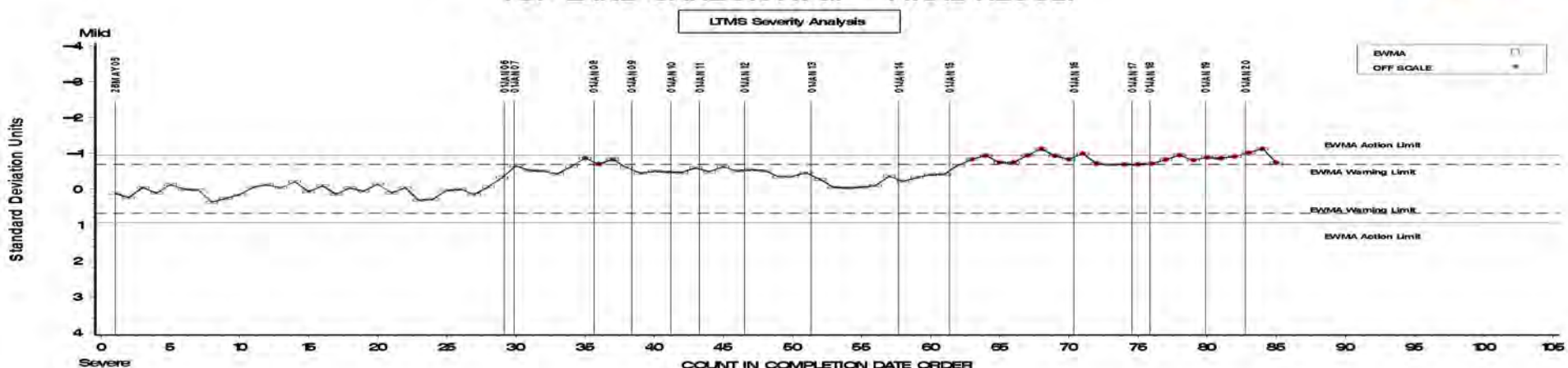
C13 Test Severity

- ▶ OC and TGC are in control
- ▶ TLC in severity warning alarm in the mild direction
- ▶ R2TC is in precision warning alarm

C13 INDUSTRY OPERATIONALLY VALID DATA



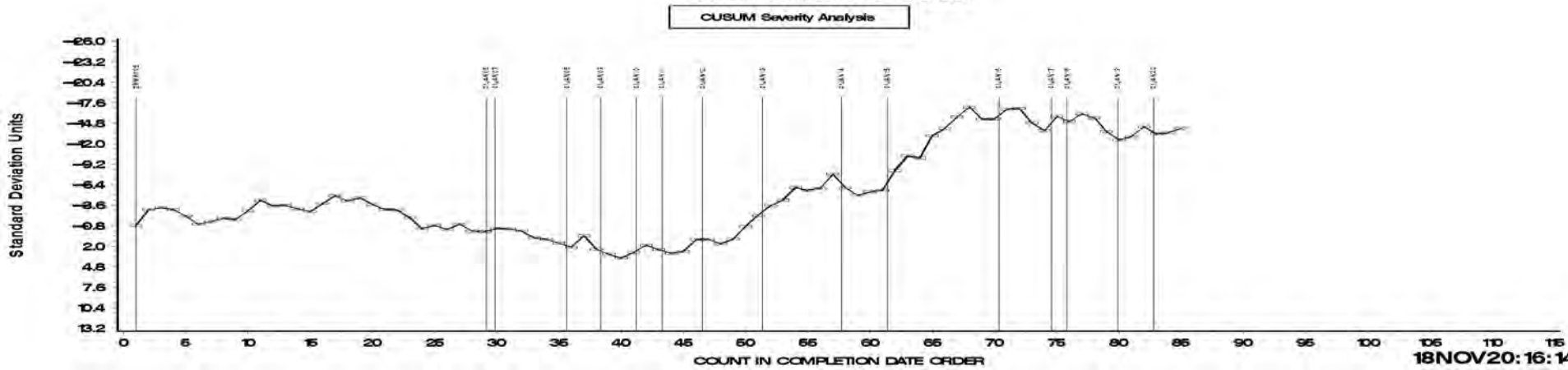
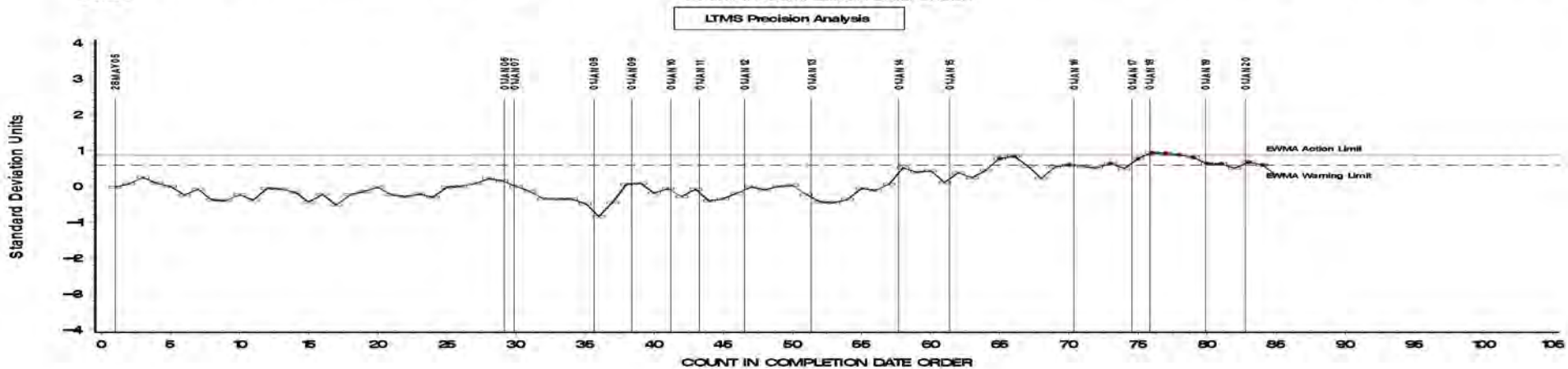
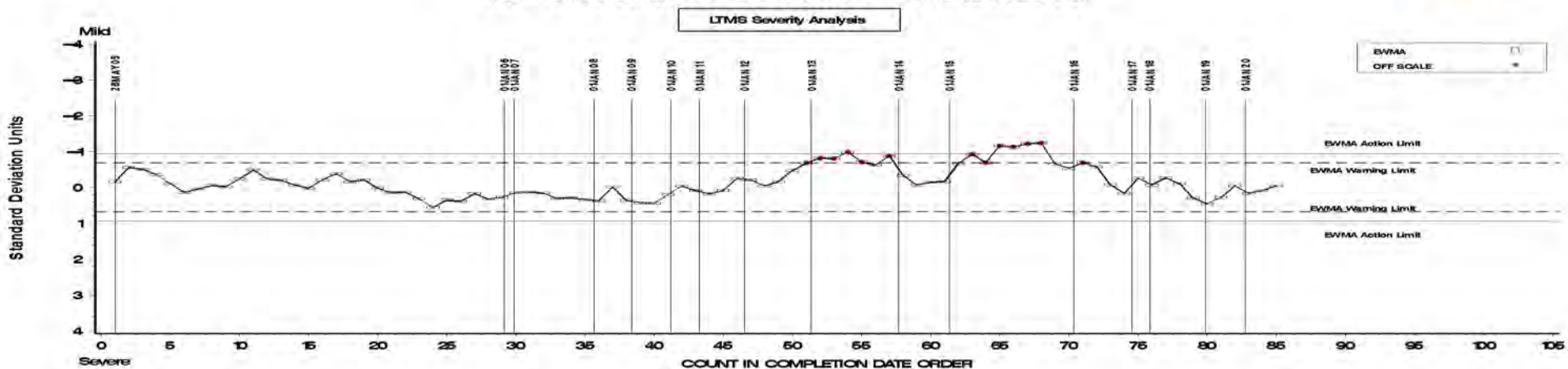
TOP LAND CARBON AVG. — FINAL RESULT



C13 INDUSTRY OPERATIONALLY VALID DATA



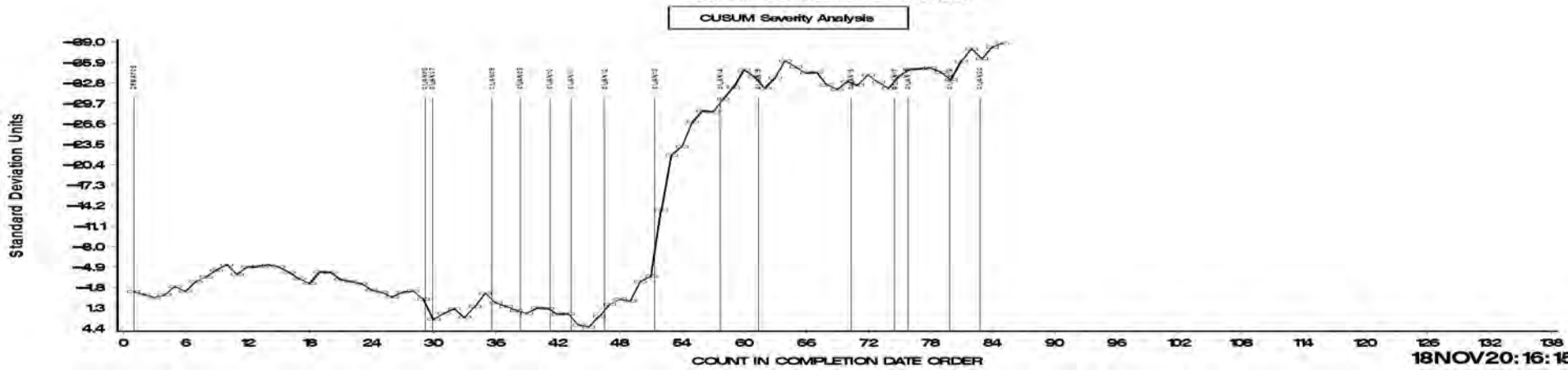
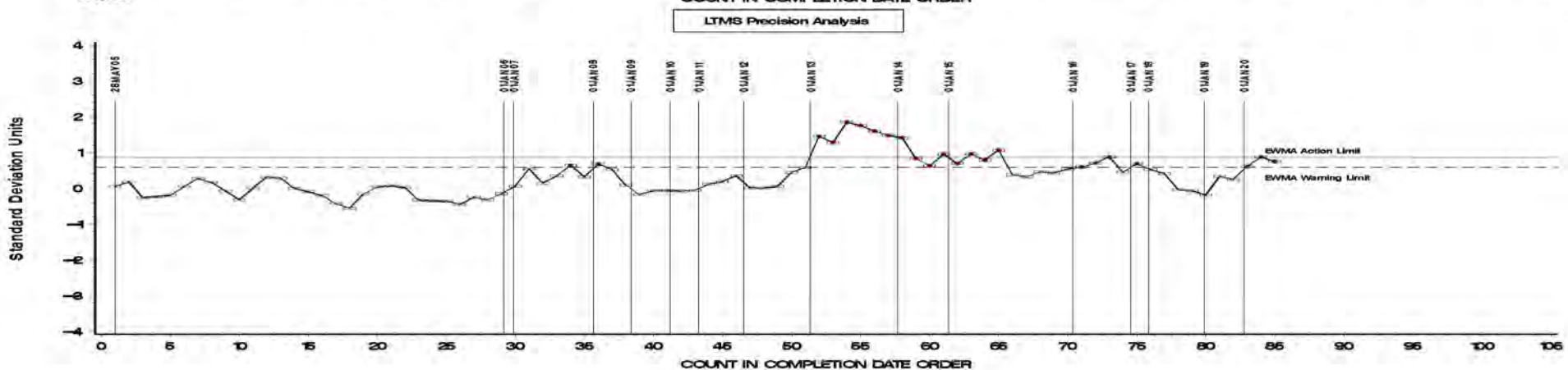
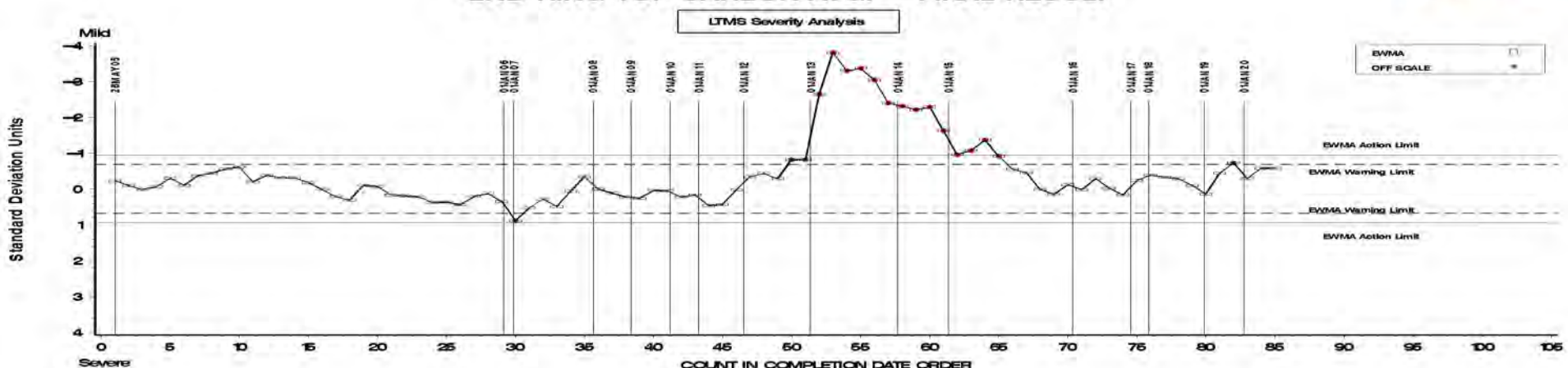
TOP GROOVE CARBON AVG — FINAL RESULT



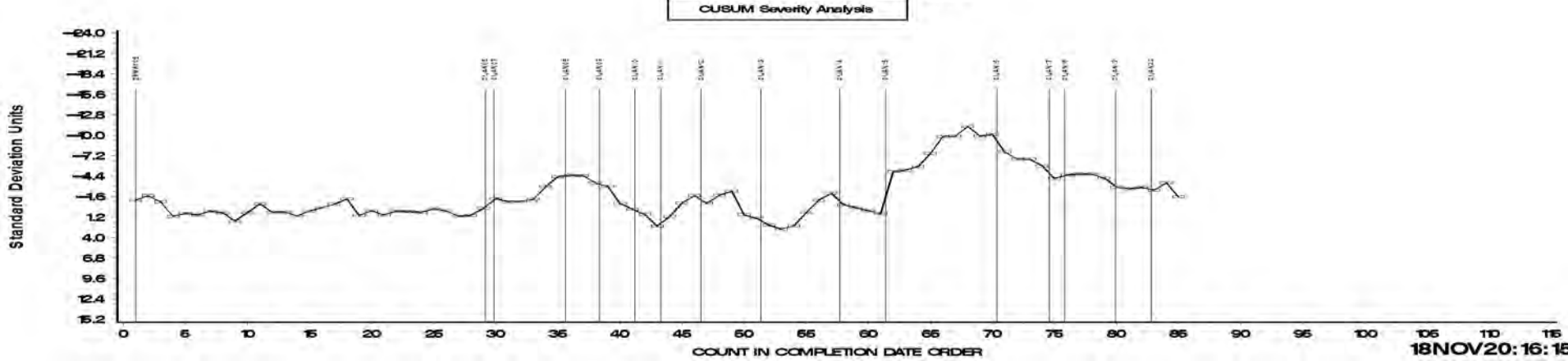
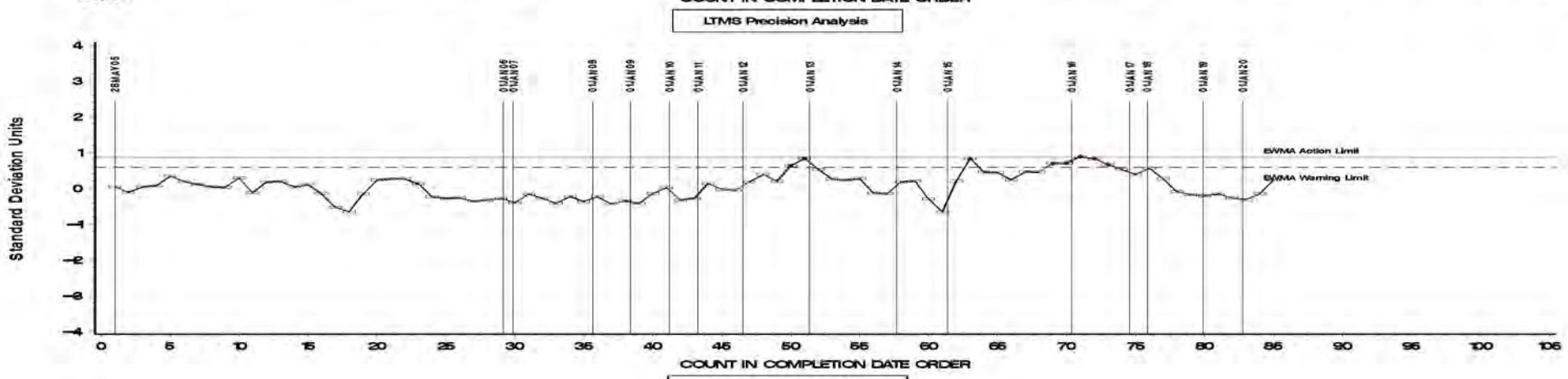
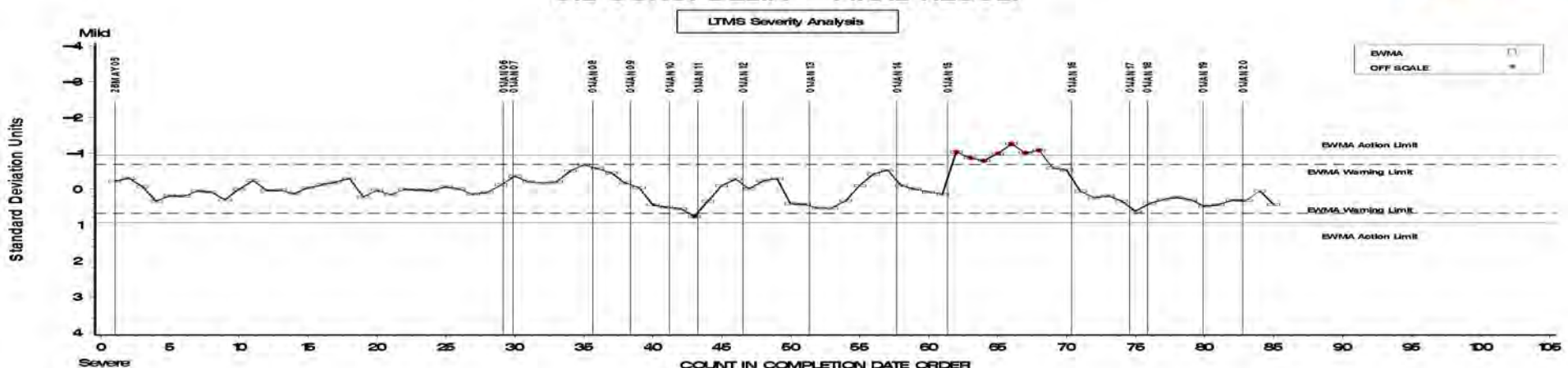
C13 INDUSTRY OPERATIONALLY VALID DATA



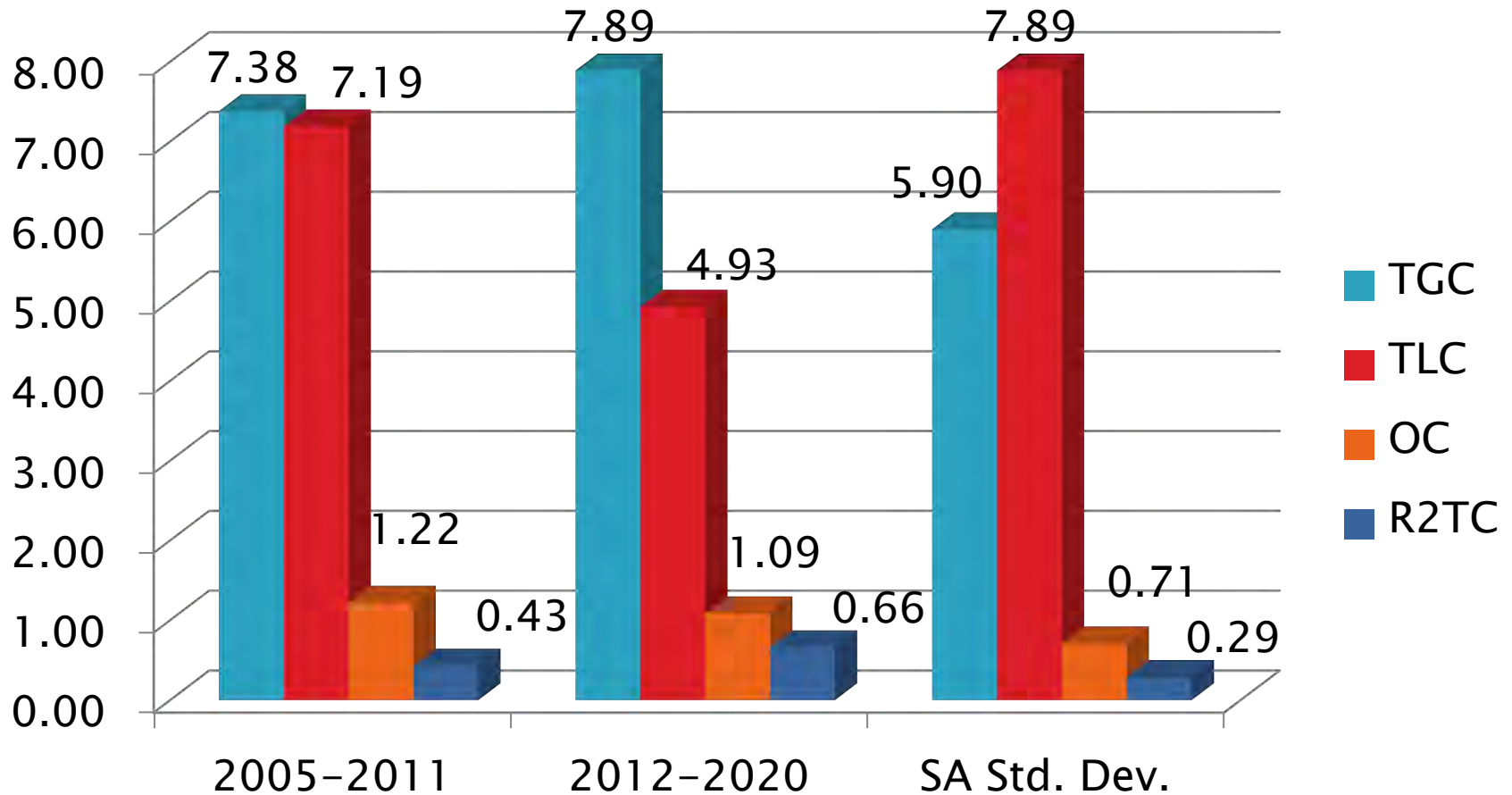
2ND RING TOP CARBON AVG. — FINAL RESULT



OIL CONS. DELTA — FINAL RESULT



C13 Precision Estimates



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C13 Oil Aeration (COAT)

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Test Monitoring Center

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COAT Test Activity

Test Status	Validity Code	COAT
Acceptable Calibration Test	AC	2
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	0
Informational Run	NN	0
Total		3

COAT Failed Tests

Failed Parameter	Number of Tests
Average oil aeration severe	1
Total	1

COAT Lost Tests*

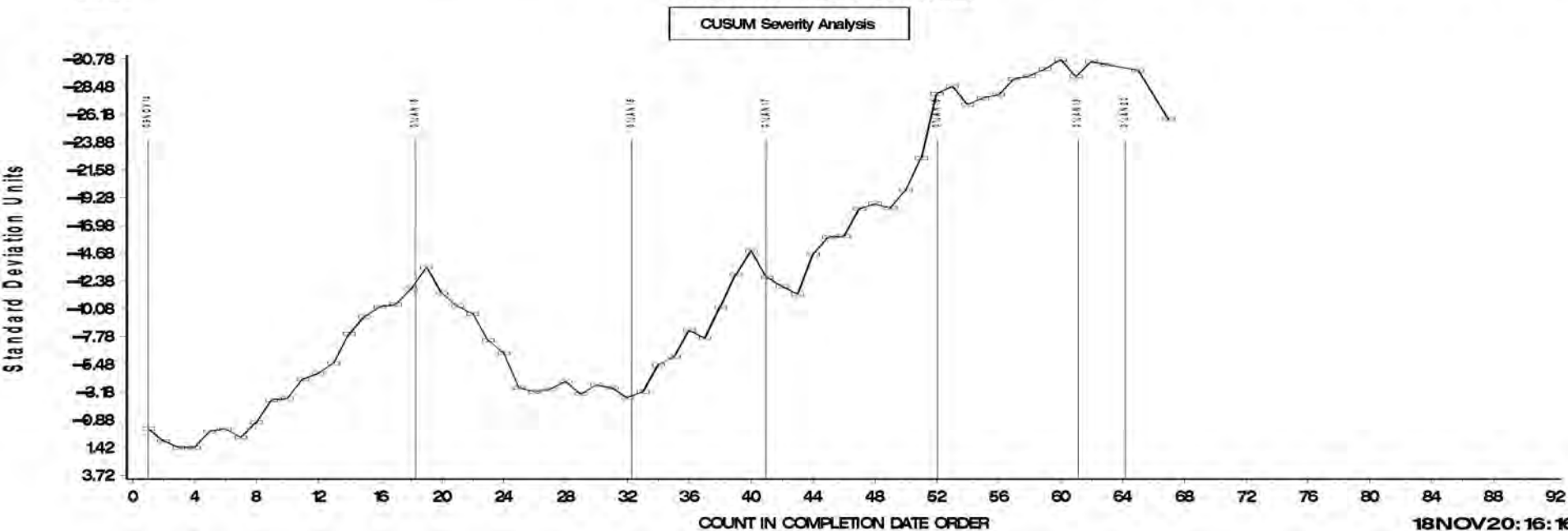
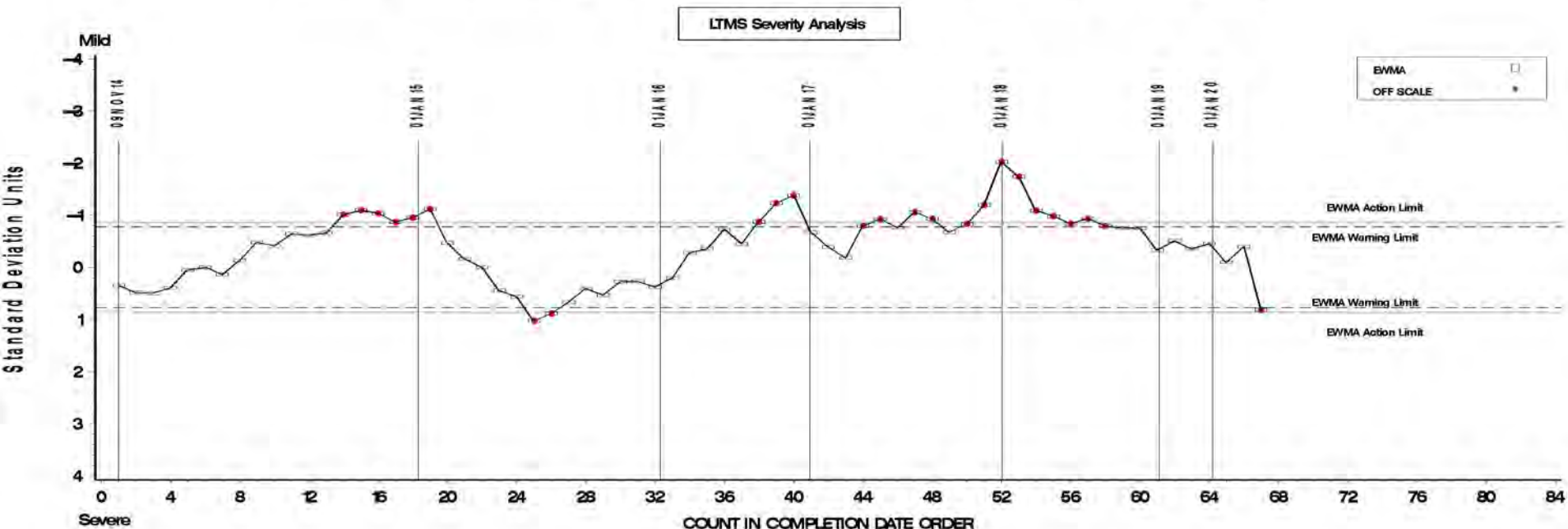
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

