




Test Monitoring Center

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

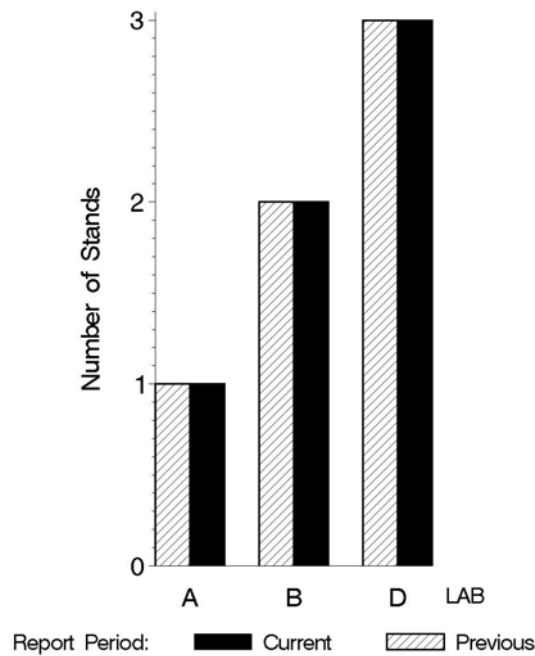
<http://astmtmc.cmu.edu>
412-365-1000

MEMORANDUM: 11-031
 DATE: June 15, 2011
 TO: Rick Graziano, Chairman, L-60-1 Surveillance Panel
 FROM: Scott Parke 
 SUBJECT: L-60-1 Testing from October 1, 2010 through March 31, 2011

A total of 20 L-60-1 tests were reported to the Test Monitoring Center during the period from October 1, 2010 through March 31, 2011. Following is a summary of testing activity this period.

	Reporting Data	Calibrated on 3-31-11
Number of Labs	3	3
Number of Stands	6	6

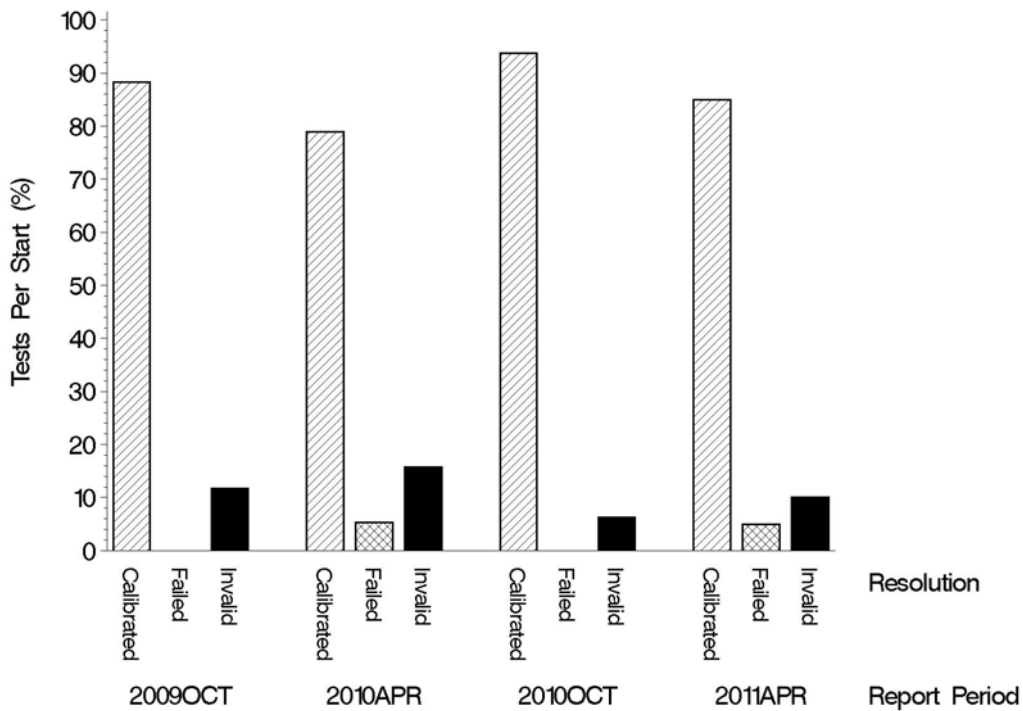
BY-LAB STAND DISTRIBUTION



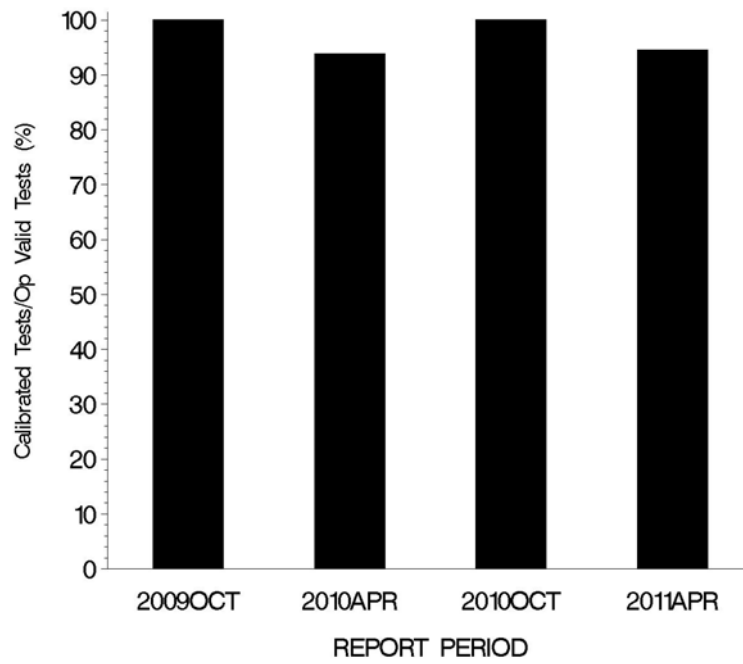
Test Distribution by Oil and Validity

		Totals			
		148-1	151-2	Last Period	This