COAT Test Severity

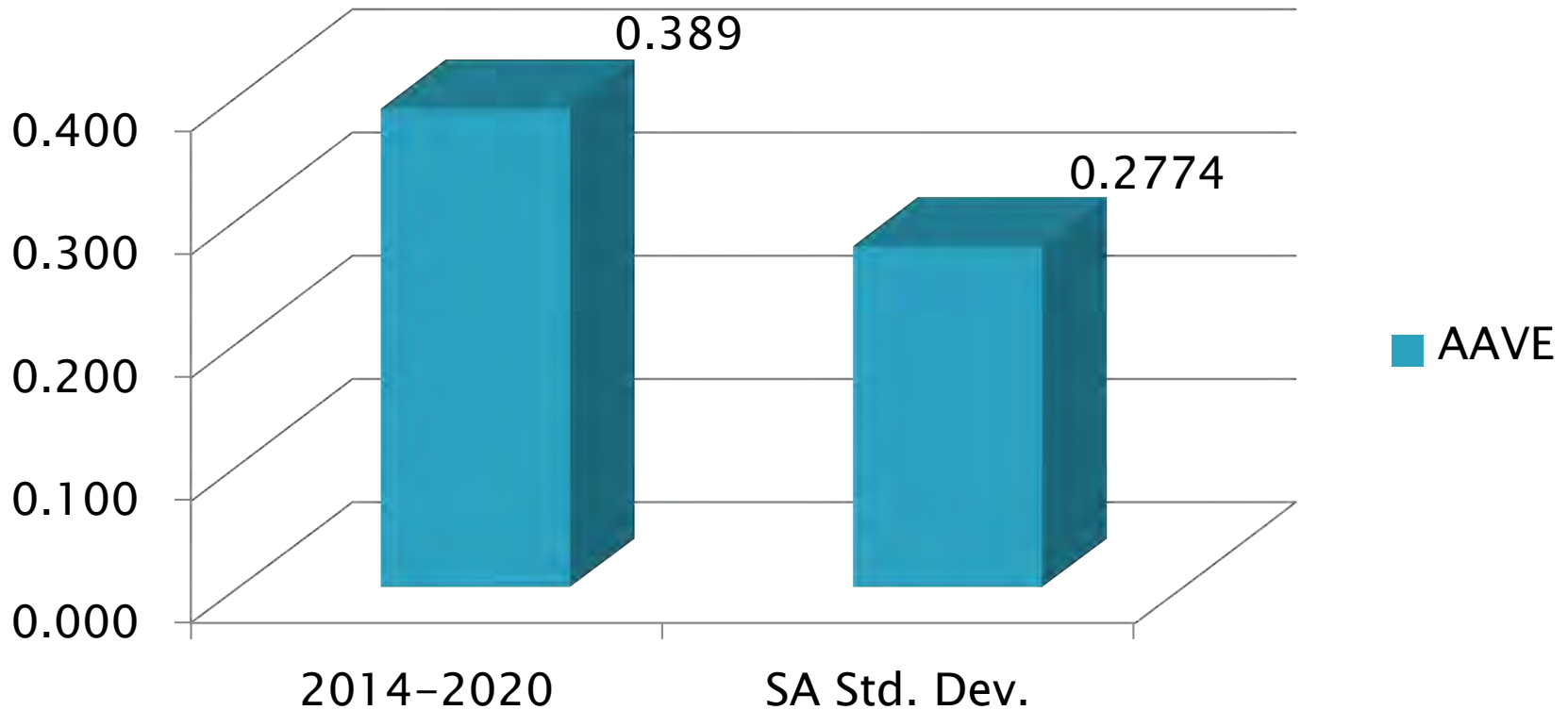
- ▶ AAVE is in Zi Level 1 alarm in the severe direction.

FINAL AVERAGE OIL AERATION OVER TEST HOURS 40-50



COAT Precision Estimates

AAVE



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Test Monitoring Center

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Daimler DD13 Scuffing Test

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Test Monitoring Center

<http://astmtmc.cmu.edu>



A Program of ASTM International

DD13 Test Activity

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

DD13 Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

DD13 Lost Tests*

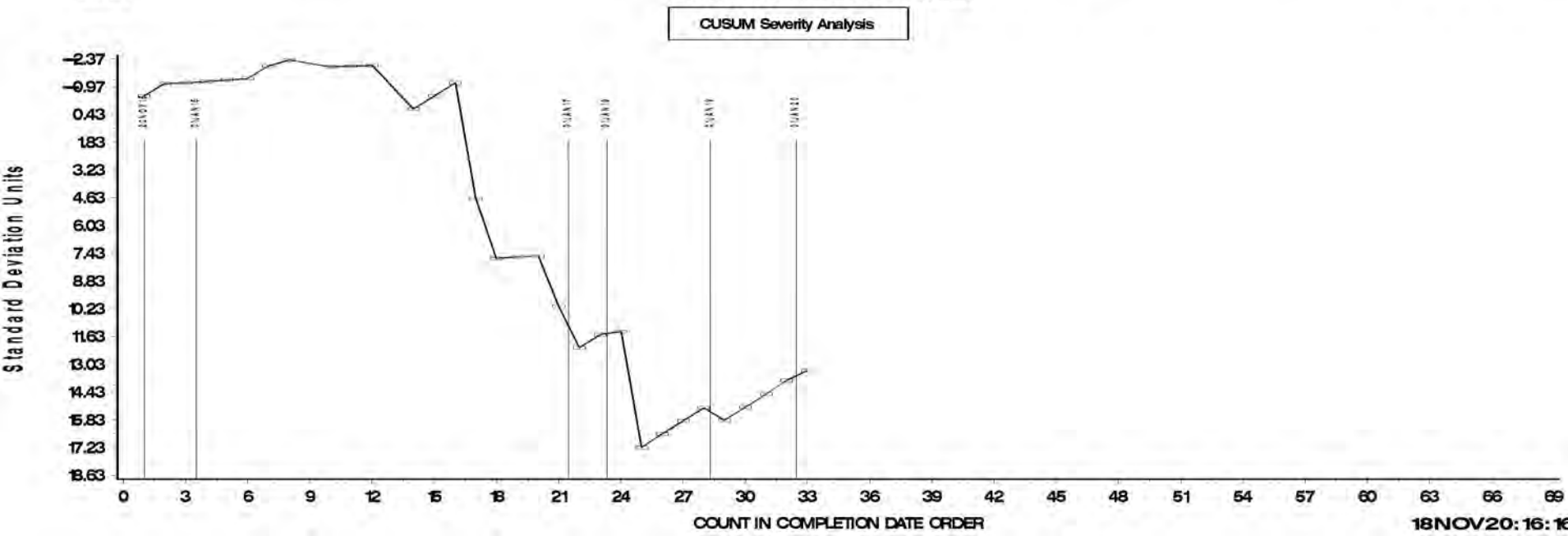
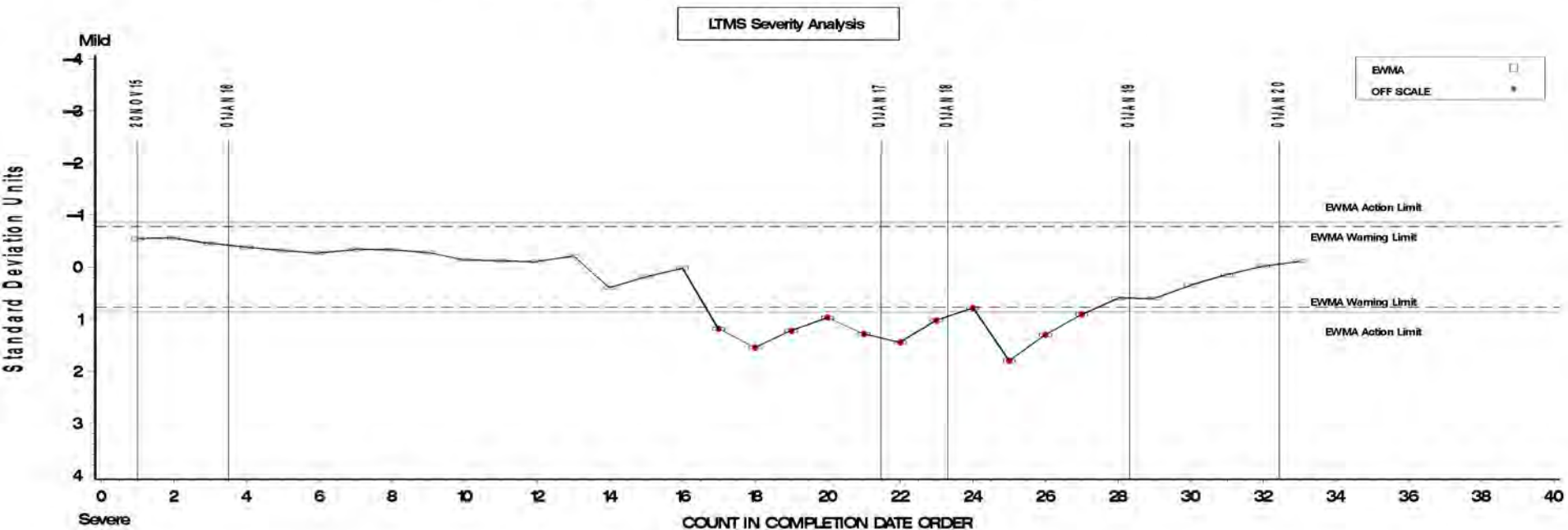
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

DD13 Test Severity

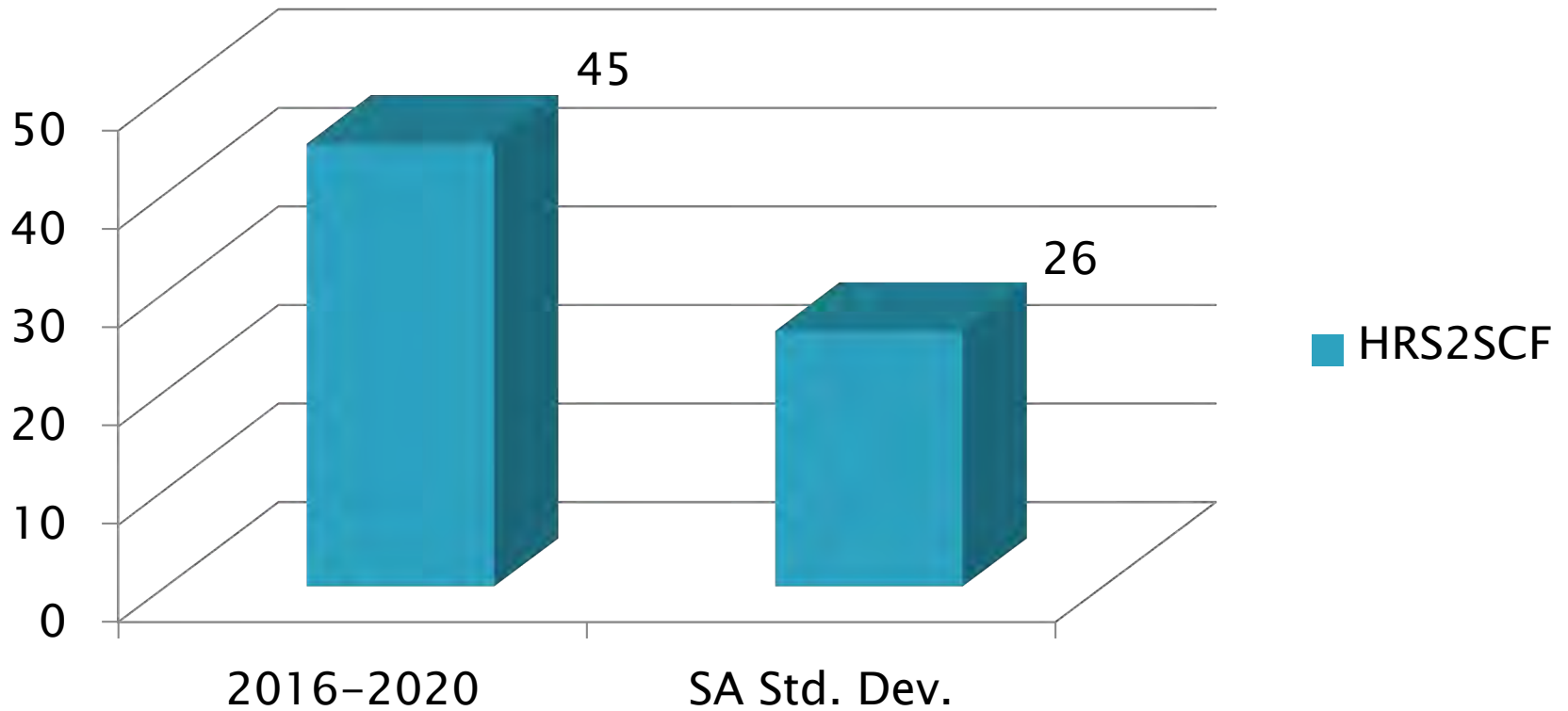
- ▶ HRS2 is in control.

FNL. ORIG. UNIT HOURS TO SCUFF



DD13 Precision Estimates

HRS2SCF



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Cummins ISB

»» October 2020

Test Monitoring Center

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ISB Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	3
Failed Calibration Test	OC	1
Operationally Invalid	LC	0
Aborted	XC	3
Total		7

ISB Failed Tests

Failed Parameter	Number of Tests
ACSW Severe	1
Total	1

ISB Lost Tests*

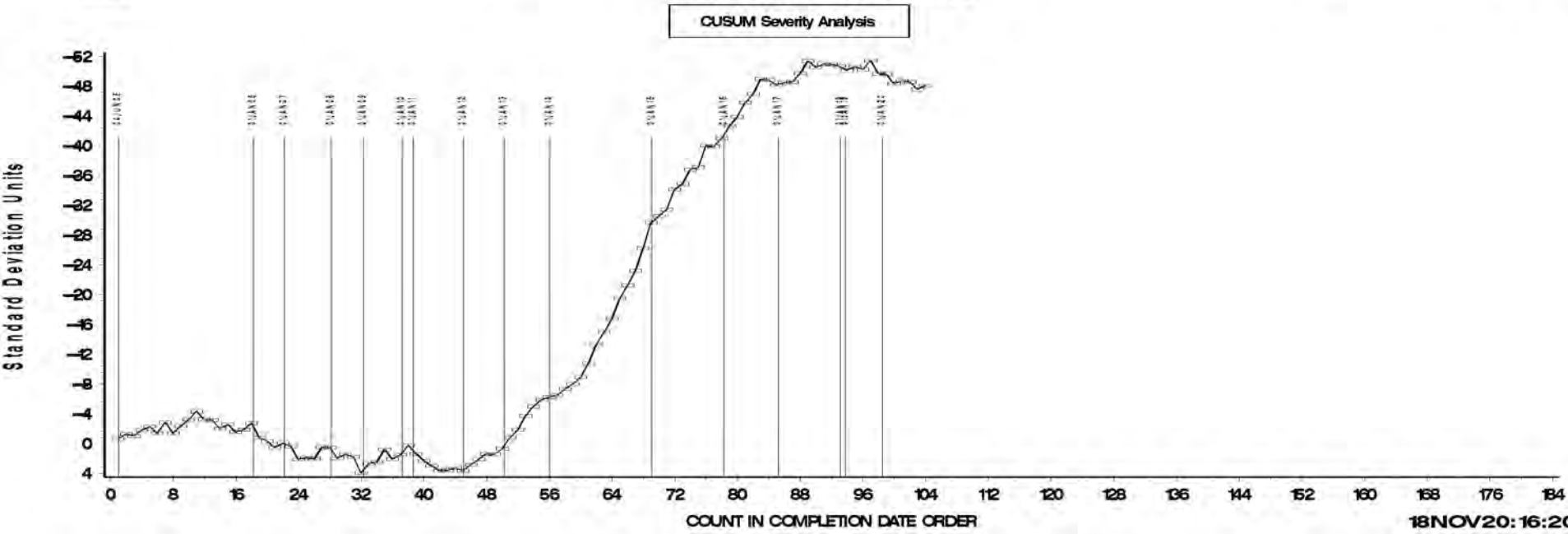
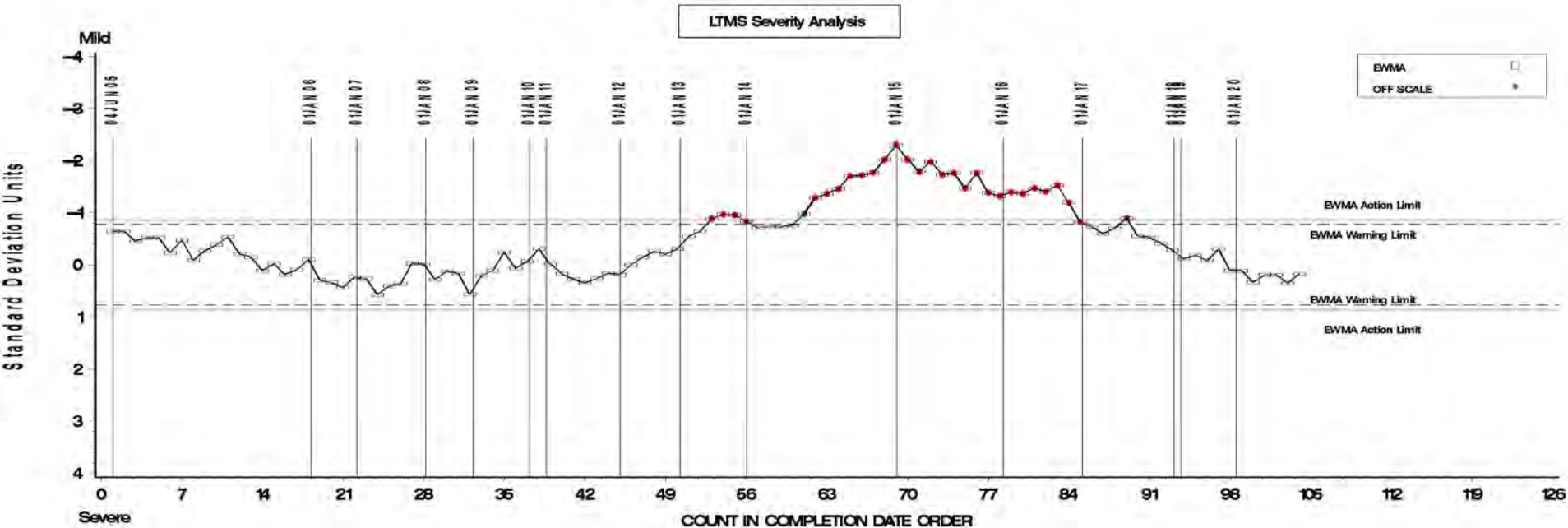
Status	Cause	#
Invalid	No invalid tests	0
Aborted	Procedure Deviation at stage change	1
Aborted	Missed soot window	1
Aborted	Turbo failure	1
Total		3

*Invalid and aborted tests

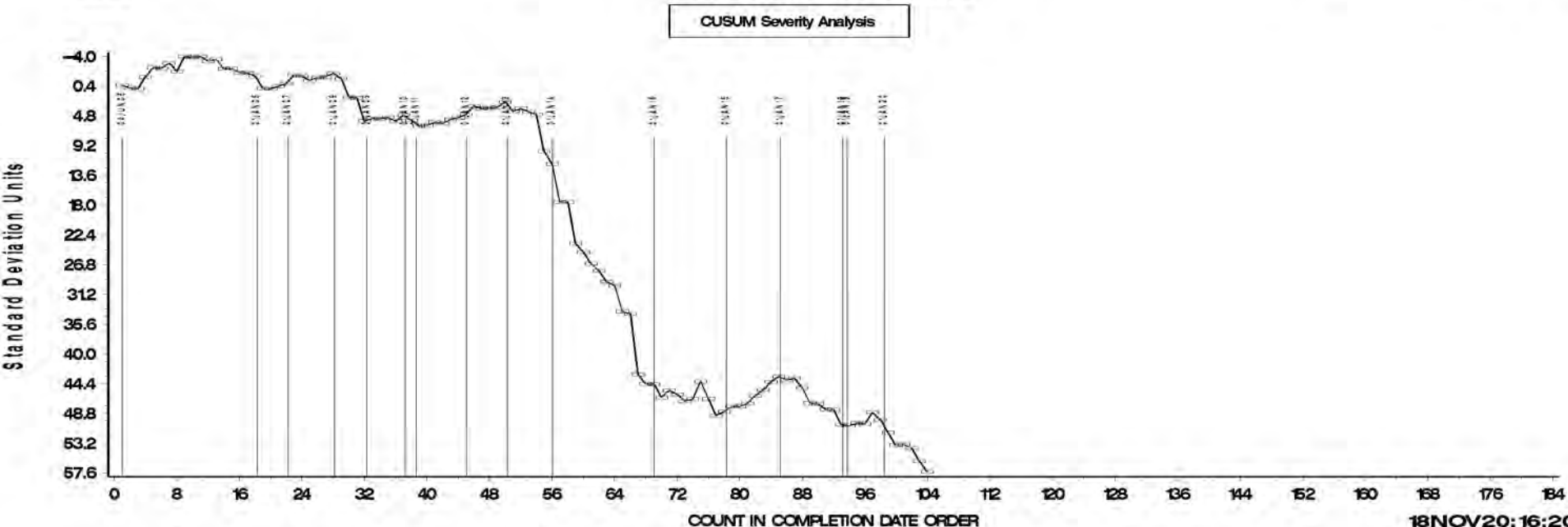
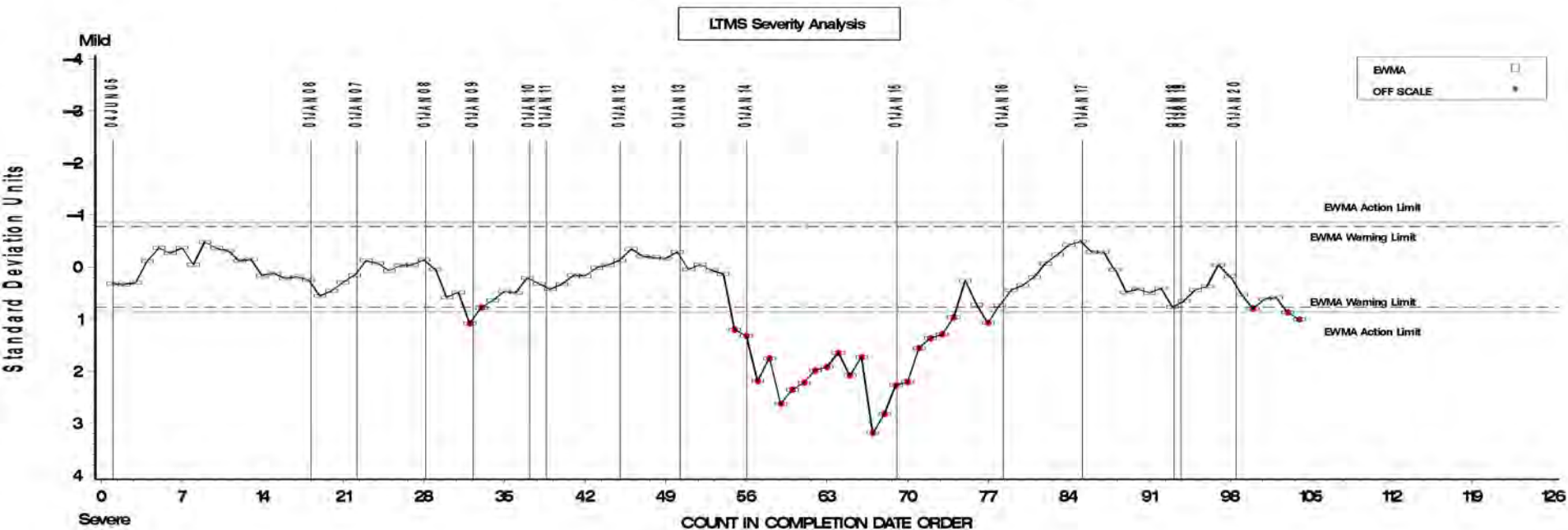
ISB Test Severity

- ▶ ATWL is in control.
- ▶ ACSW is in ZI level 2 alarm in the severe direction.

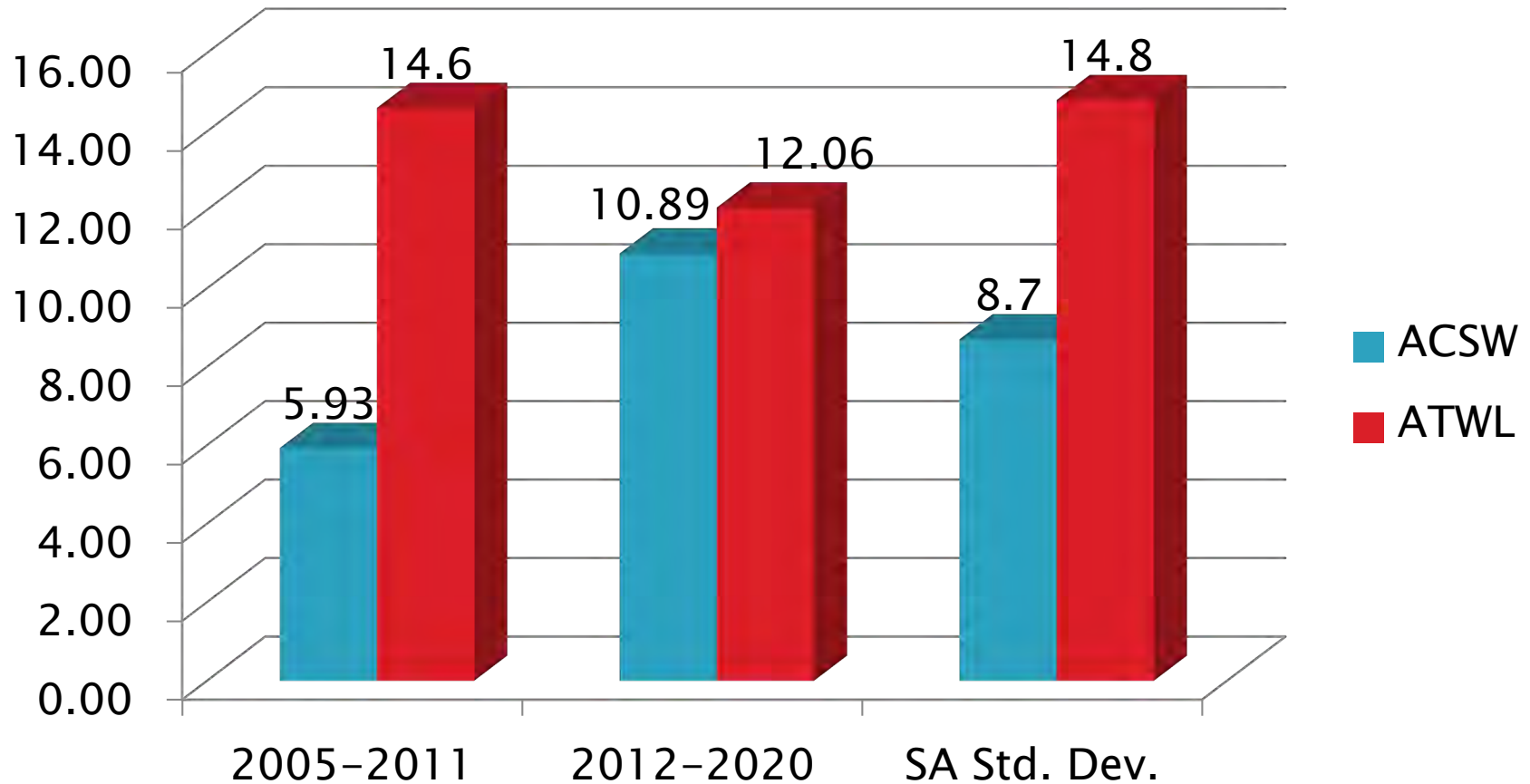
AVERAGE TAPPET WEIGHT LOSS



AVERAGE CAMSHAFT WEAR



ISB Precision Estimates



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Cummins ISM

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ISM Test Activity

Test Status	Validity Code	#
Acceptable Calibration	AC	4
Failed Calibration	OC	1
Operationally Invalid	LC	0
Aborted	XC	1
Hardware Approval	AI	1
Total		7

ISM Failed Tests

Failed Parameter	Number of Tests
ASR mild	1
Total	1

ISM Lost Tests*

Status	Cause	#
Invalid	No Invalid Tests	0
Aborted	Lost oil charge at 150 hrs	1
Total		1

*Invalid and aborted tests

ISM Test Severity

- ▶ CWL and FPD are in control.
- ▶ ASR is in precision action alarm.
- ▶ IAS is in severity action alarm in the severe direction and precision action alarm.

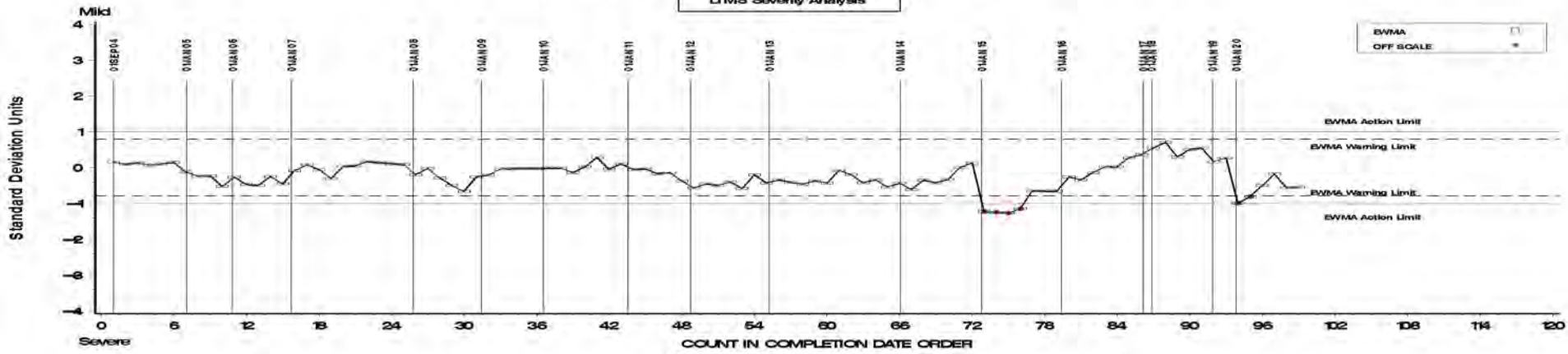
ISM INDUSTRY OPERATIONALLY VALID DATA



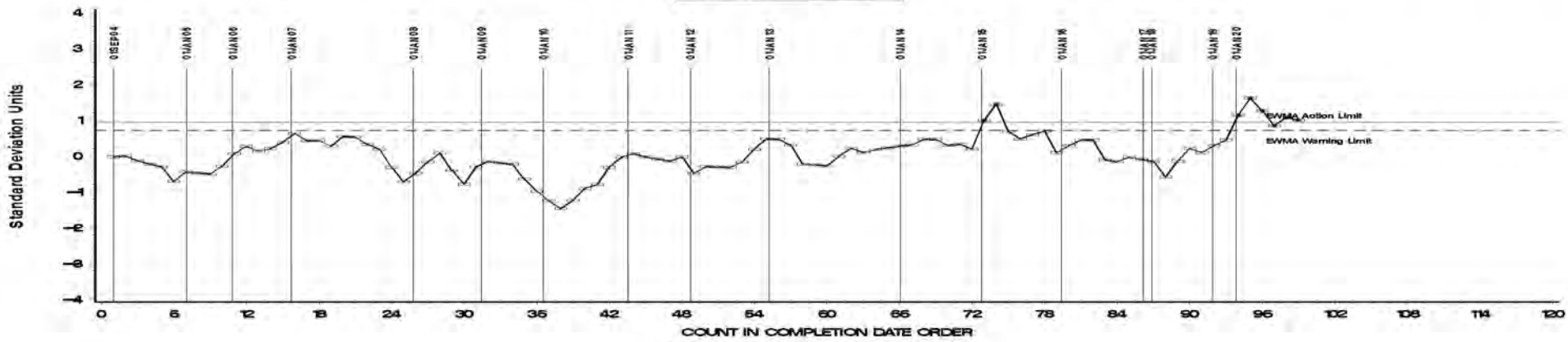
A Program of ASTM International

AVERAGE SLUDGE RATING

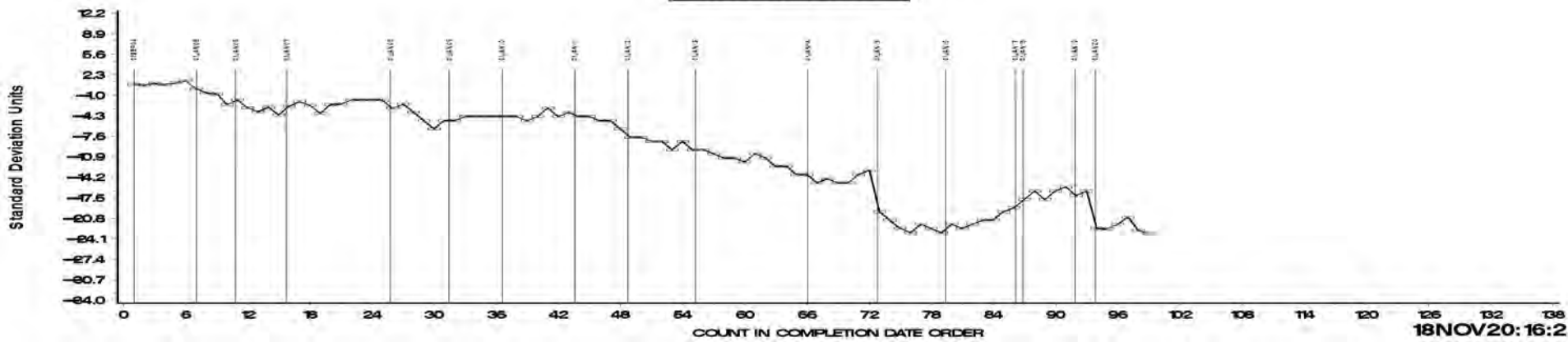
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

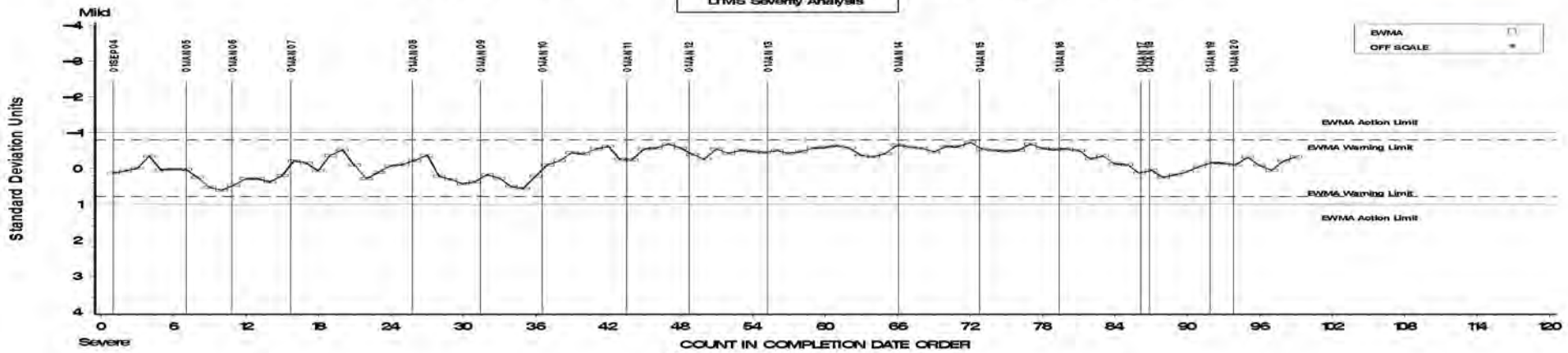


ISM INDUSTRY OPERATIONALLY VALID DATA

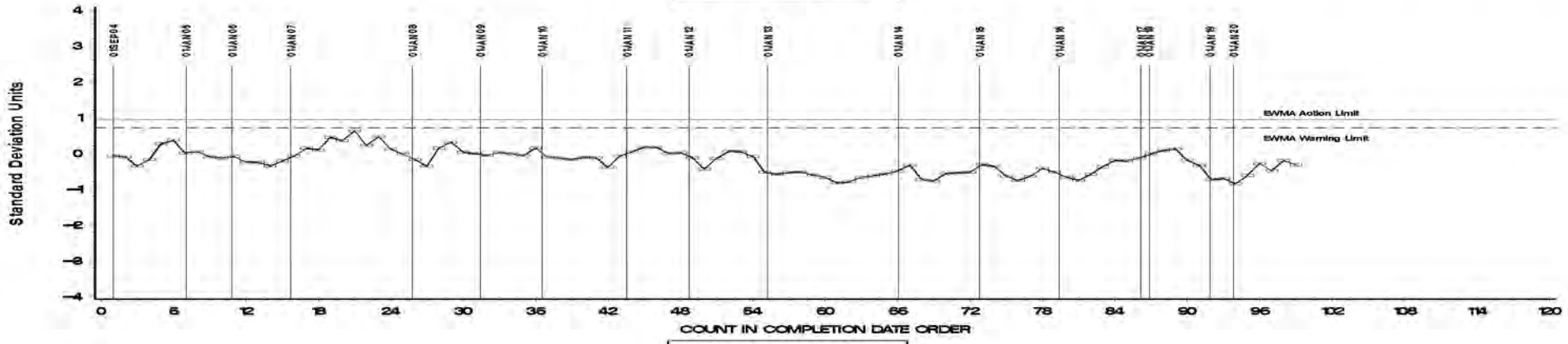


CROSSHEAD WEIGHT LOSS ADJUSTED TO 3.9 % SOOT

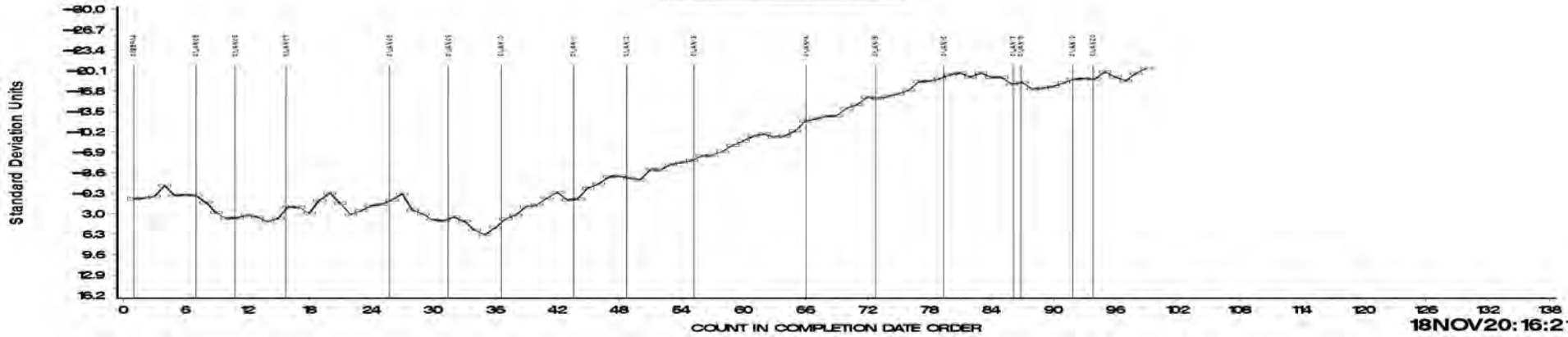
LTMS Severity Analysis



LTMS Precision Analysis



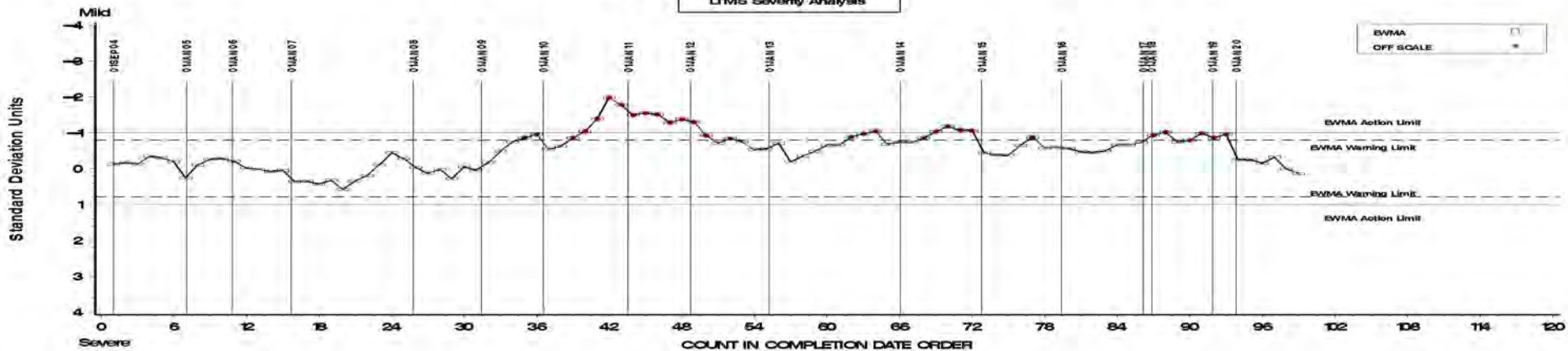
CUSUM Severity Analysis



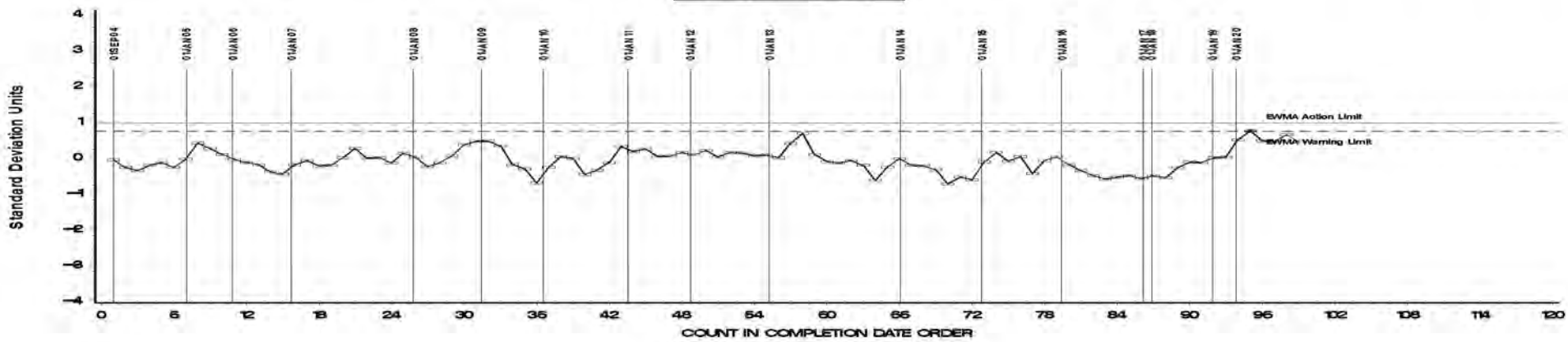
ISM INDUSTRY OPERATIONALLY VALID DATA

FILTER PLUGGING DELTA P

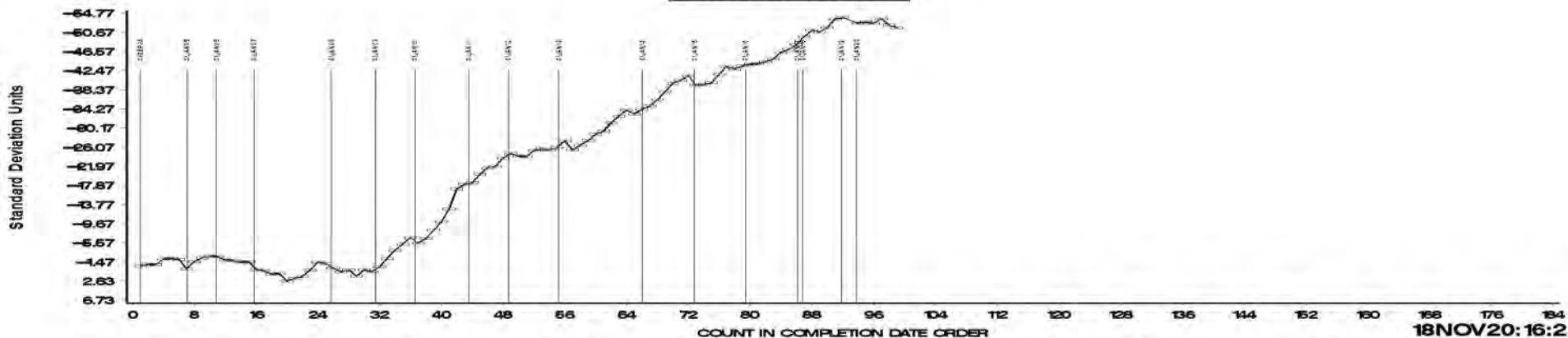
LTMS Severity Analysis



LTMS Precision Analysis

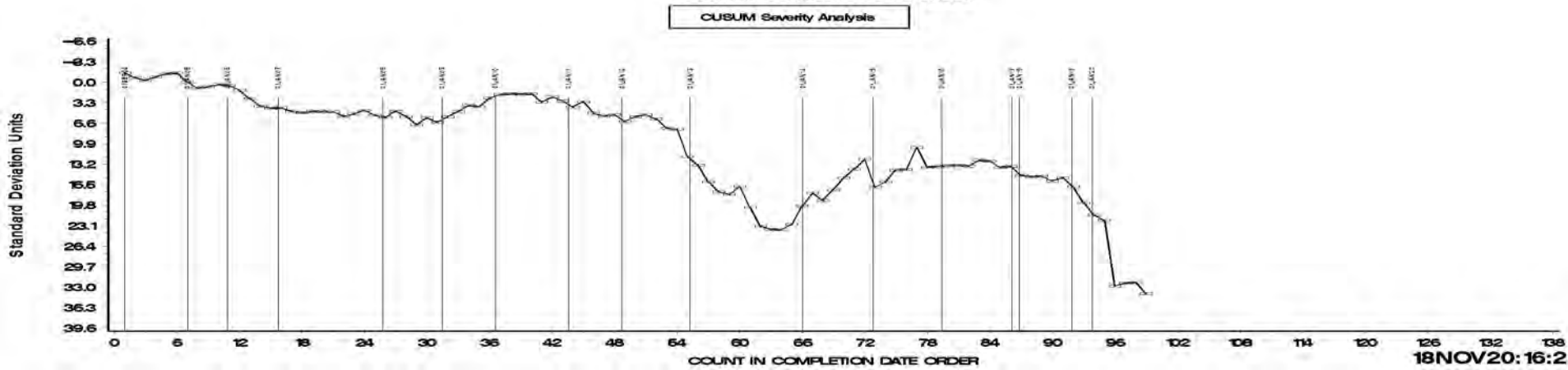
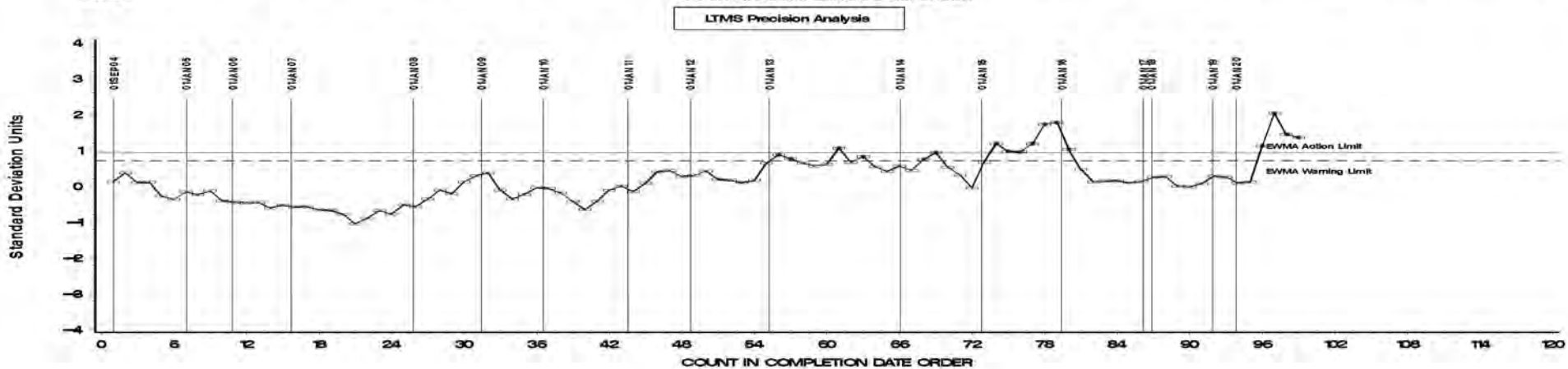
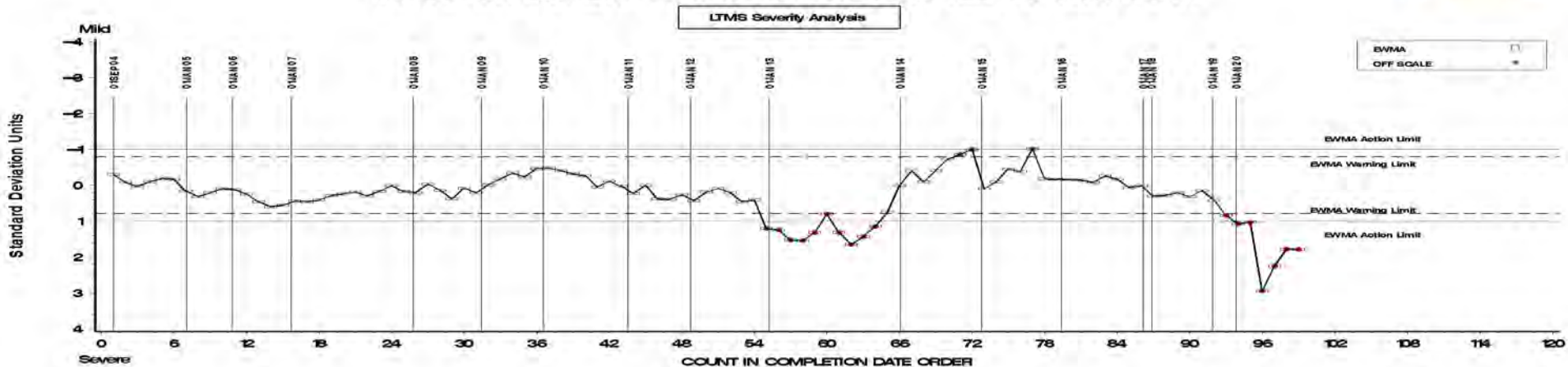


CUSUM Severity Analysis

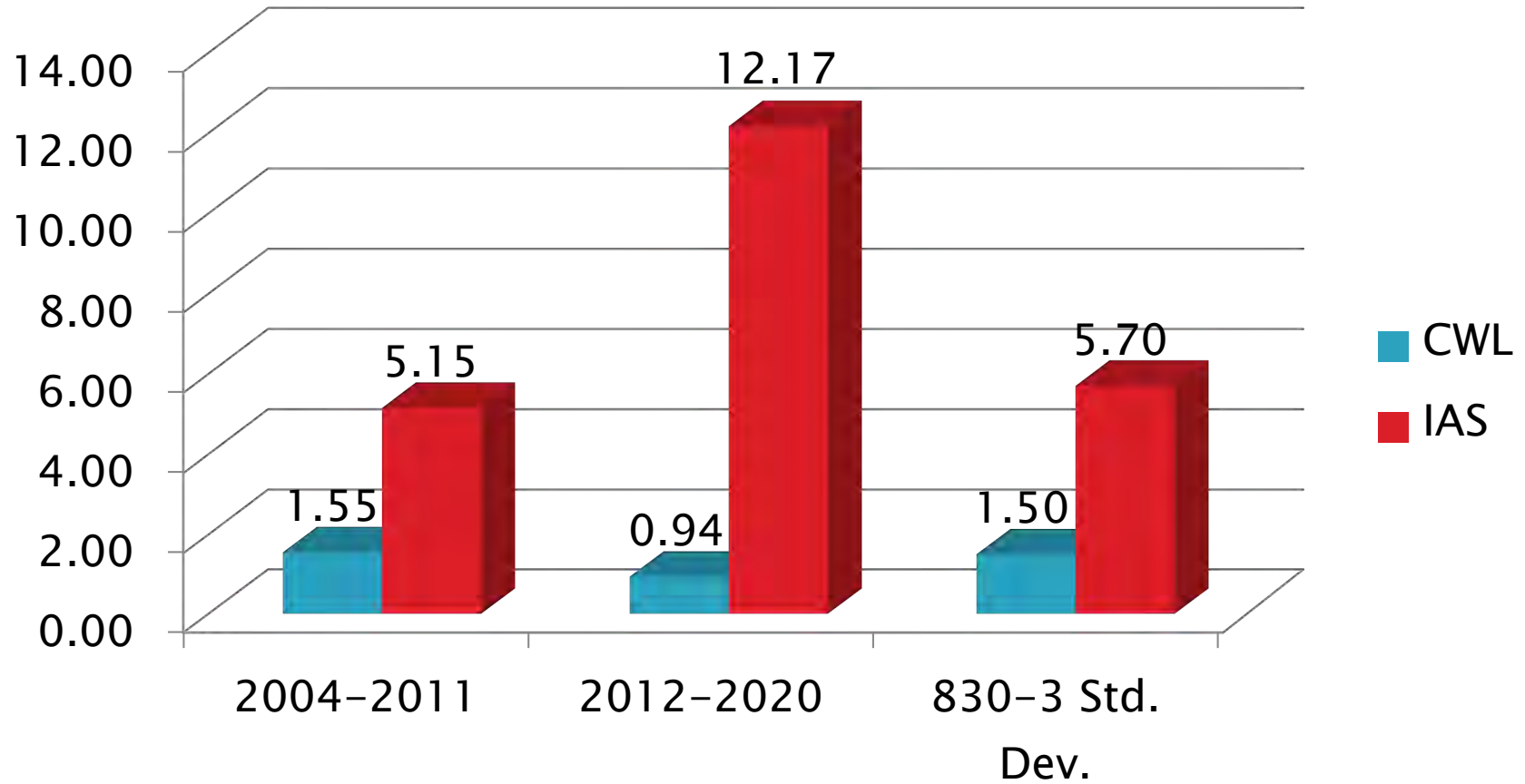


ISM INDUSTRY OPERATIONALLY VALID DATA

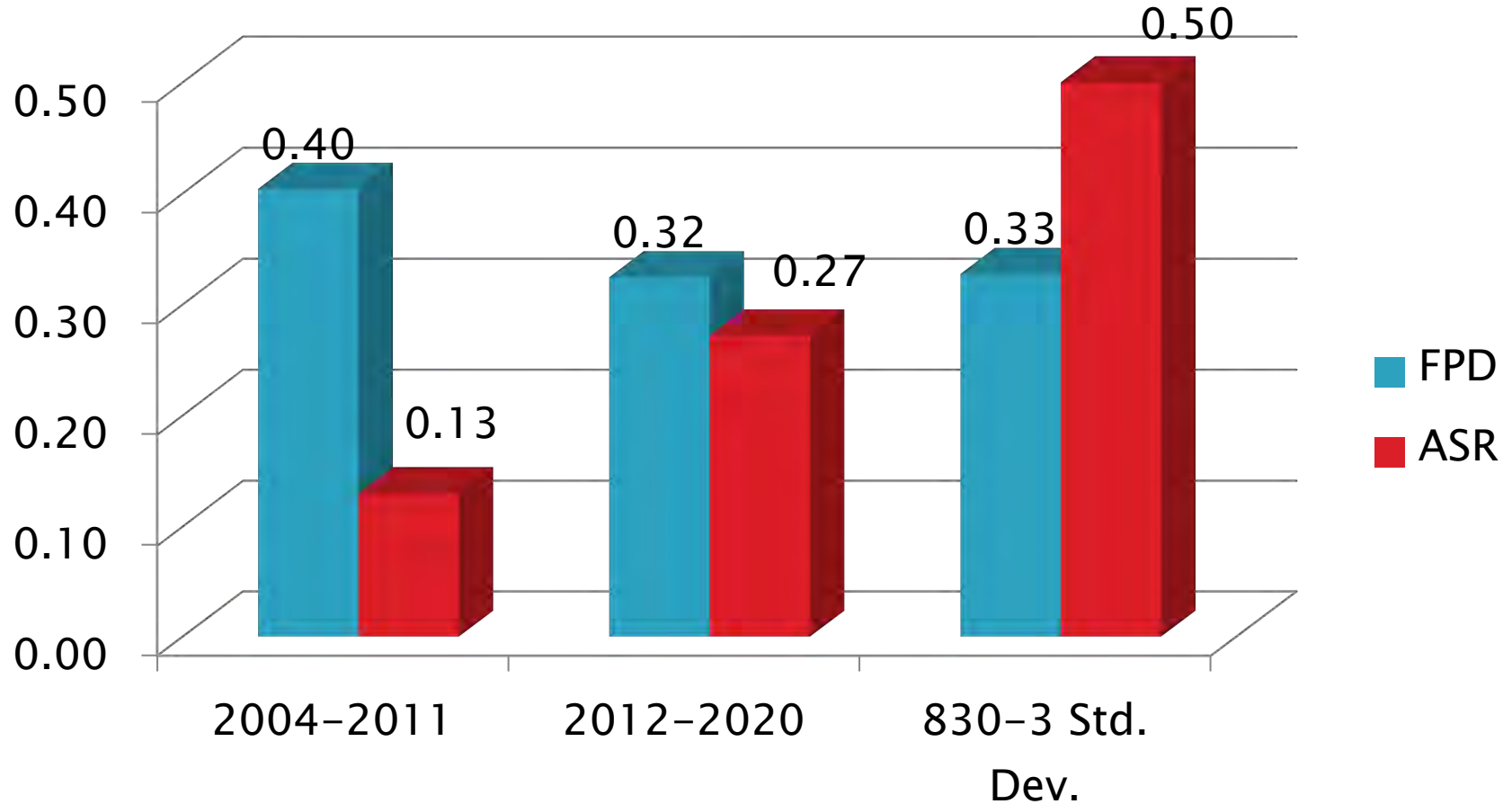
INJECTOR SCREW WEIGHT LOSS ADJUSTED TO 3.9% SOOT



ISM Precision Estimates



ISM Precision Estimates



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EOAT

»» October 2020

Test Monitoring Center

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EOAT 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

EOAT Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

EOAT Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

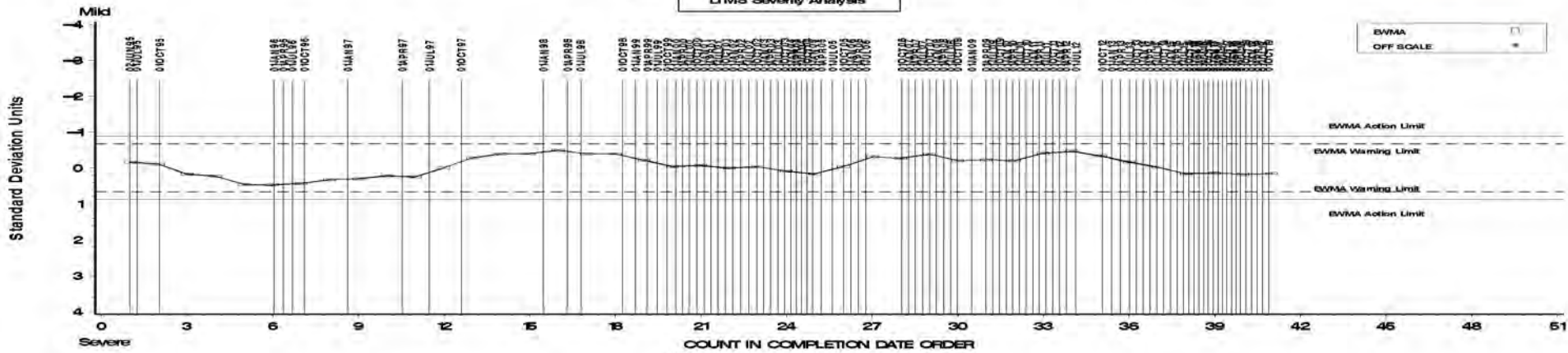
EOAT Test Severity

- ▶ As no EOAT tests were run during this period no statement about test severity can be made.

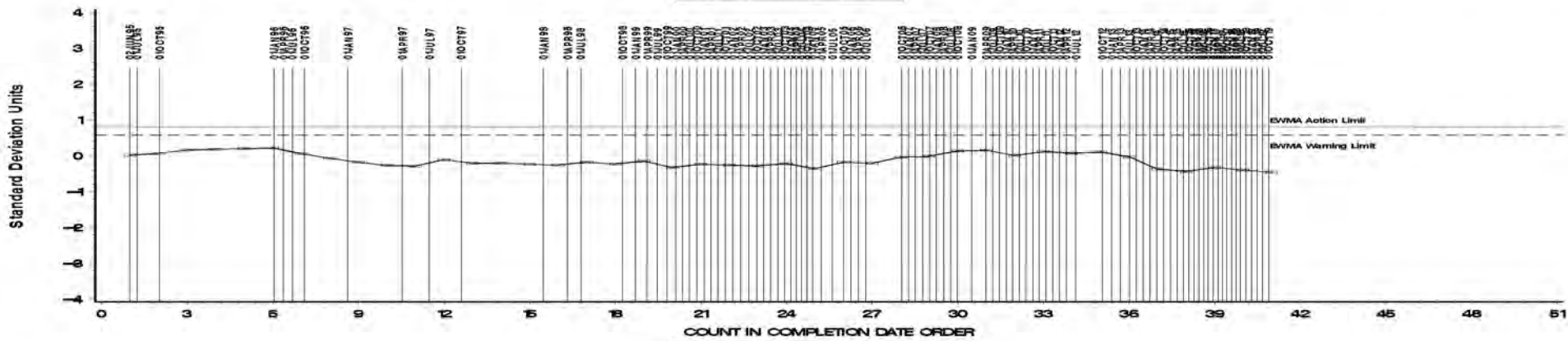
EOAT INDUSTRY OPERATIONALLY VALID DATA

ENGINE OIL AERATION

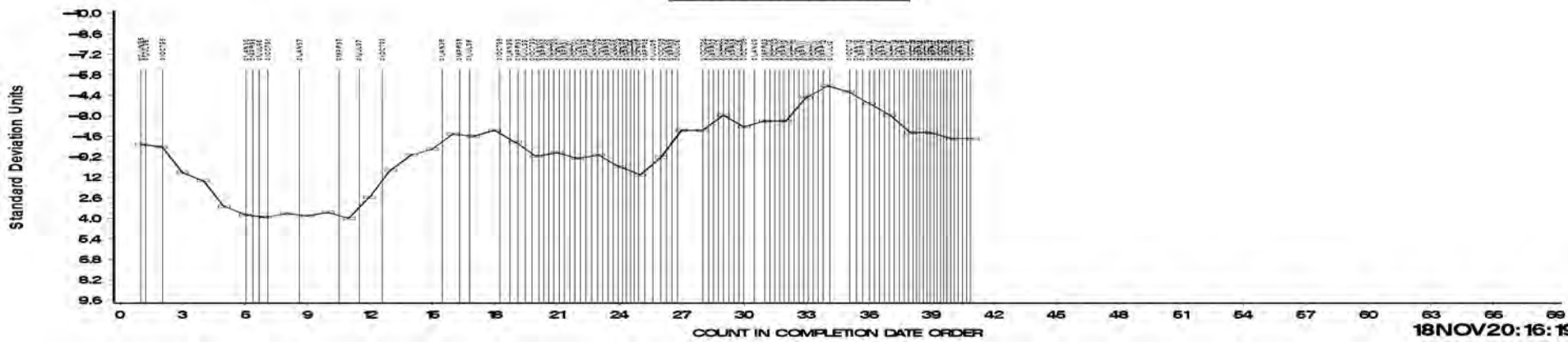
LTMS Severity Analysis



LTMS Precision Analysis

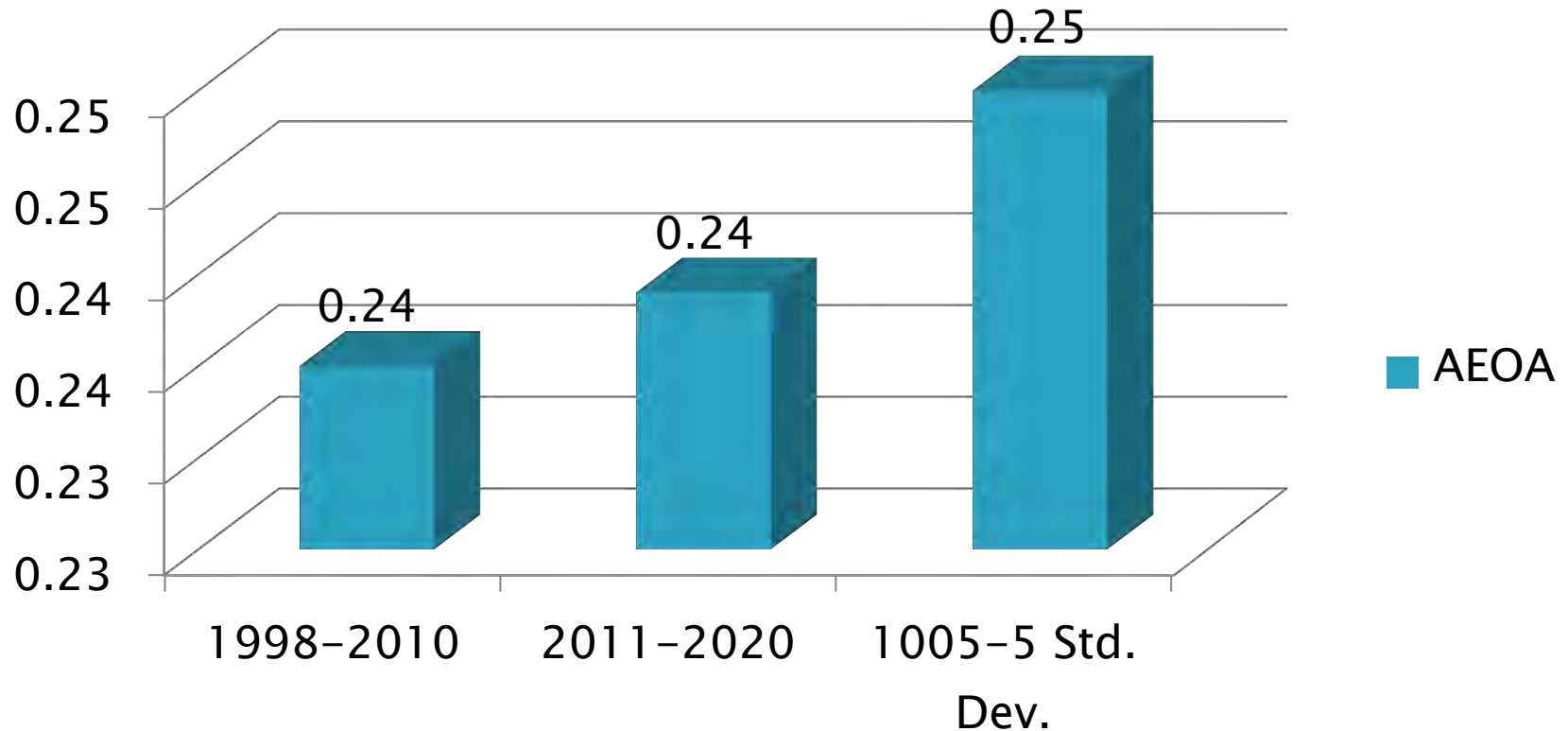


CUSUM Severity Analysis



EOAT Precision Estimates

AEOA



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RFWT

»» October 2020

RFWT 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

RFWT Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

RFWT Lost Tests*

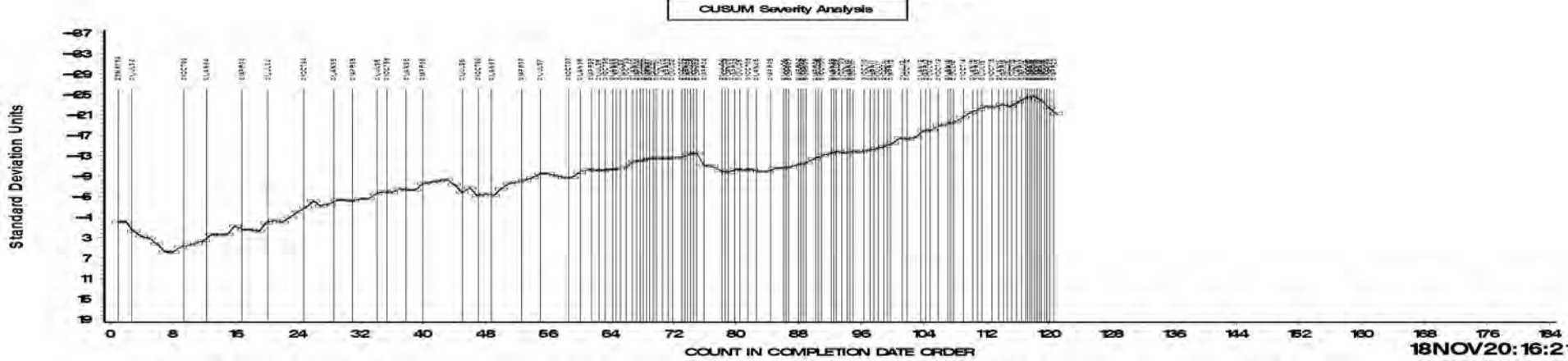
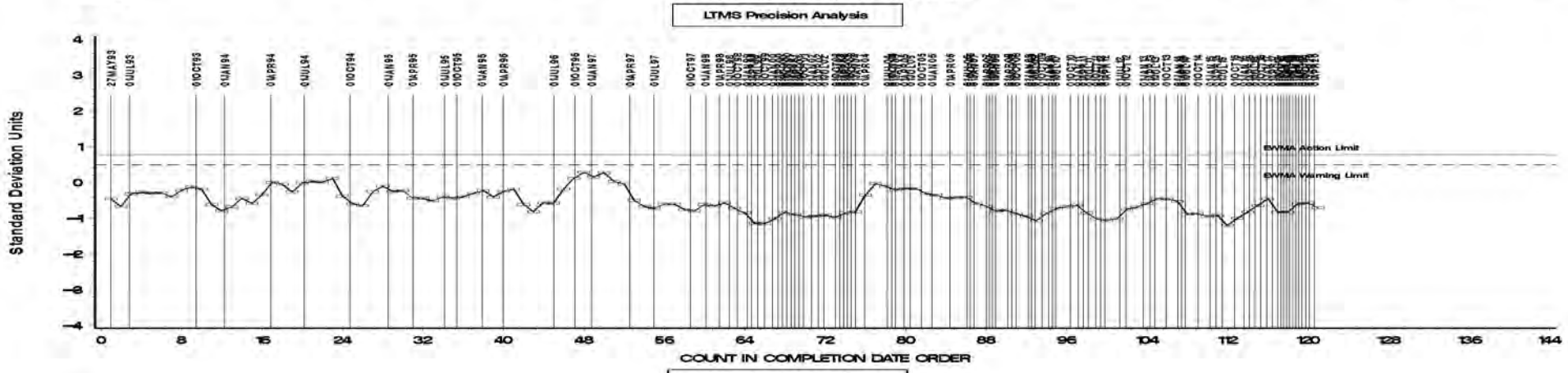
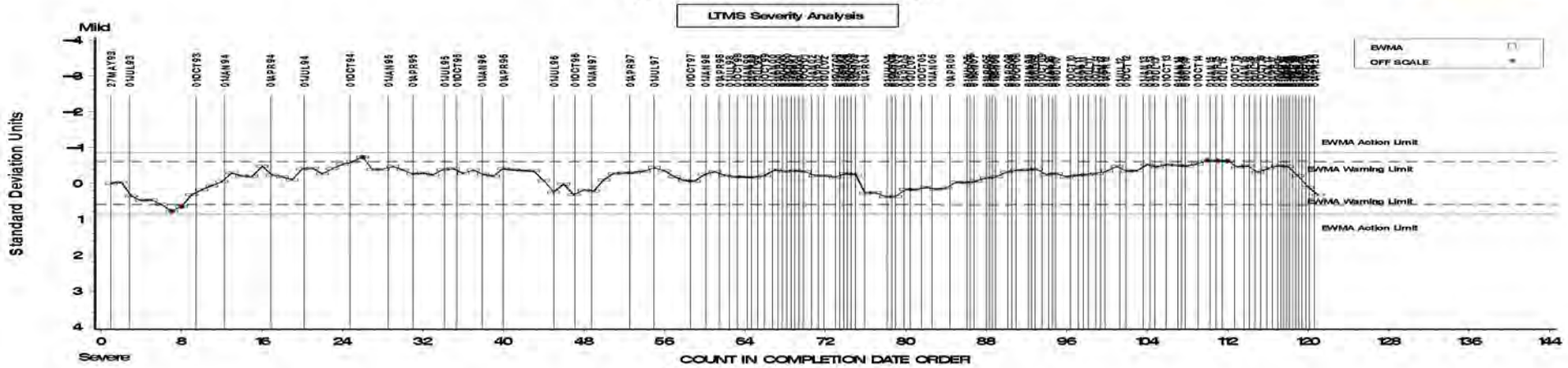
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

RFWT Test Severity

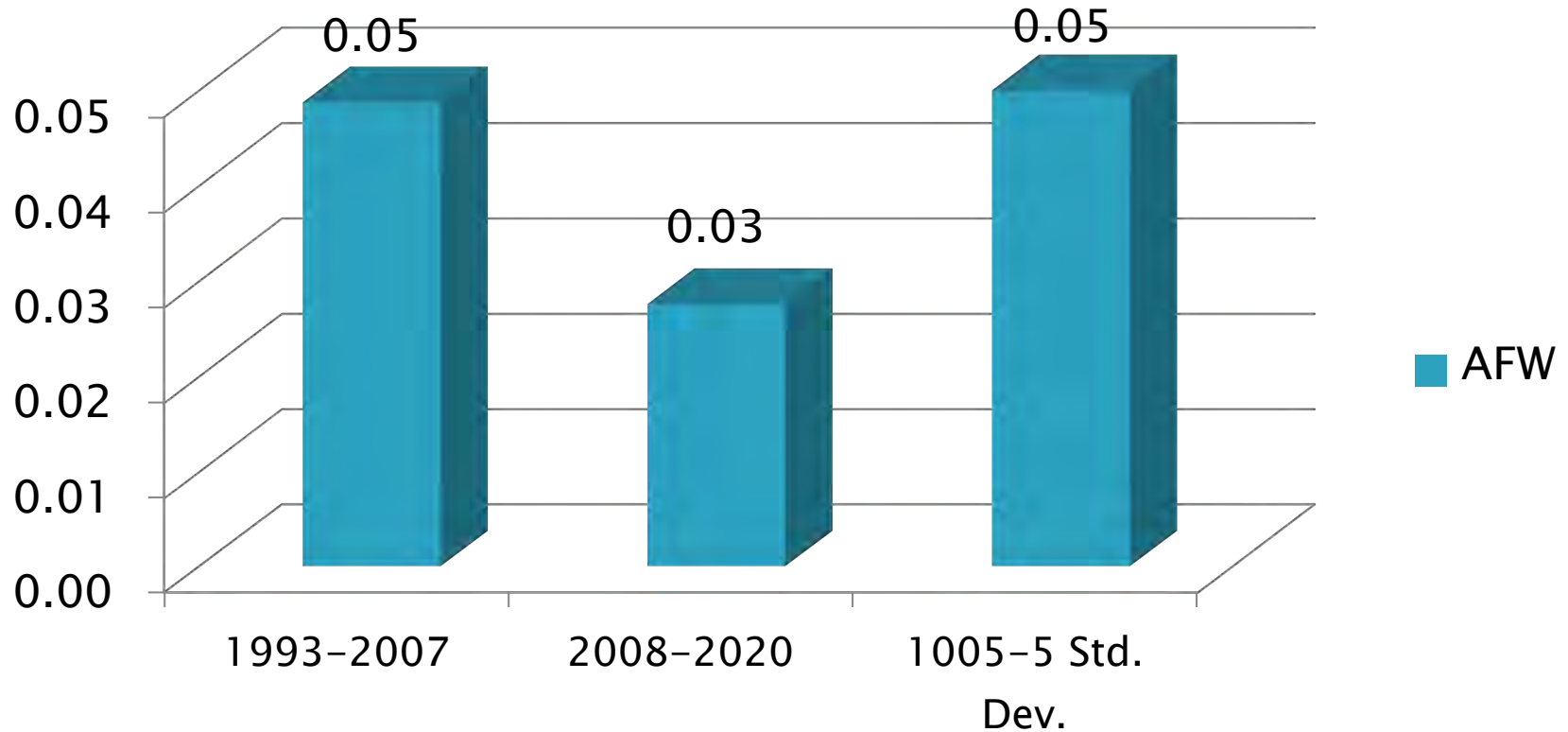
- ▶ AFW is in control

Average Follower Wear



RFWT Precision Estimates

AFW



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Mack T-8/T-8E

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Test Monitoring Center

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T-8/T-8E 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

T-8/T8-E Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

T-8/T8-E Lost Tests*

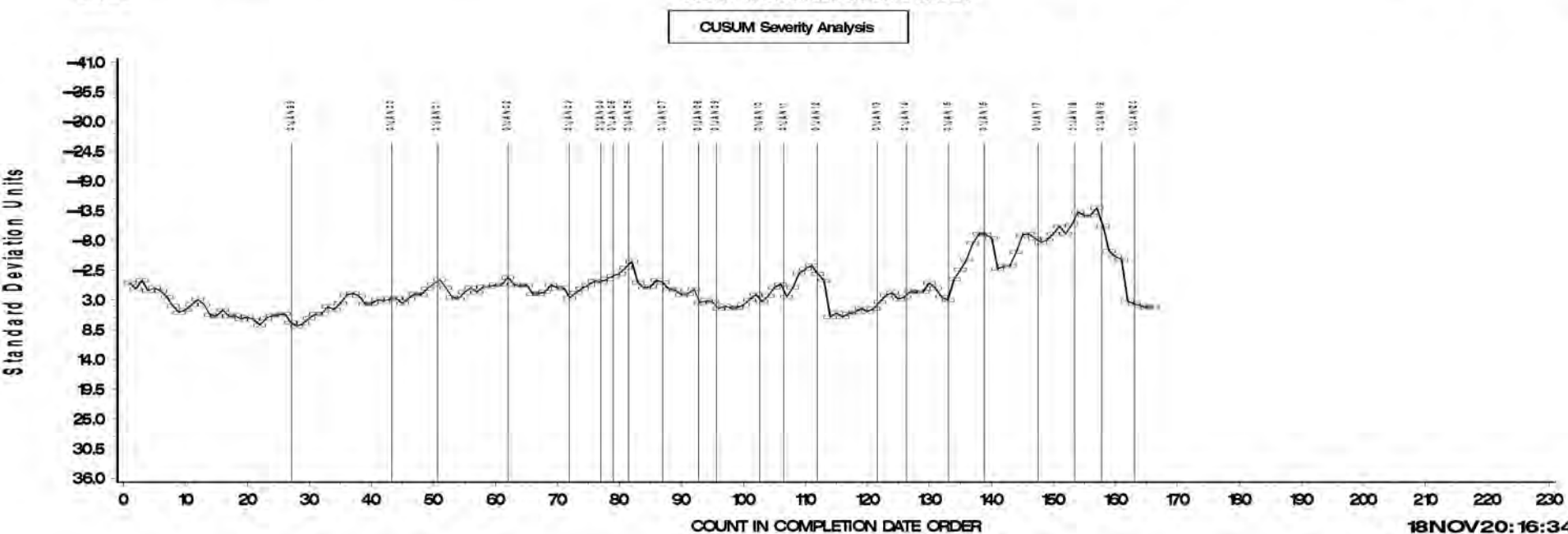
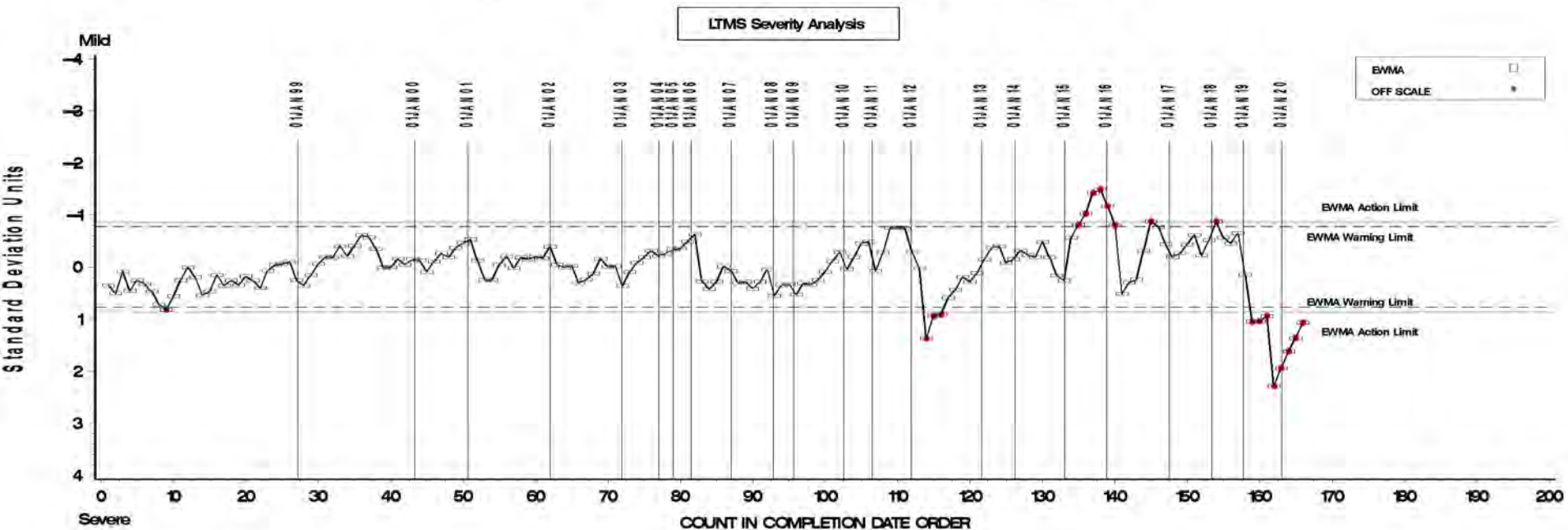
Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

T-8/T-8E Test Severity

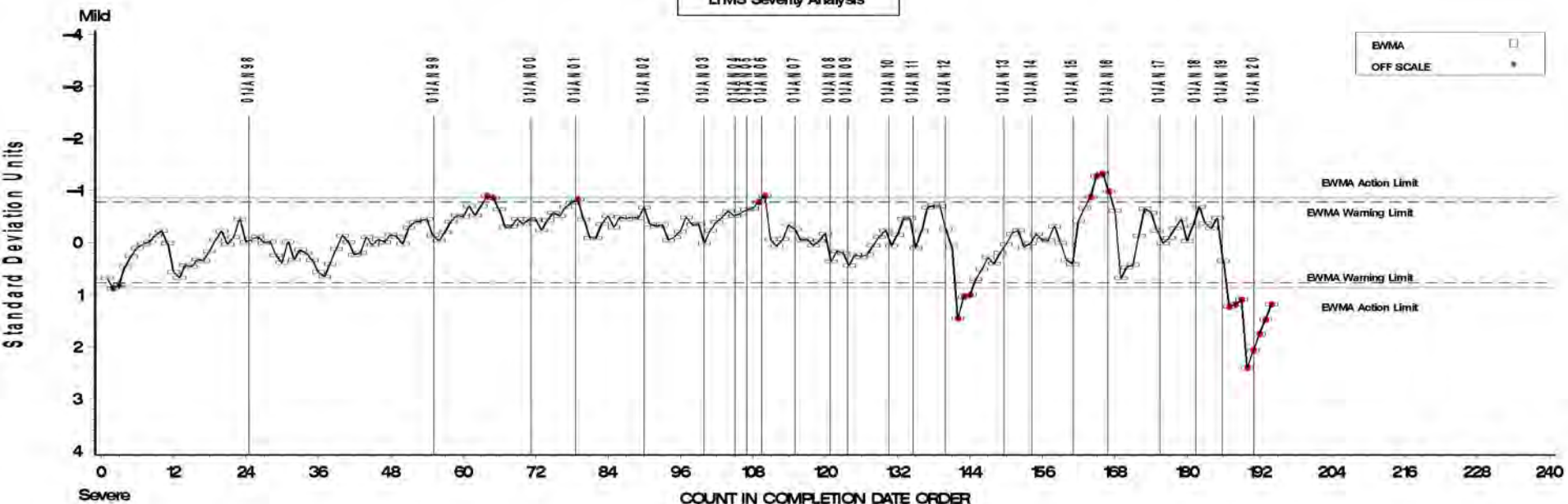
- ▶ VI38 is in control.
- ▶ RV48 is in Level 2 Zi alarm in severe direction.
- ▶ RV2 is in Level 2 Zi alarm in severe direction.

RELATIVE VISCOSITY @ 4.8% (100% LOSS)

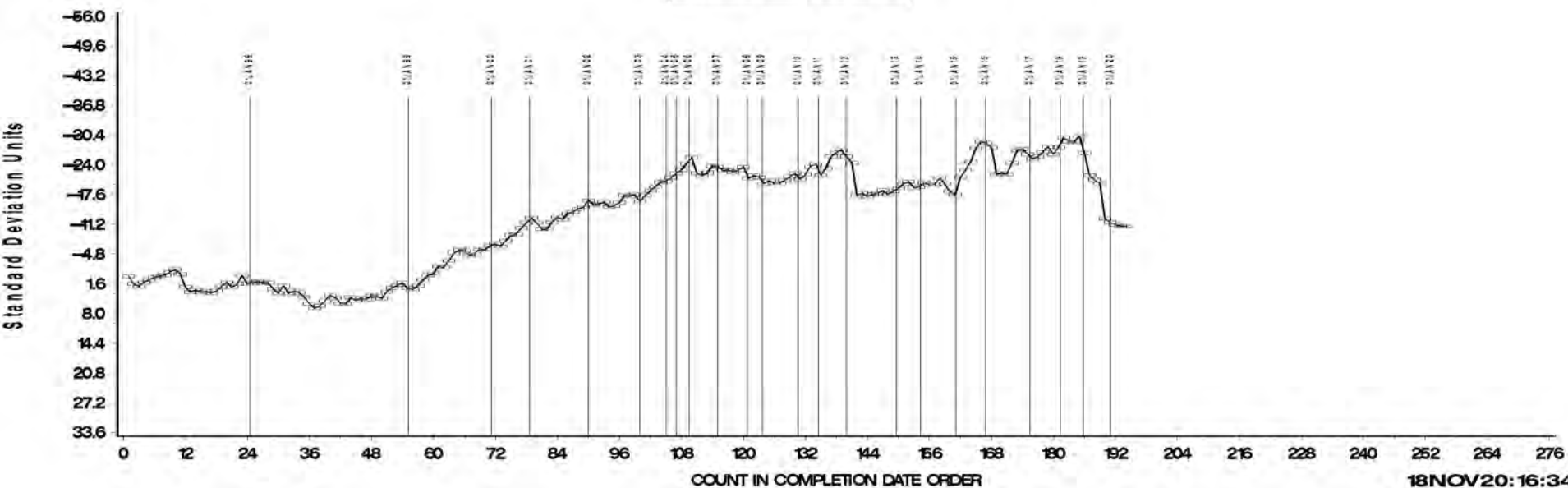


RELATIVE VISCOSITY @ 4.8% (50% LOSS)

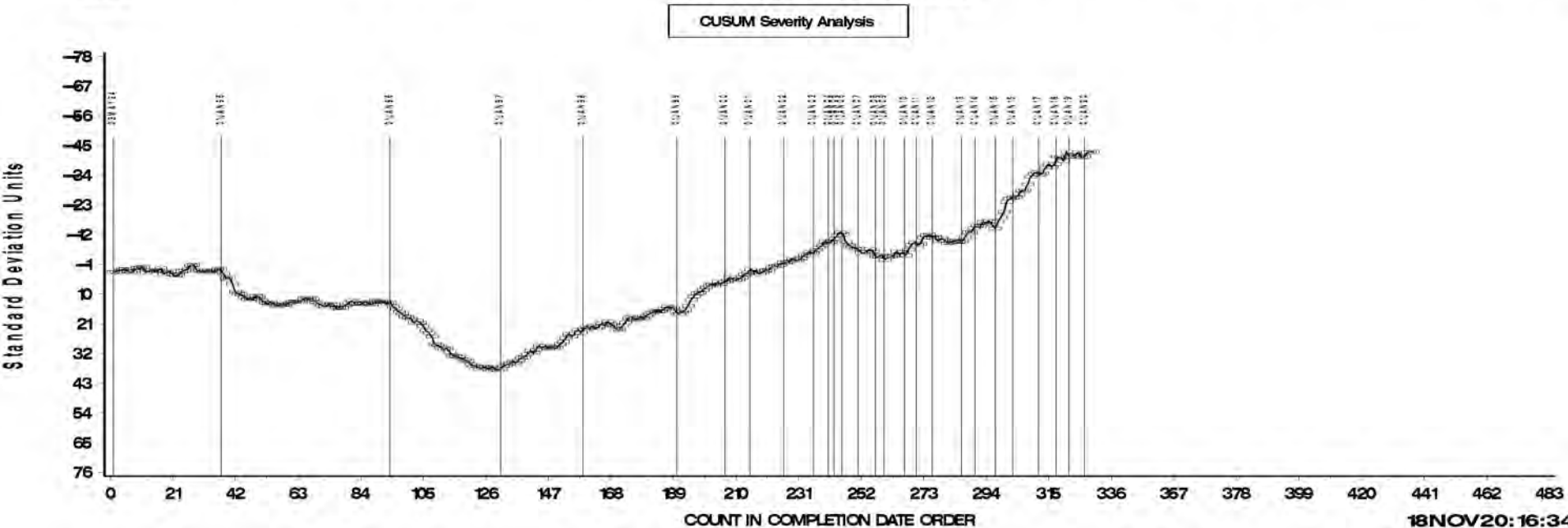
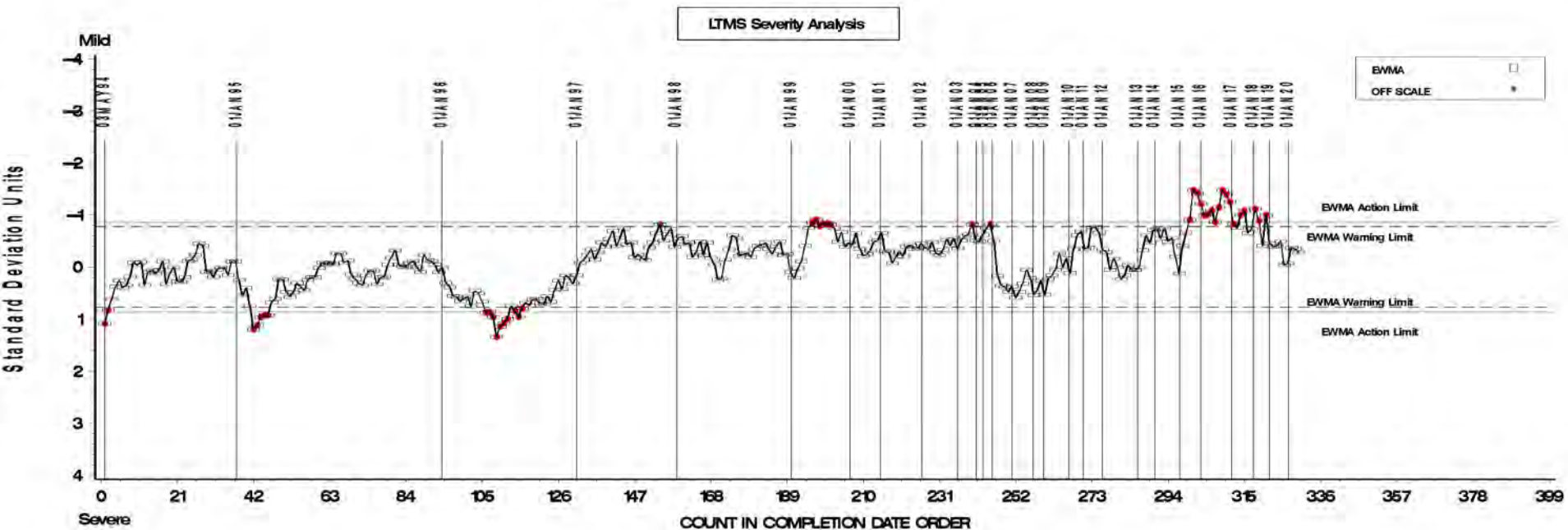
LTMS Severity Analysis



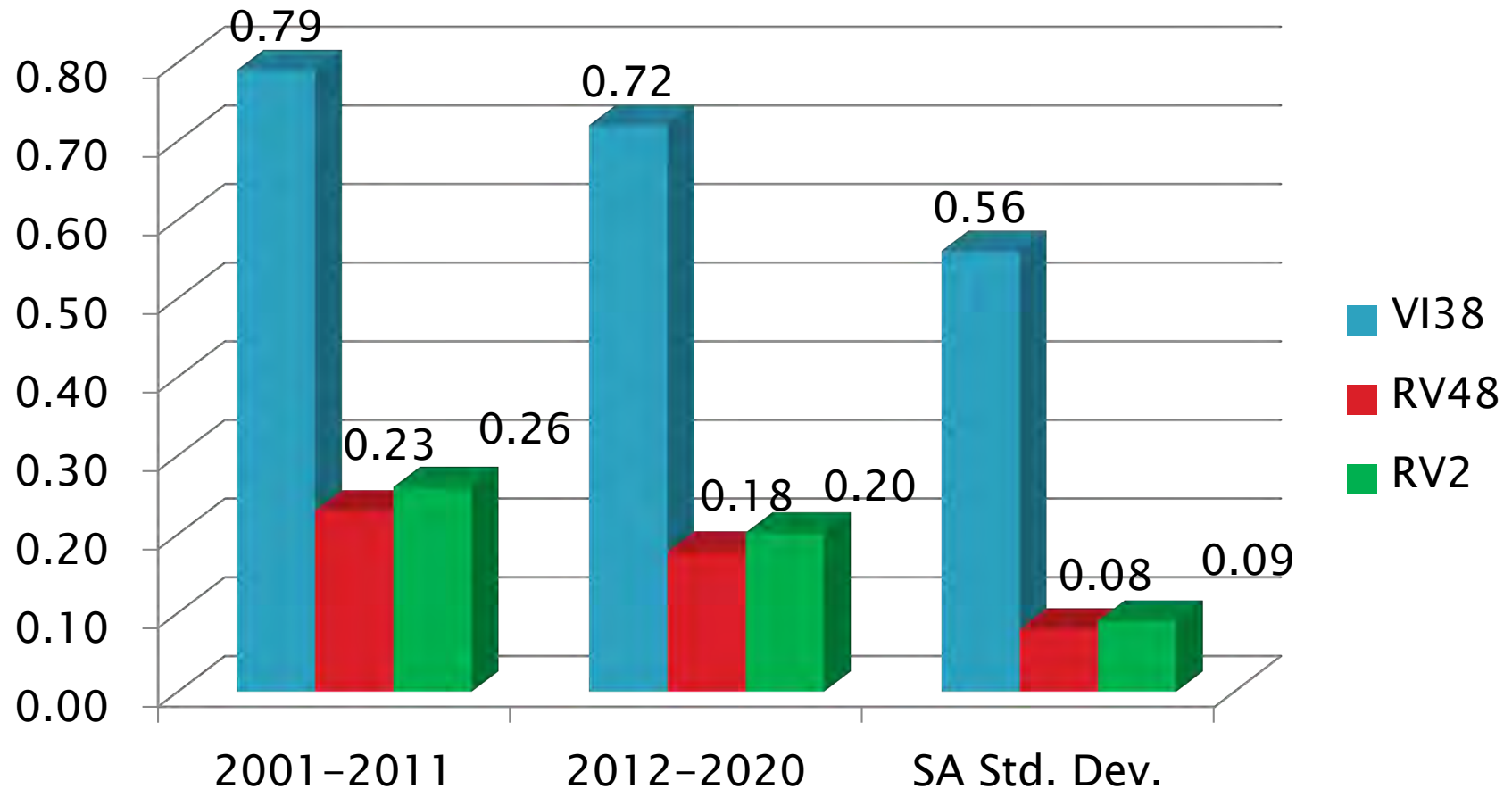
CUSUM Severity Analysis



VISCOSITY INCR @ 3.8% SOOT



T-8/E Precision Estimates



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Mack T-11

»» October 2020

Test Monitoring Center

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T-11 Test Activity

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

T-11 Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

T-11 Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

T-11 Test Severity

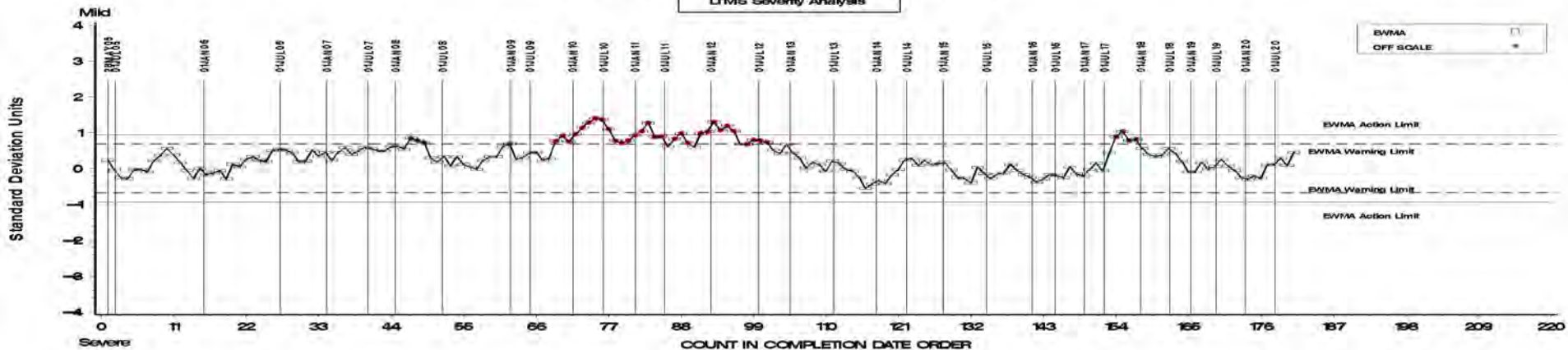
- ▶ SOOT and SOOT5 are in control.
- ▶ SOOT4 is in severity action alarm in the severe direction and precision warning alarm.
- ▶ MRV is in severity warning alarm.

T-11 INDUSTRY OPERATIONALLY VALID DATA

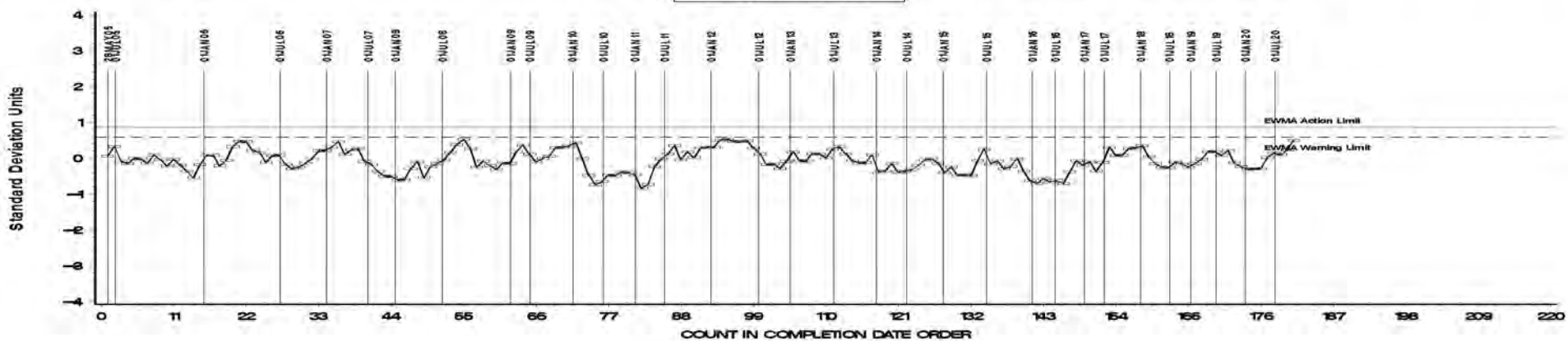


SOOT @ 15 cSt — FINAL RESULT

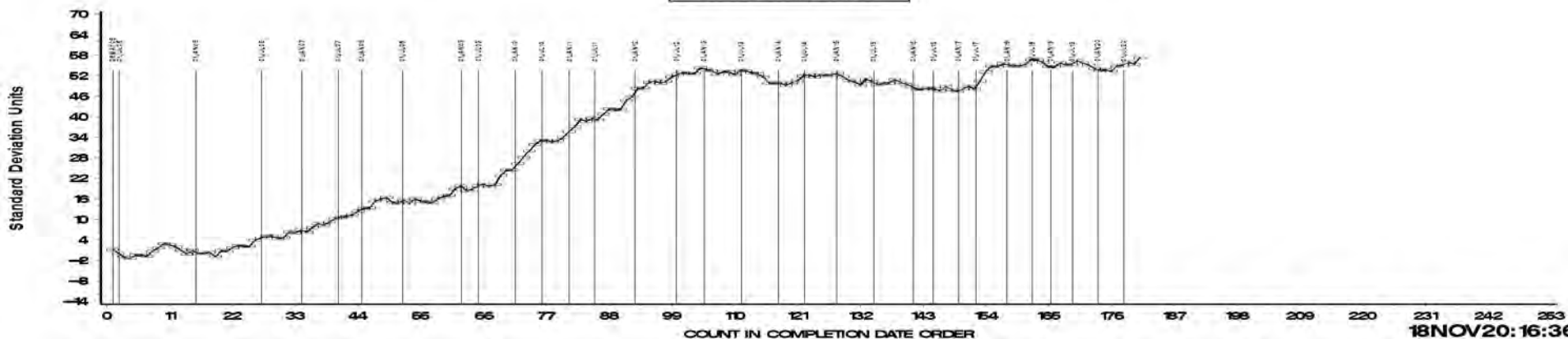
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

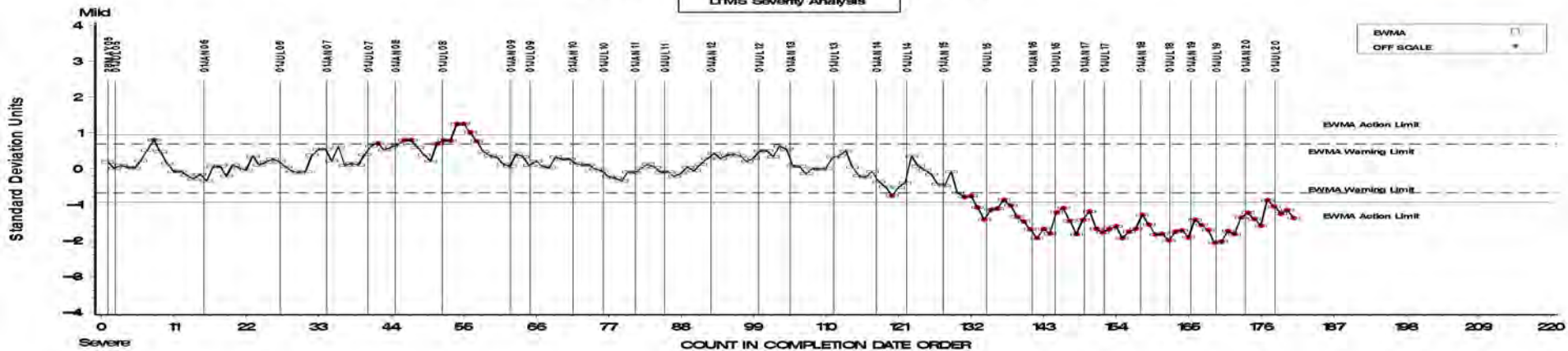


T-11 INDUSTRY OPERATIONALLY VALID DATA

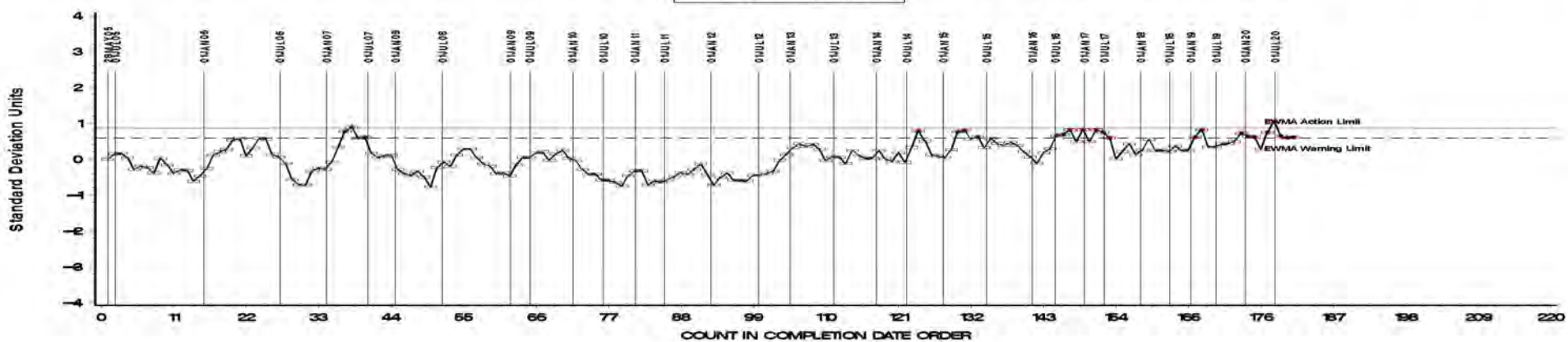


SOOT @ 4 cSt — FINAL RESULT

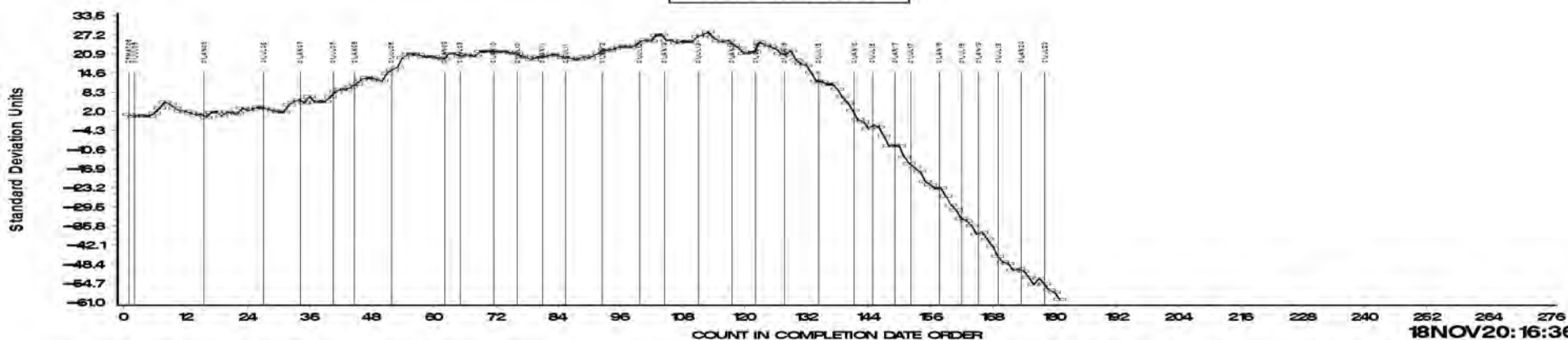
LTMS Severity Analysis



LTMS Precision Analysis



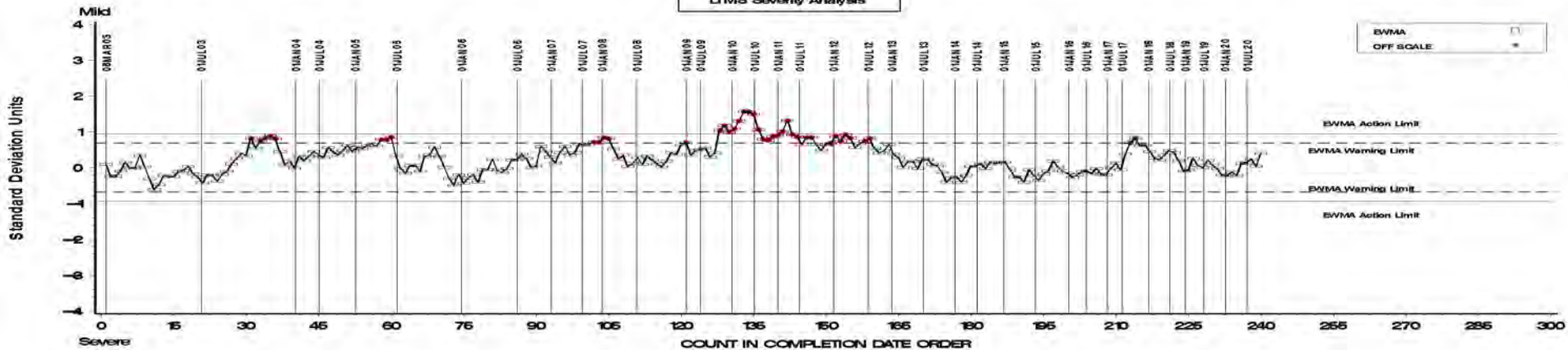
CUSUM Severity Analysis



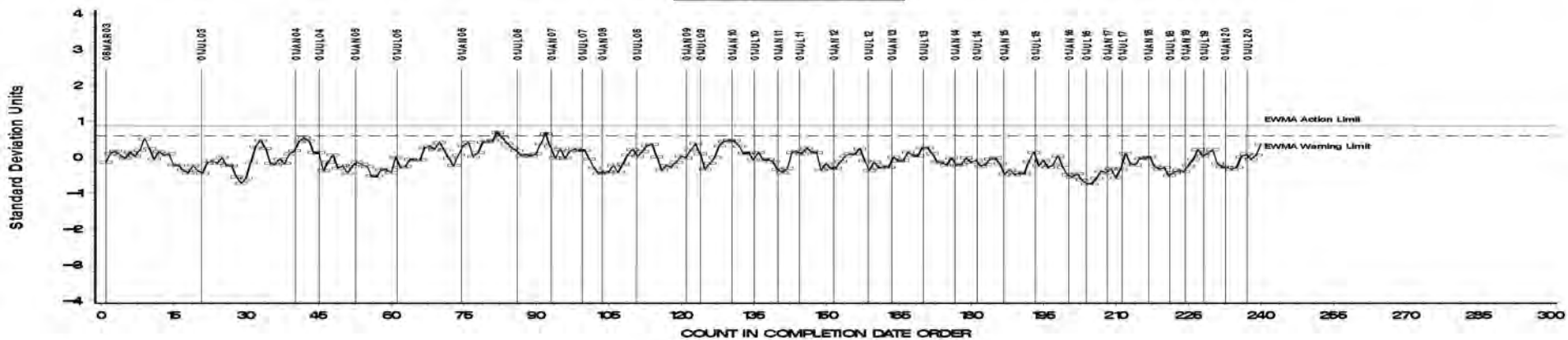
T-11 INDUSTRY OPERATIONALLY VALID DATA

SOOT AT 12 cSt

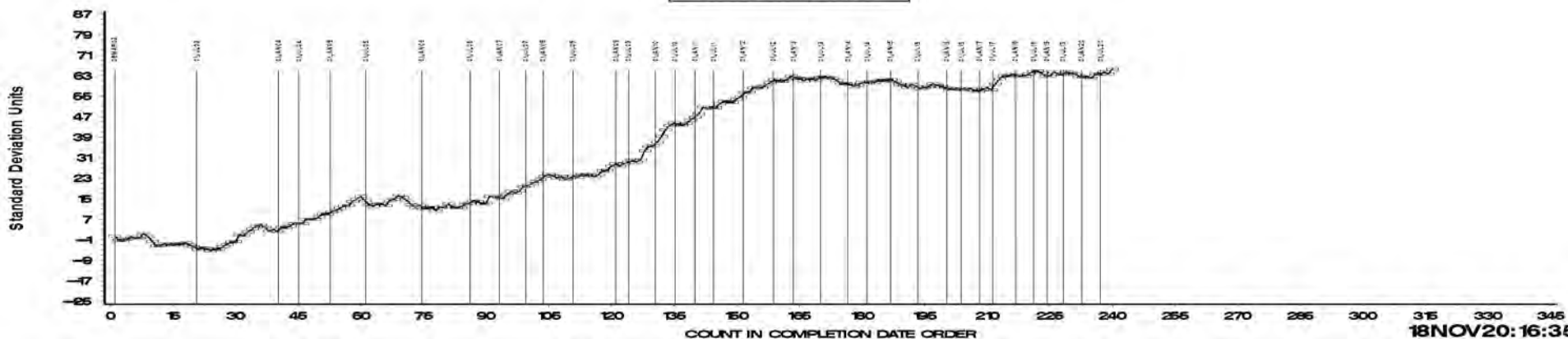
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

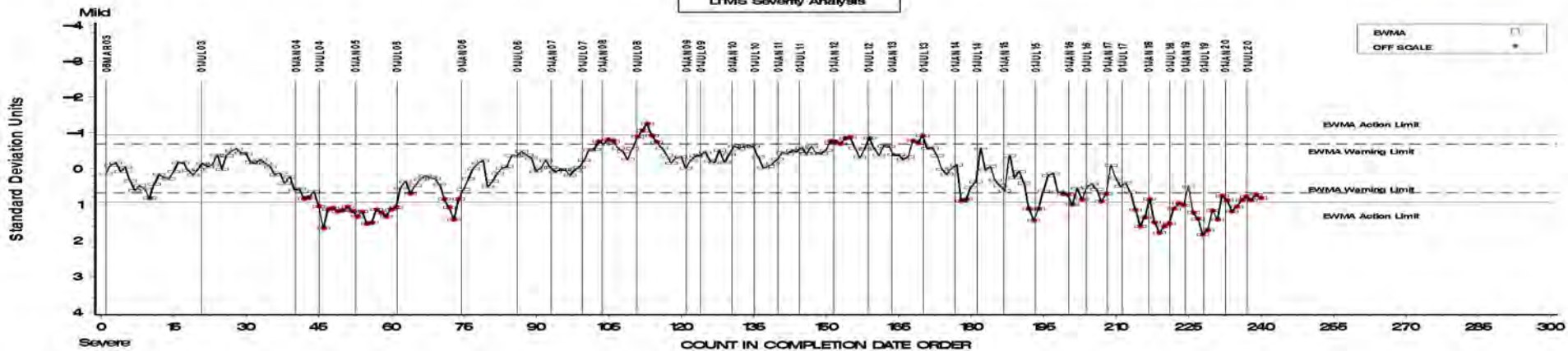


T-11 INDUSTRY OPERATIONALLY VALID DATA

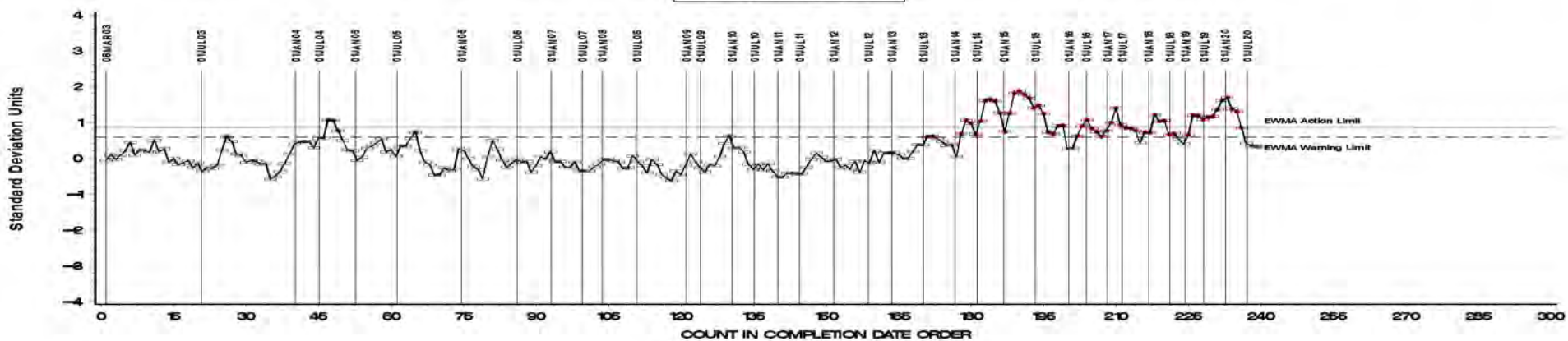


MRV VISCOSITY

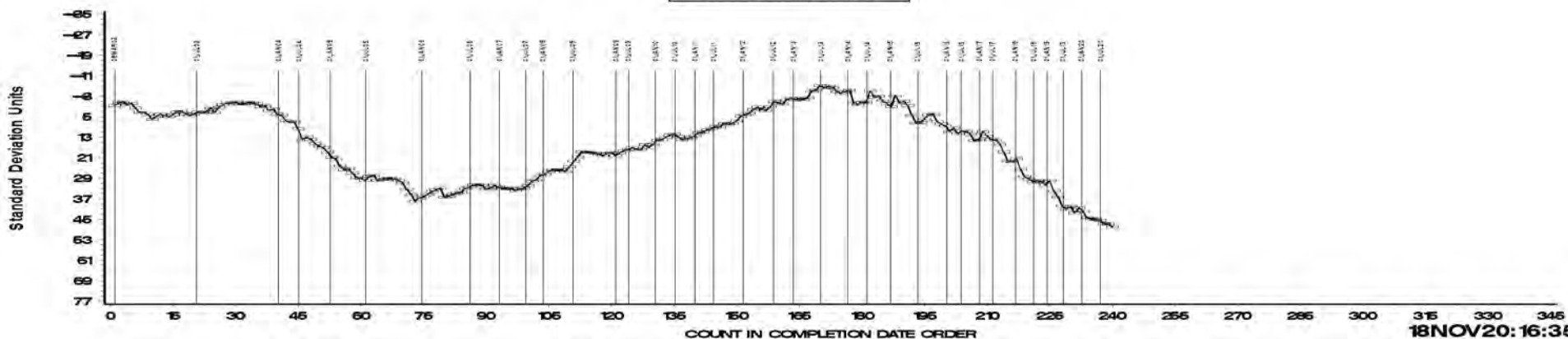
LTMS Severity Analysis



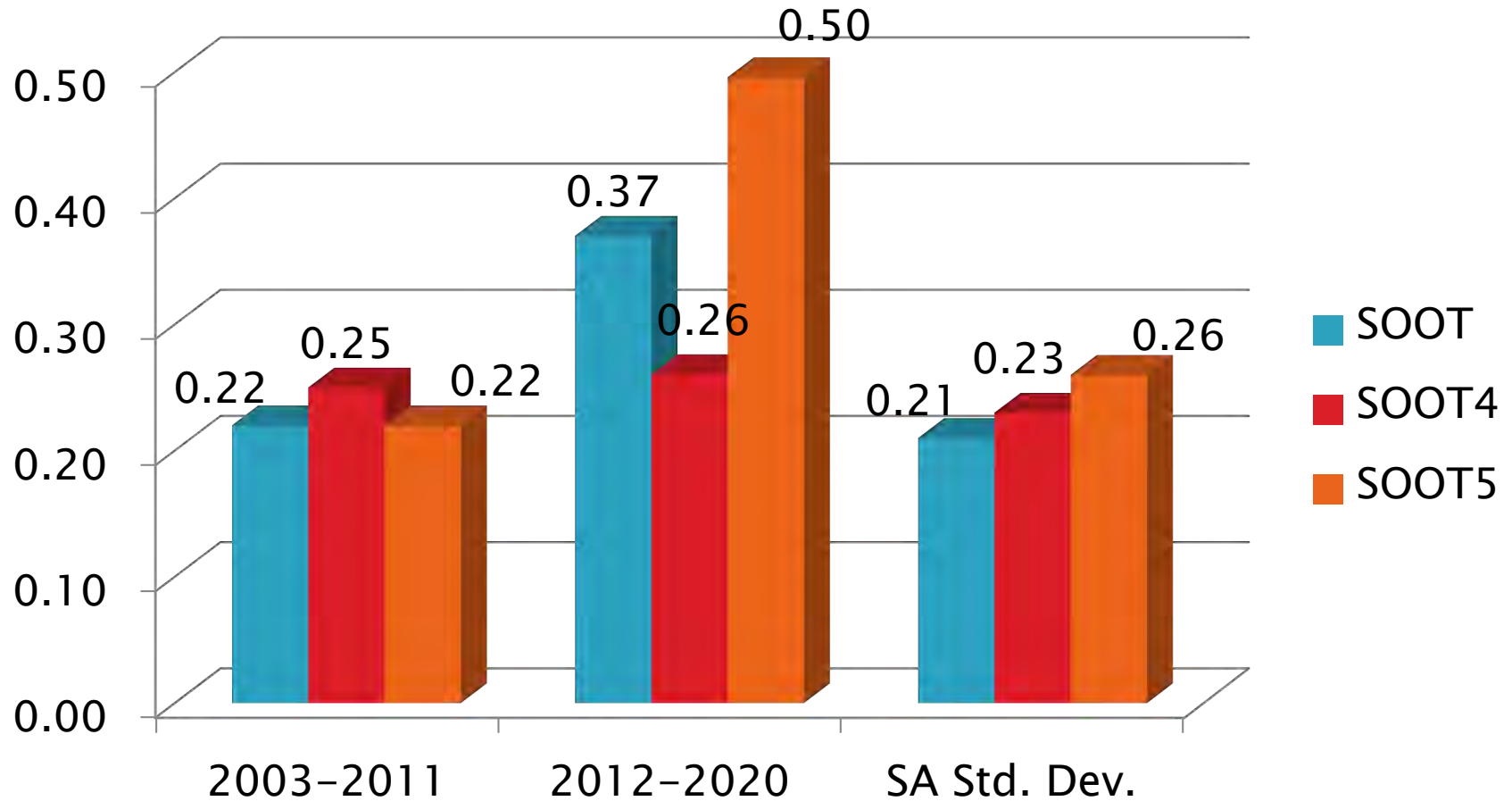
LTMS Precision Analysis



CUSUM Severity Analysis

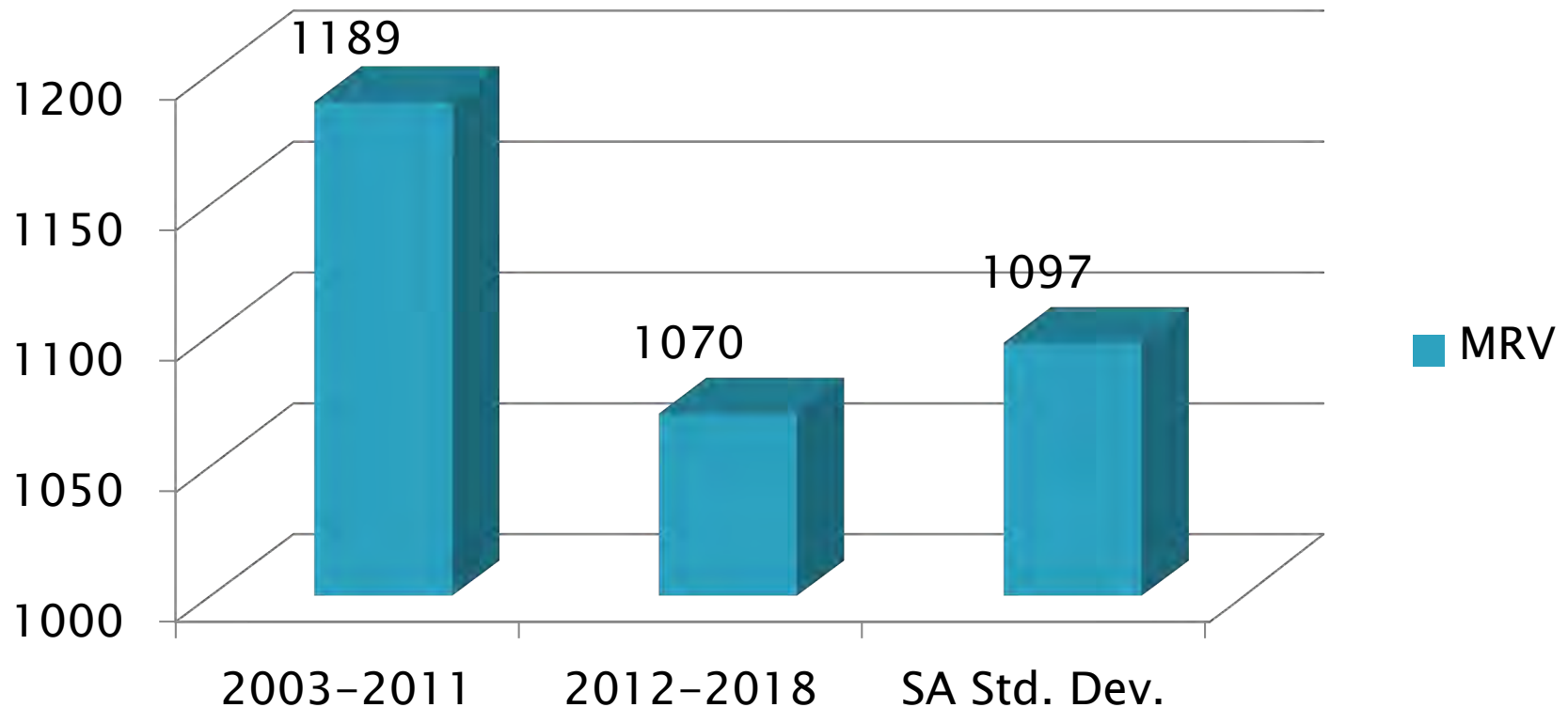


T-11 Precision Estimates



T-11 Precision Estimates

MRV



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Mack T-12

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T-12 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

T-12 Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

T-12 Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

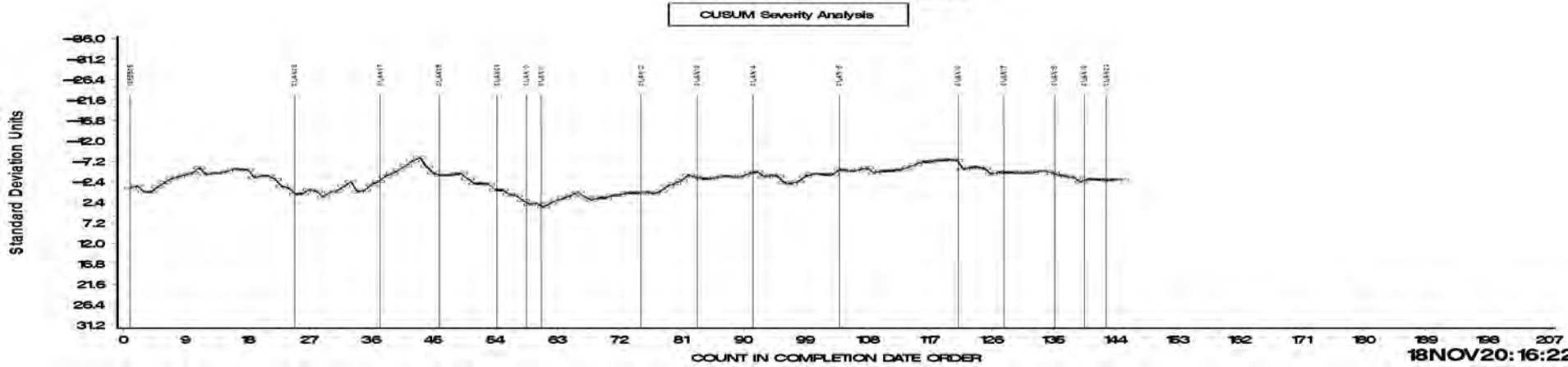
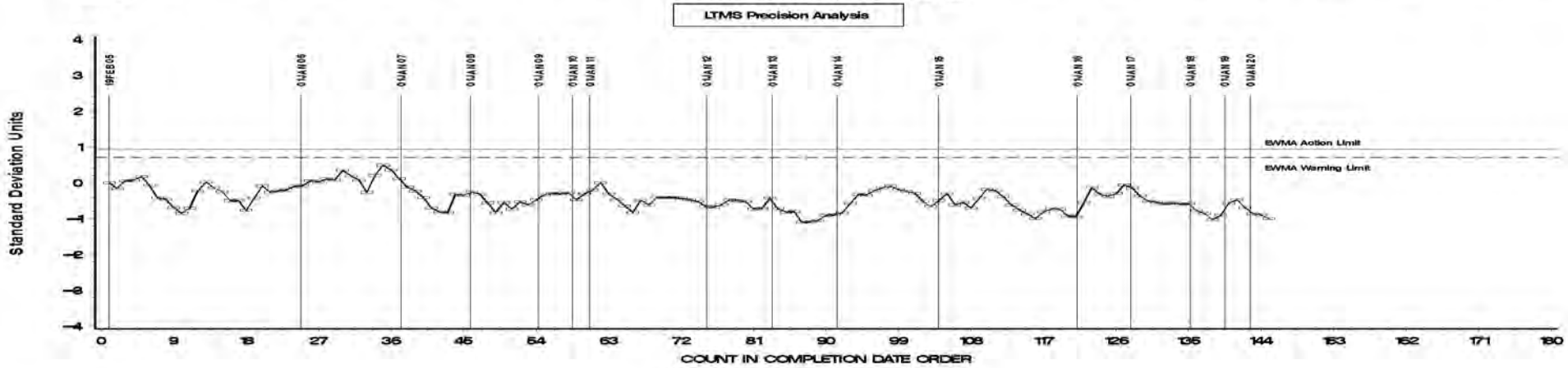
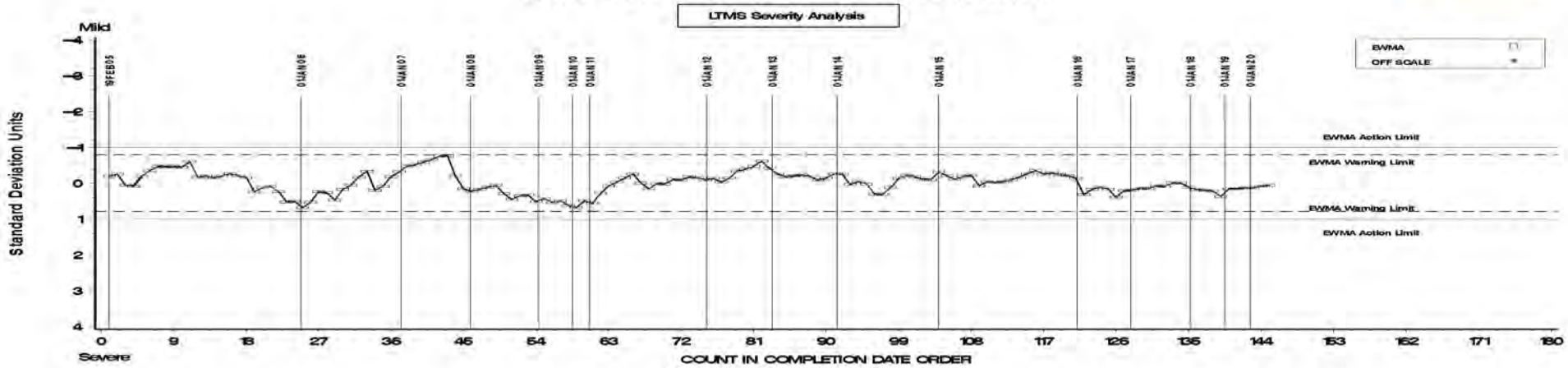
T-12 Test Severity

- ▶ CLW, Pb, Pb2, TRWL and OC are in control.

MACK T-12 INDUSTRY OPERATIONALLY VALID DATA



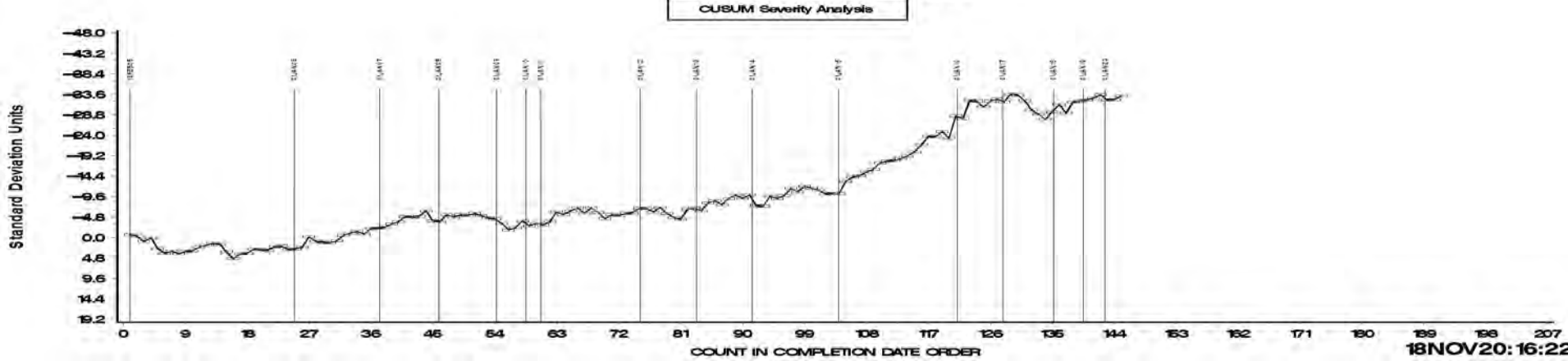
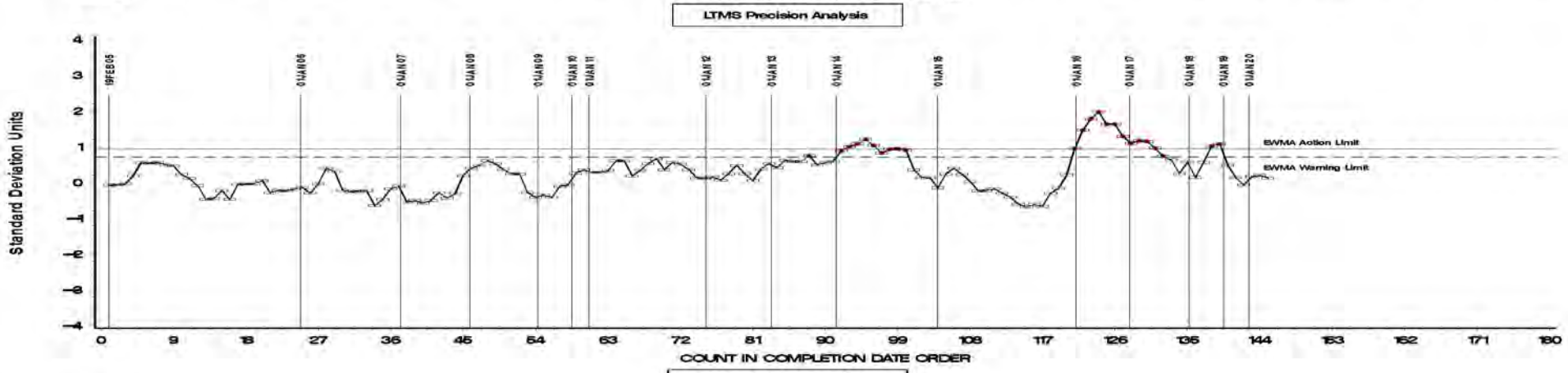
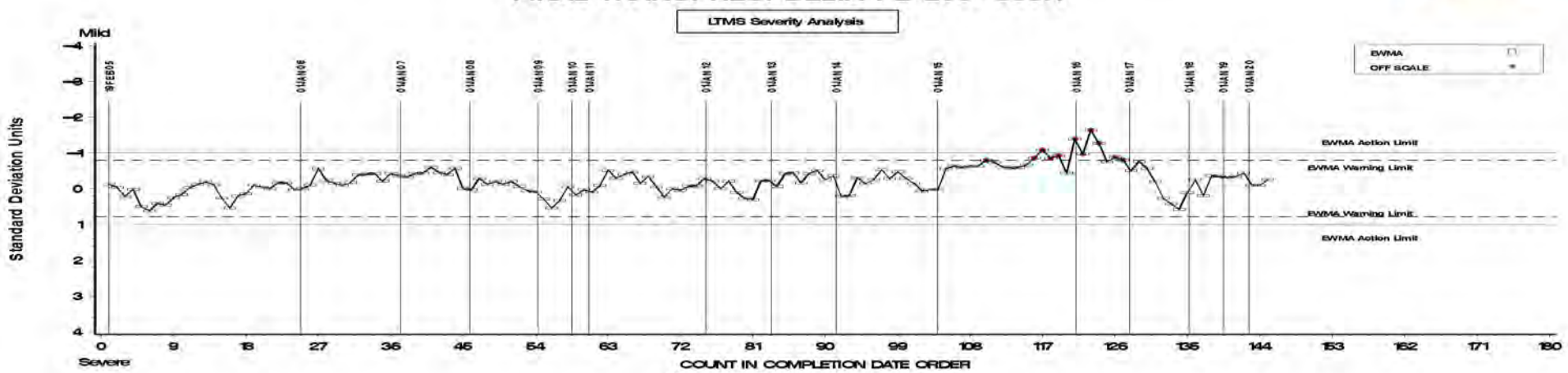
AVG. TOP RING WEIGHT LOSS (TRWL)



MACK T-42 INDUSTRY OPERATIONALLY VALID DATA



FINAL TRANS. RES. DELTA PB 250-300H

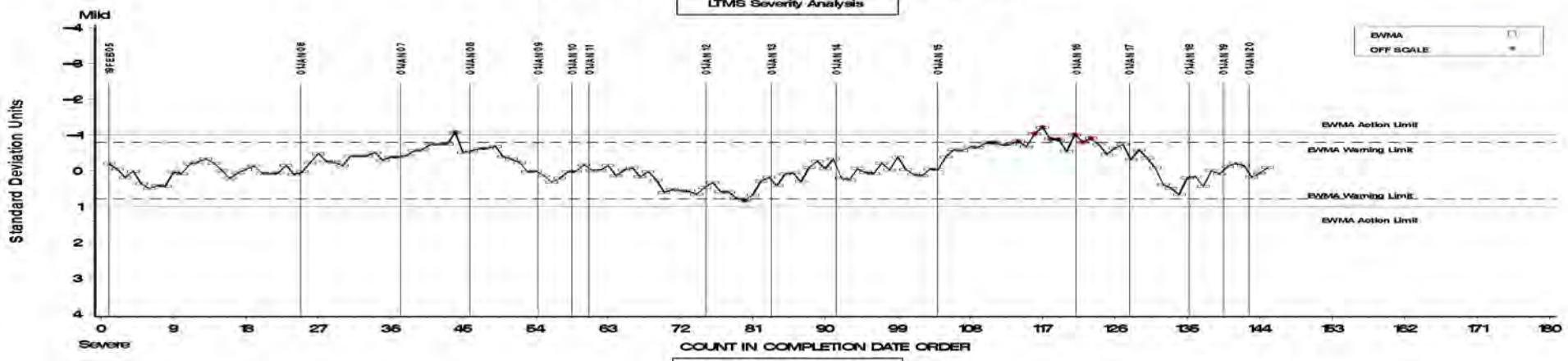


MACK T-12 INDUSTRY OPERATIONALLY VALID DATA

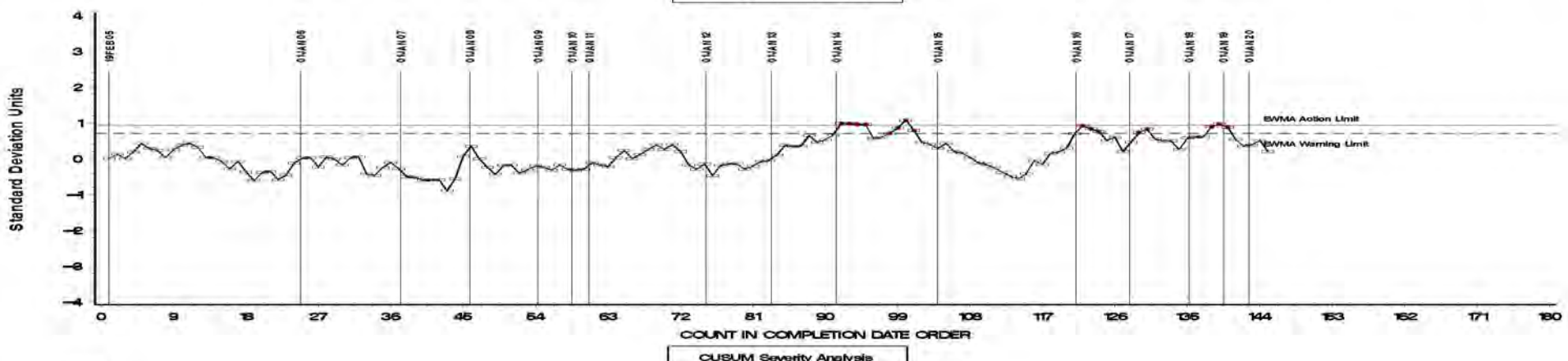


FINAL TRANS. RES. DELTA PB @ EOT

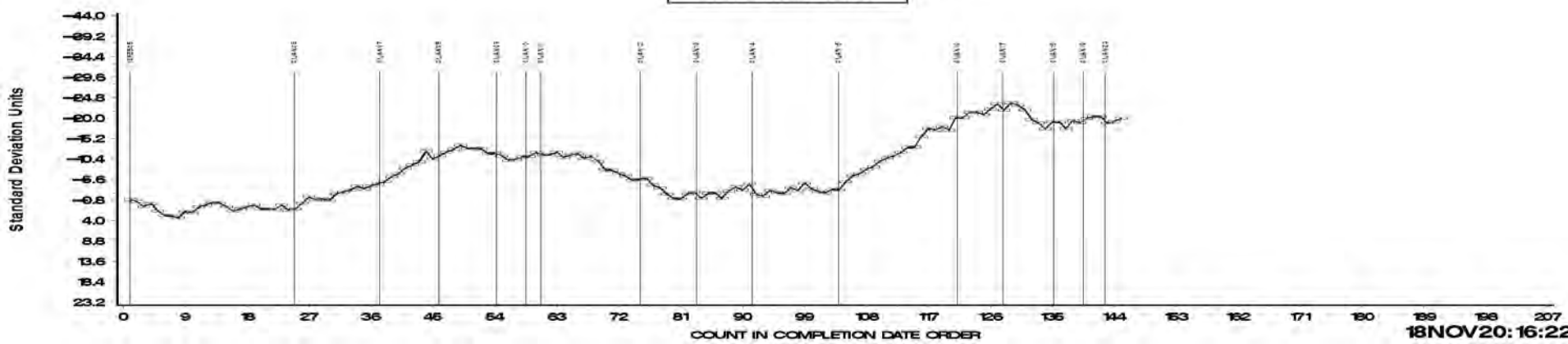
LTMS Severity Analysis



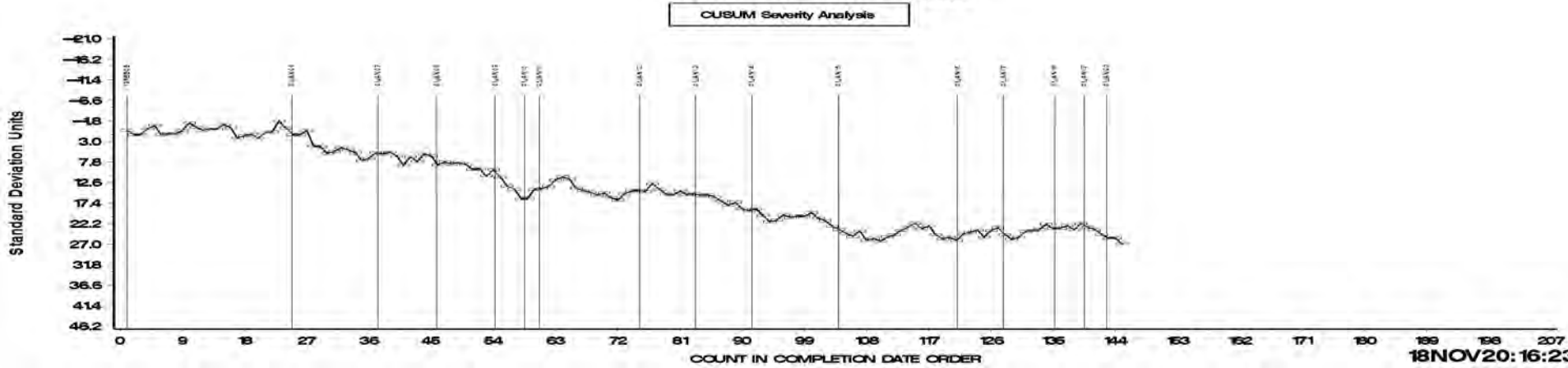
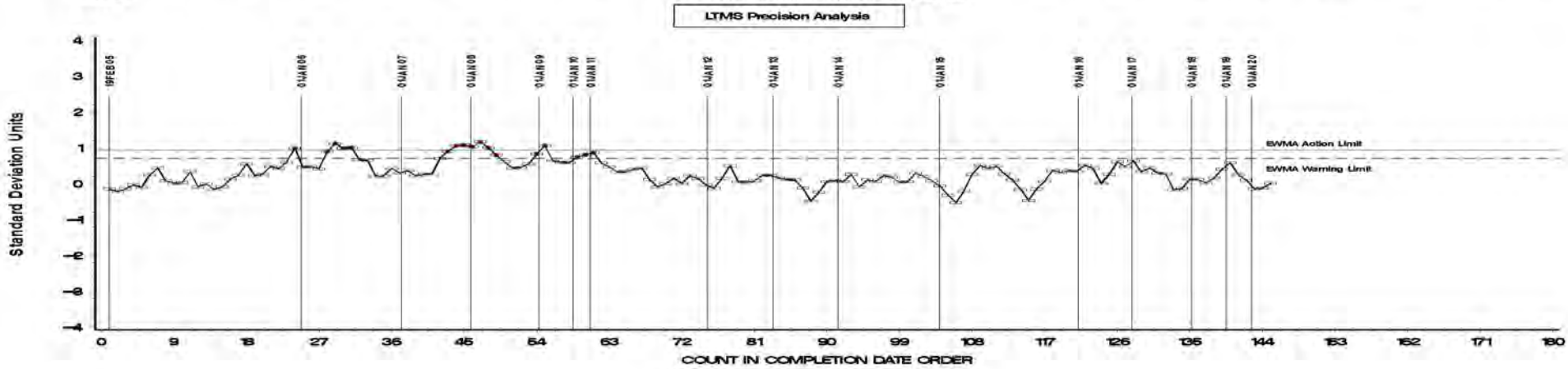
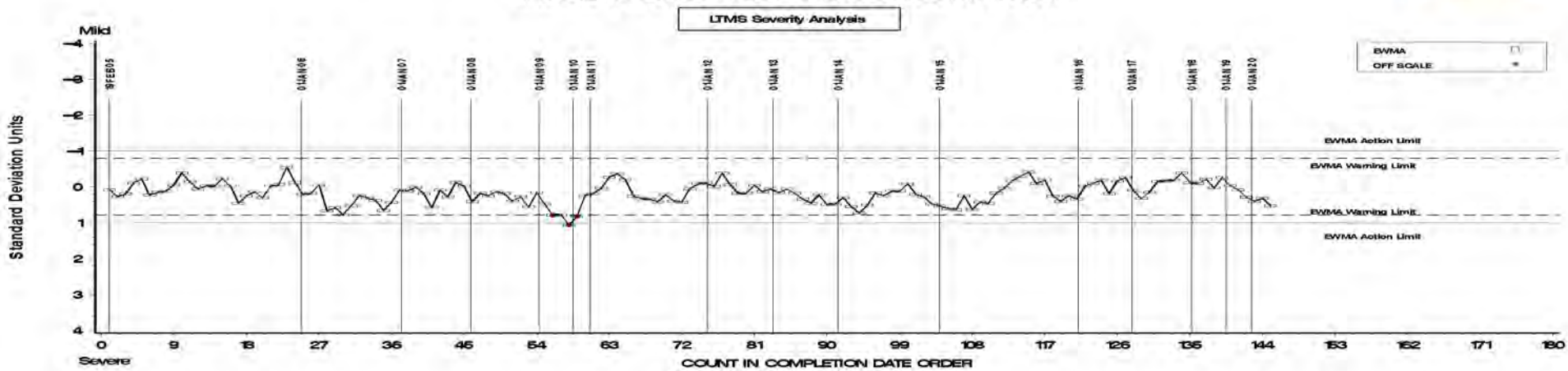
LTMS Precision Analysis



CUSUM Severity Analysis



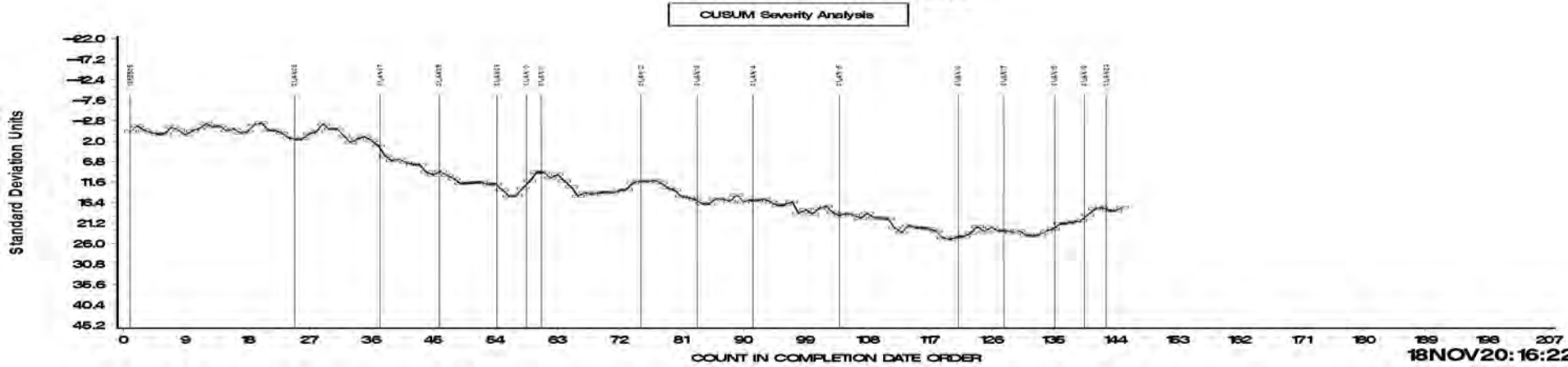
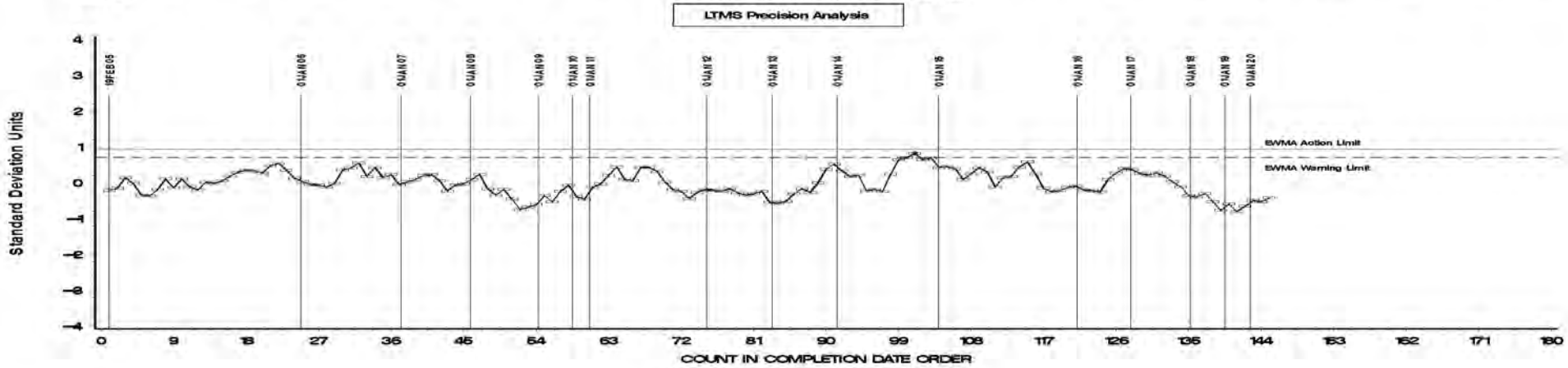
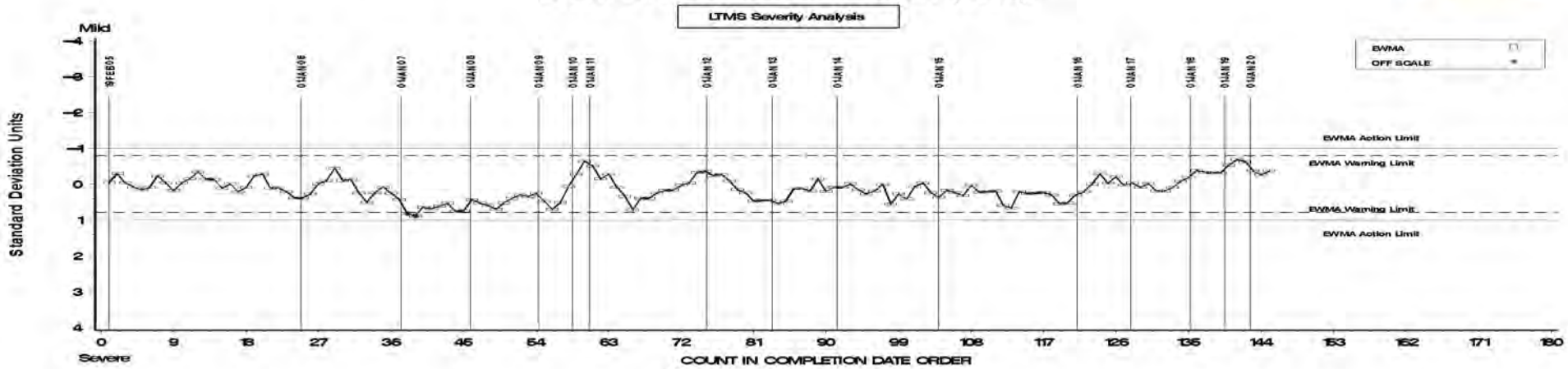
FINAL TRANS. RES. OIL CONSUMPTION



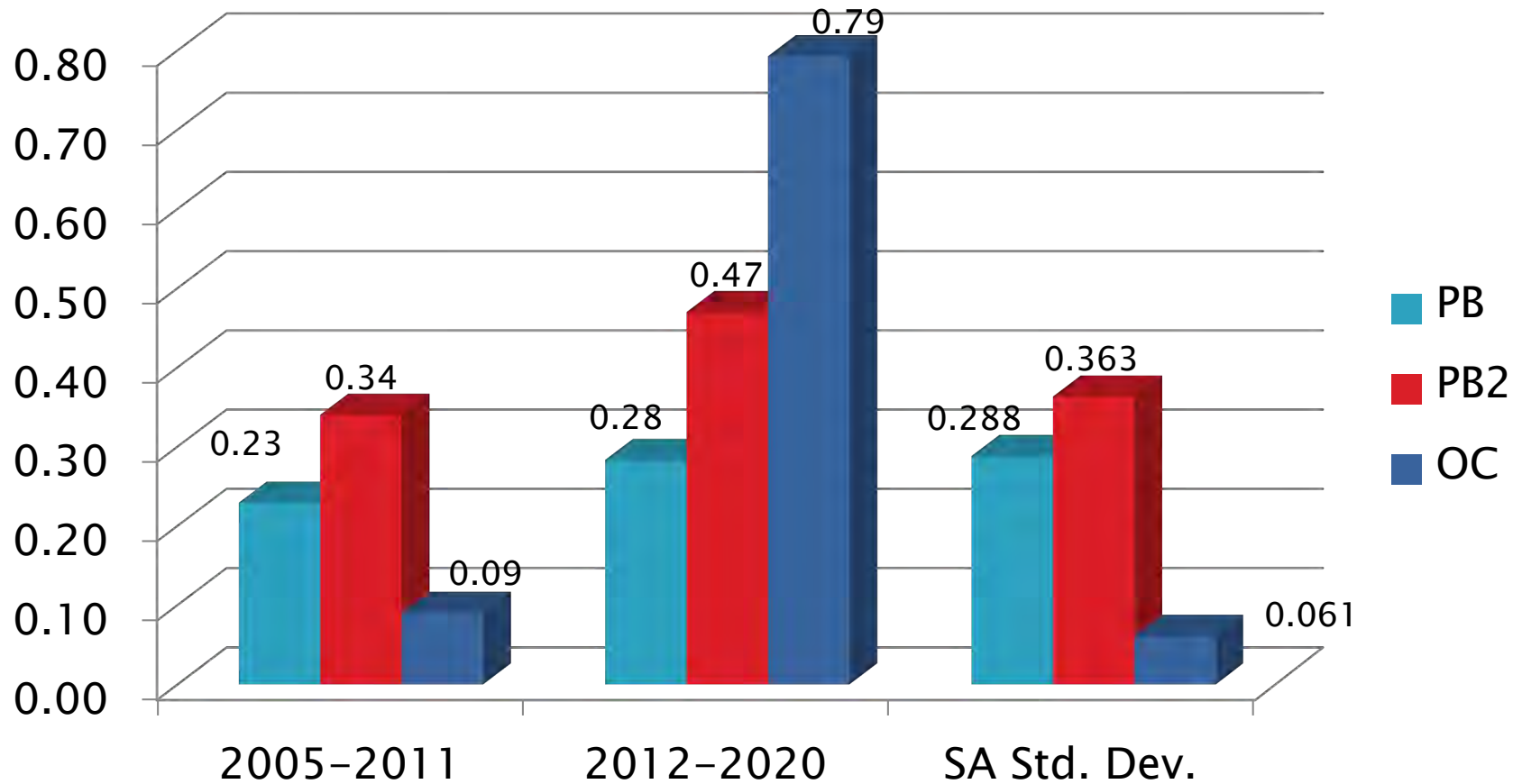
MACK T-12 INDUSTRY OPERATIONALLY VALID DATA



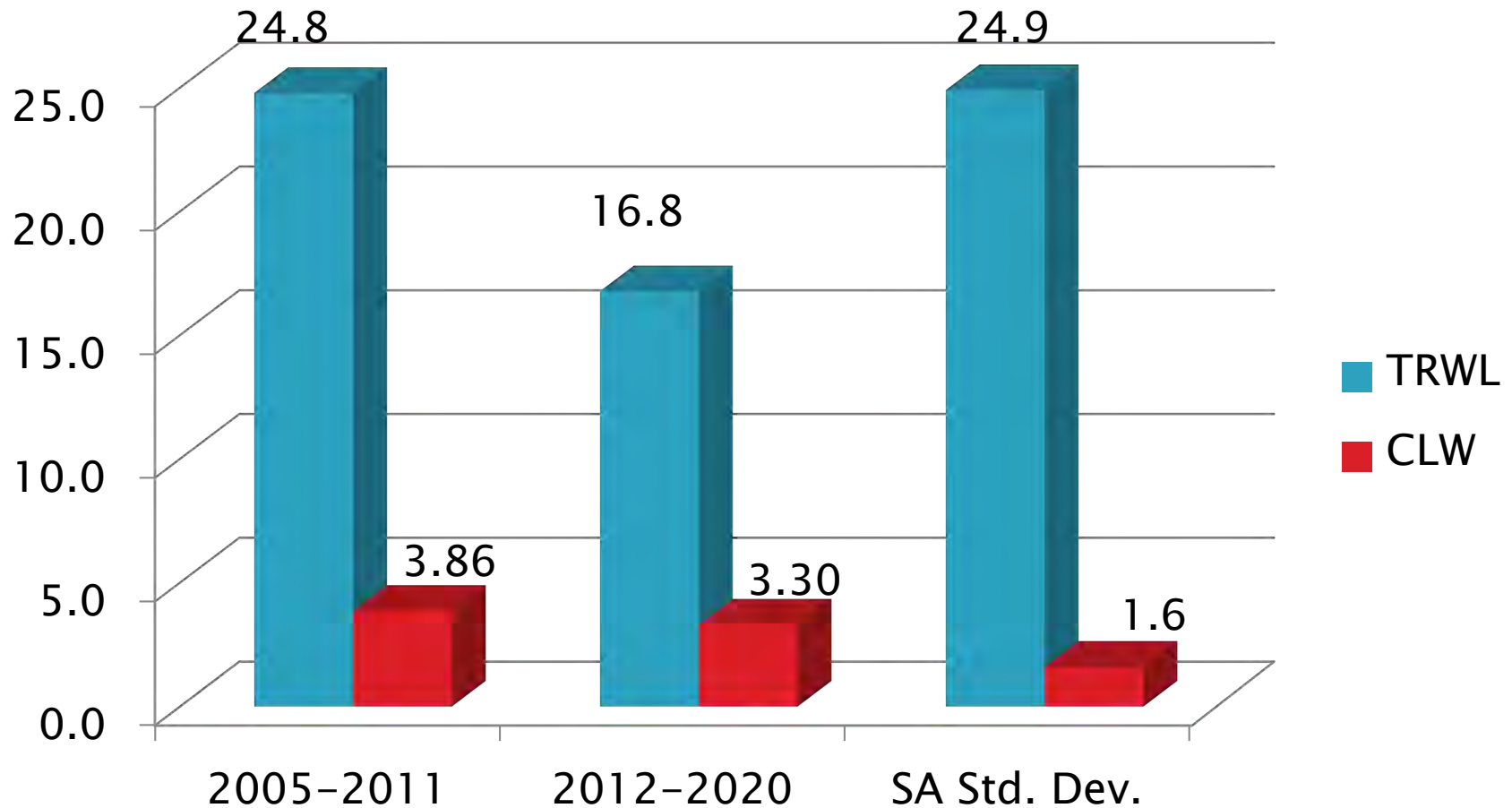
AVG. CYLINDER LINER WEAR (CLW)



T-12 Precision Estimates



T-12 Precision Estimates



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T-12A 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

T-12A Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

T-12A Lost Tests*

Status	Cause	#
Invalid	No invalid tests	0
Aborted	No aborted tests	0
Total		0

*Invalid and aborted tests

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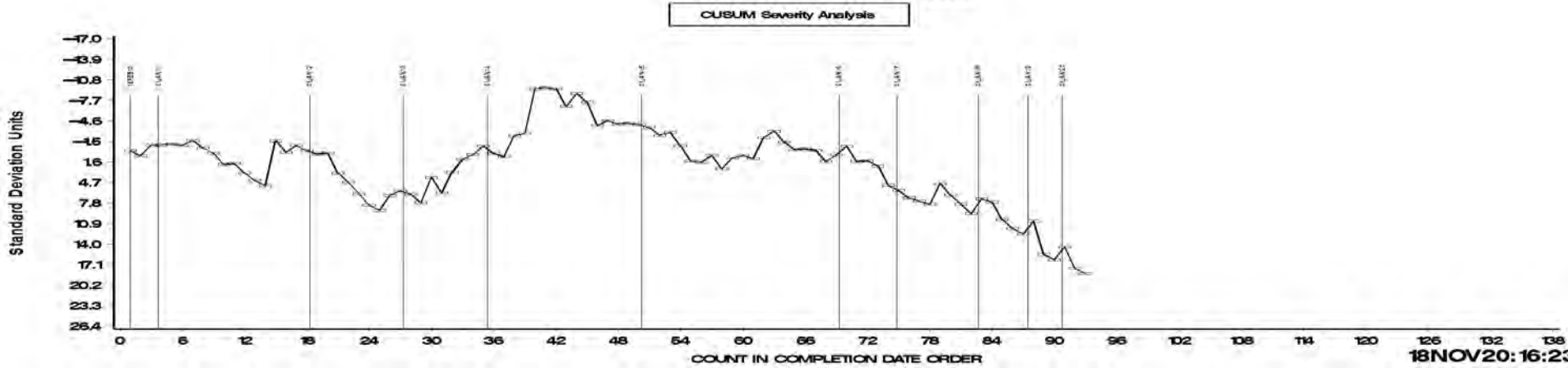
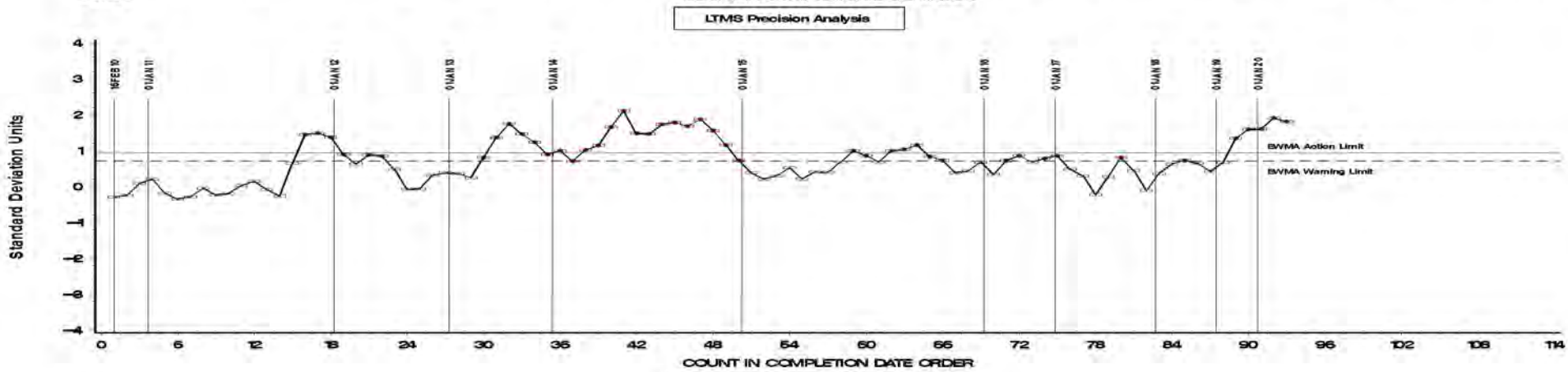
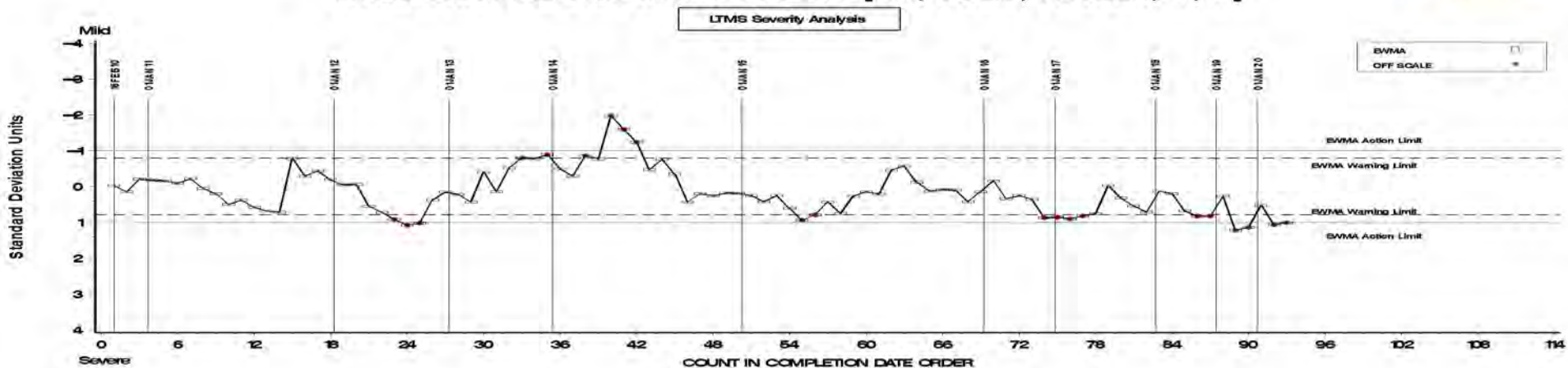
T-12A Test Severity

- ▶ MRV is in severity and precision action alarm.

MACK T-2A INDUSTRY OPERATIONALLY VALID DATA

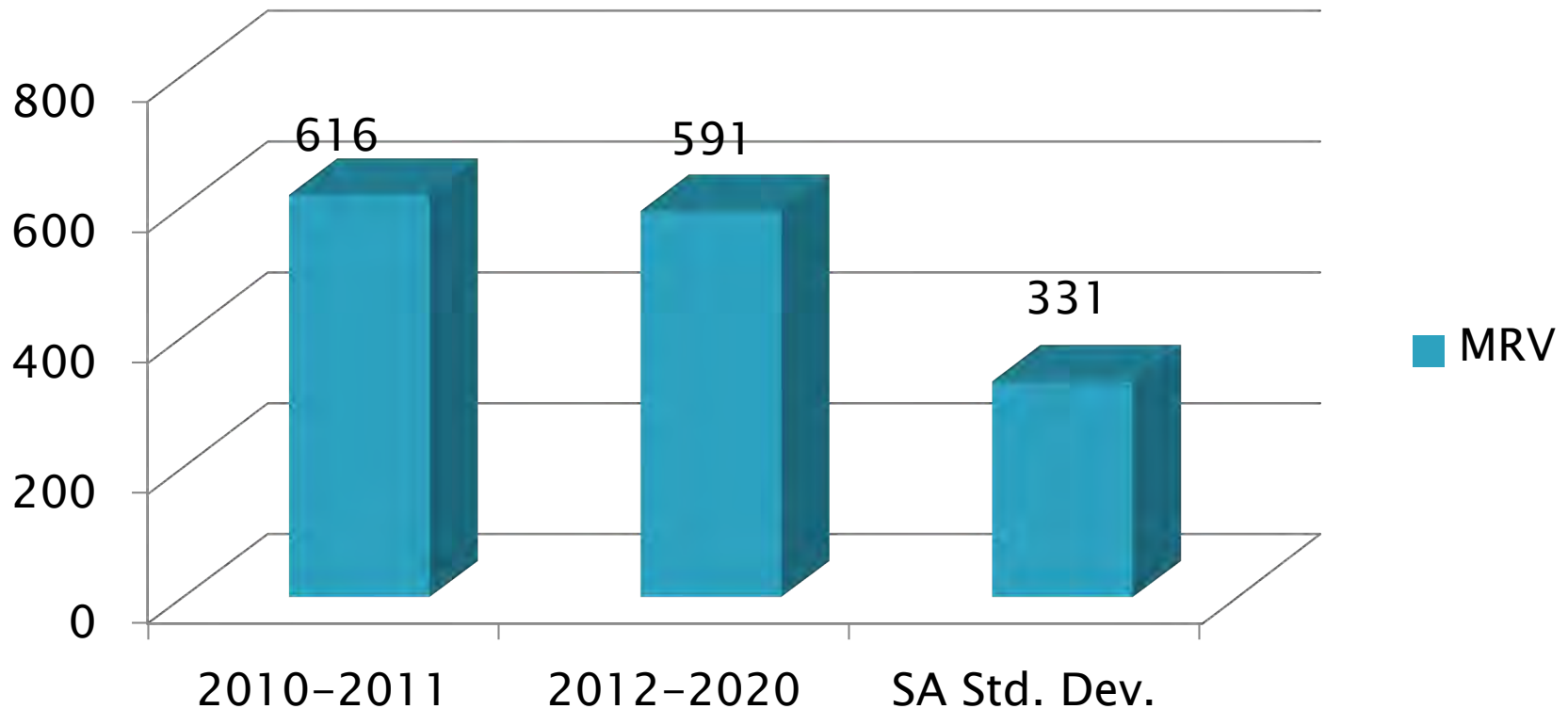


FINAL ORIGINAL UNIT MRV VISCOSITY [NM, SOLID, FROZEN, <, >]



T-12A Precision Estimates

MRV



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T-13 Test Activity

Test Status	Validity Code	#
Acceptable Calibration Test	AC	3
Failed Calibration Test	OC	0
Operationally Invalid	LC	2
Aborted	XC	3
Total		8

T-13 Failed Tests

Failed Parameter	Number of Tests
No failed tests	0
Total	0

T-13 Lost Tests*

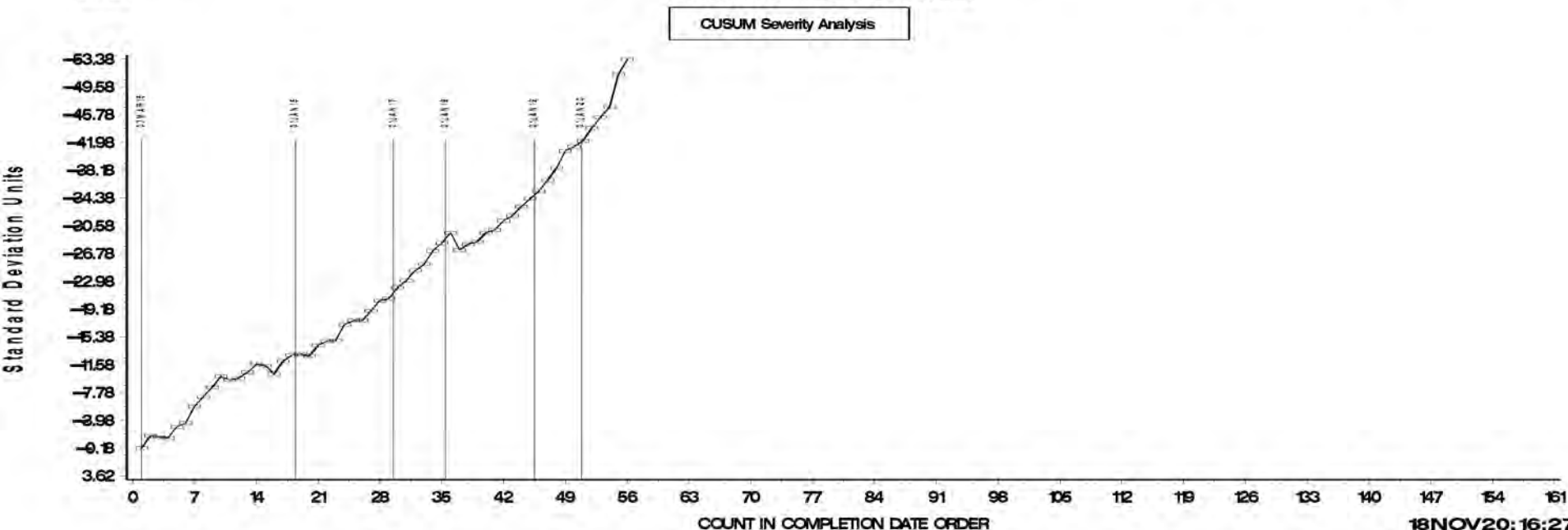
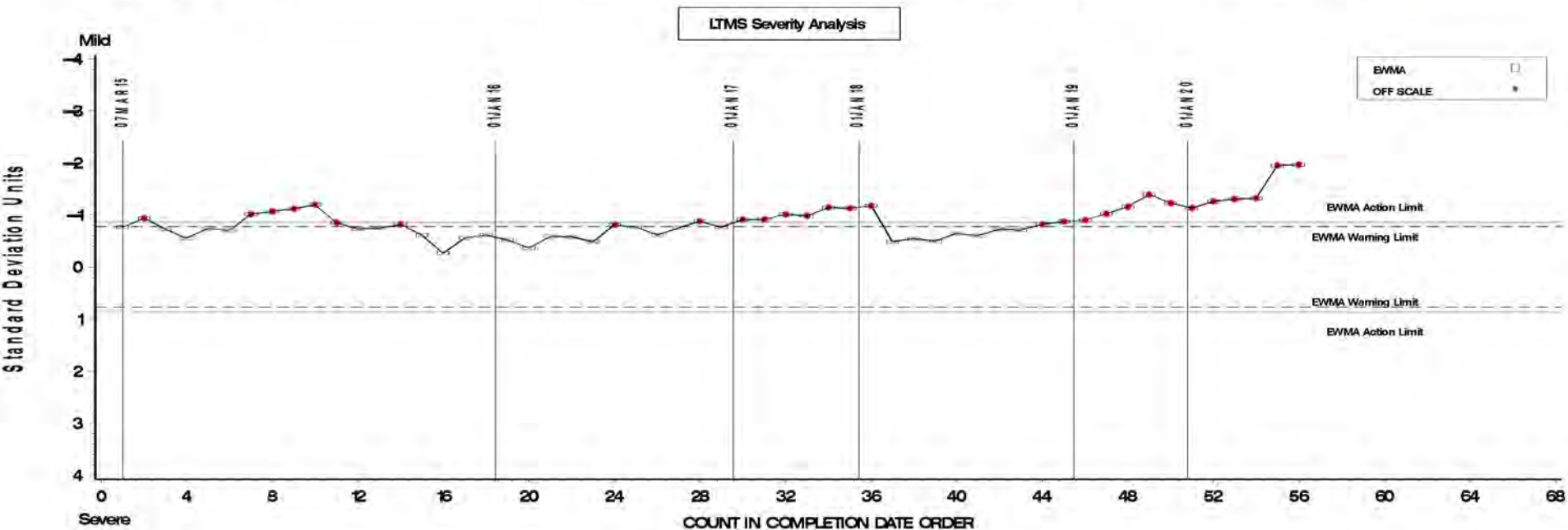
Status	Cause	#
Invalid	Bad oil gallery thermocouple insertion depth	2
Aborted	Engine failure during break-in	1
Aborted	Exhaust valve failure	1
Aborted	Incorrect initial oil charge	1
Total		5

*Invalid and aborted tests

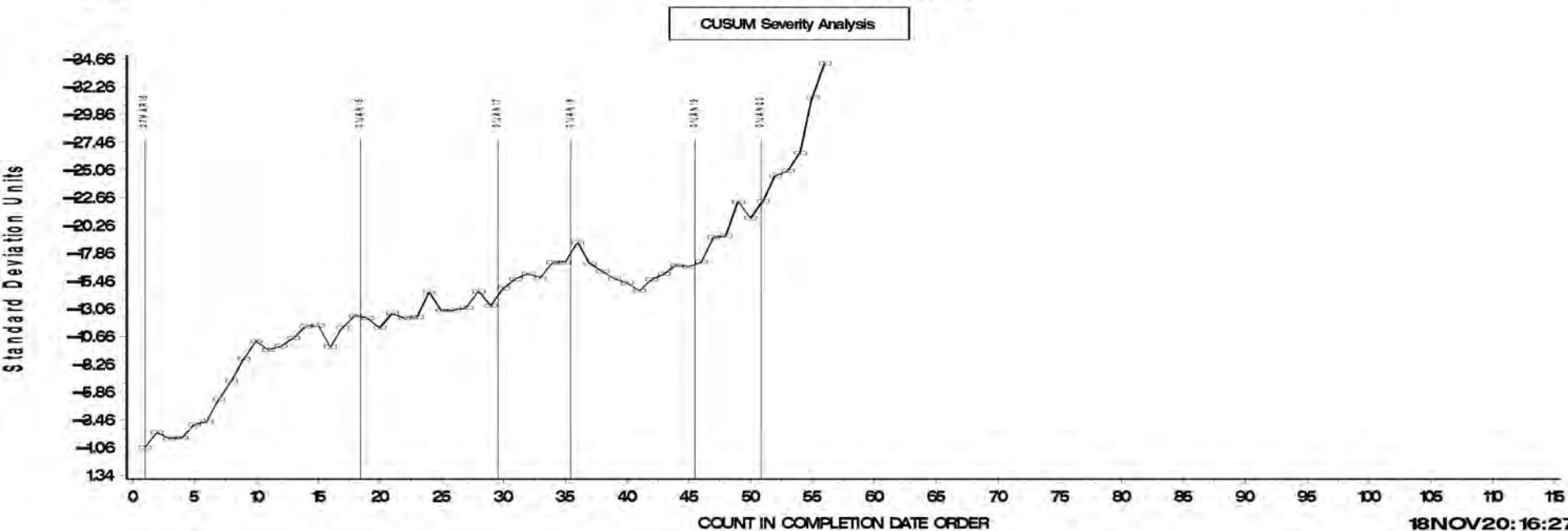
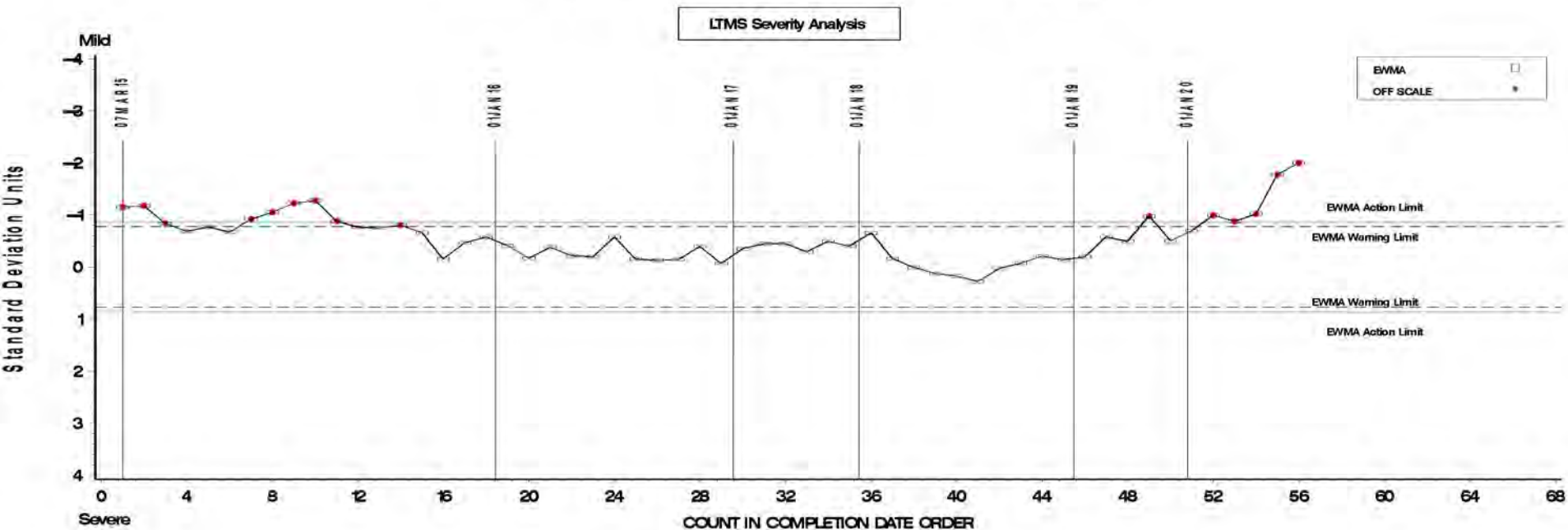
T-13 Test Severity

- ▶ IRPH and KV40 are in level 2 Zi alarm.

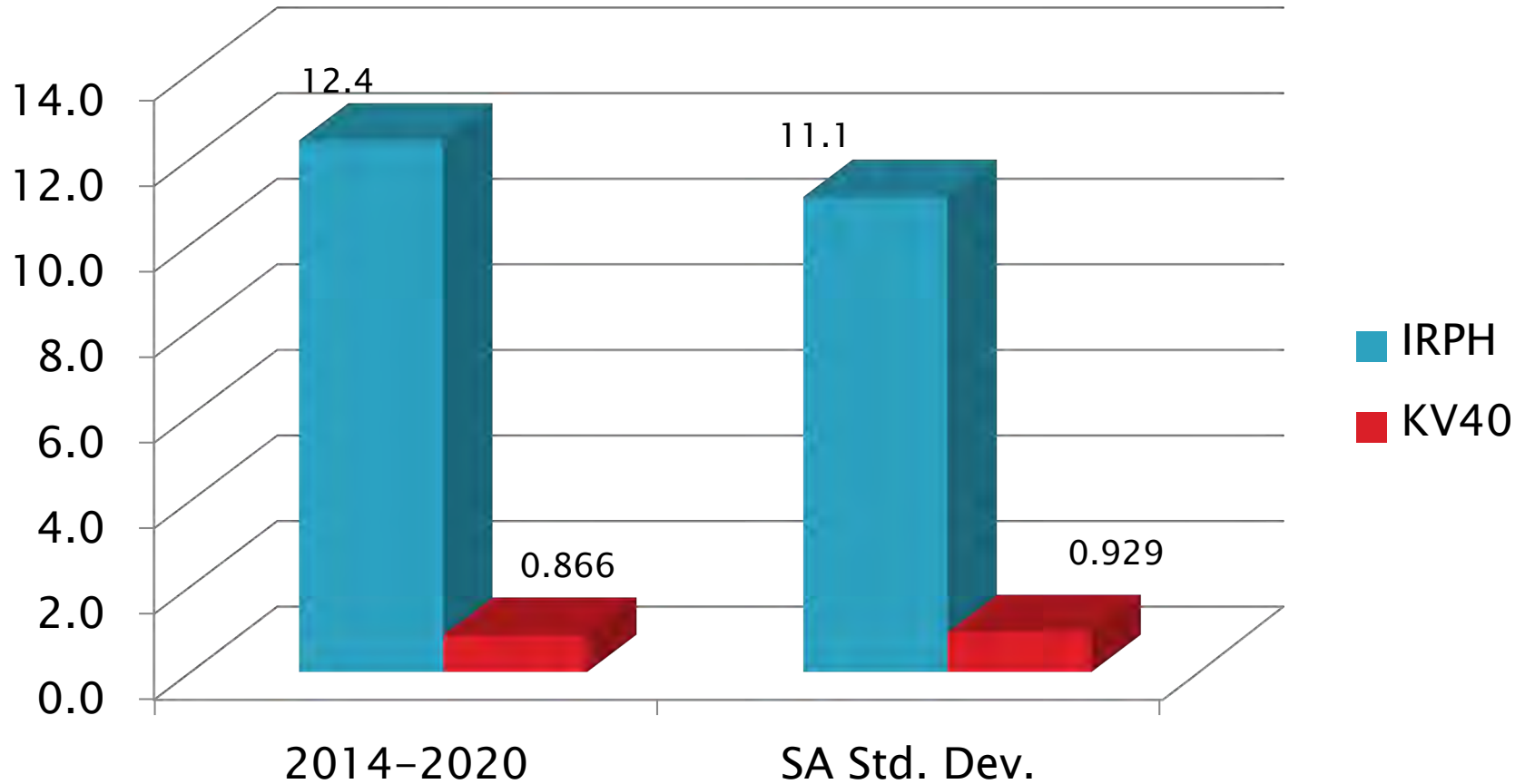
FNL. ORIG. UNIT KINEMATIC VISCOSITY AT 40 DEG C % CHANGE 300-360 HRS



FINAL ORIGINAL PEAK HEIGHT IR AT EOT



T-13 Precision Estimates



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Information Letters

»» April 1, 2020–
September 30, 2020

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Information Letters*

Test	Date	IL	Topic
ISM	4/22/2020	20-1	Update to ISM Crosshead Mass Loss Correction Factor for Batch G Crossheads and IAS Mass Loss Correction Factor
T13	9/14/2020	20-2	T-13 Parts List Updates
ISB	9/27/2020	20-1	Average Camshaft Wear Correction Factor Change

*Available from TMC Website

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Memos

»» April 1, 2020–
September 30, 2020

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Memos*

Date	Number	Topic
4/16/2020	20-017	ISM Reference Oil 830-3 Target Updates

*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

- ▶ Re-blend of oil 823 requested.

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	10	1983	116	5+ years
811-2	1K, 1N	1732	40	822	40	5+ years
821-4	T-12	4495	150	2472	100	5+ years
822-2	1R, T-11	4386	168	2311	112	3+ years
823	T-13	1796	240	432	120	1 year
830-3	ISM	2891	75	2587	75	5+ years
831-4	C13, ISB	1699	170	1138	130	5+ years

Quantities in gallons

Reference Oil Inventory Estimated Life

Oil	Tests	Original Blend Amount	Quantity Shipped in last 6 months	TMC Inventory	Lab Inventory	Estimated Life
832-1	COAT	1951	0	1529	56	4+ years
833-1	COAT	1248	0	856	84	3 years
864-1	DD13	1576	100	816	75	2+ years
873-2*	1M-PC	1650	20	6	20	1 years
1005-5	1P, 1R, EOAT, RFWT, T-8/E	3826	212	1450	256	1.5+ years

* - No re-blend possible

Quantities in gallons

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LTMS Deviations

»» April 1, 2020–

September 30, 2020

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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, 2020–

September 30, 2020

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Quality Index Deviations

- ▶ No QI deviations this period.

Quality Index Deviations

Historical Count of HD Quality Index Deviations

Test	Qi Deviations
1P	15
1R	1
ISM	3
C13	2
T-10A	1
T-11	3
T-12	7
T-13	2
COAT	4

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TMC Laboratory Visits

»» April 1, 2020–

September 30, 2020

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TMC Lab Visits

- ▶ No lab visits this period.

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Test Area Timelines

»» April 1, 2020–
September 30, 2020

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Test Area Timeline Additions*

Test	Date	IL/Memo	Topic
ISB	9/04/2020	20-1	ACSW CORRECTION FACTOR UPDATED
ISB	9/04/2020		ACSW MEAN AND STANDARD DEVIATION UPDATED FOR OILS 831-3 AND 831-4
ISB	9/04/2020		ACSW SEVERITY ADJUSTMENT STANDARD DEVIATION CHANGED

*As of 9/30/2020

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Rating Workshop Data



2020 Heavy Duty Workshop

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Rating Workshop Data

- ▶ The 2020 HD Rating Workshop was cancelled due to the COVID-19 pandemic.

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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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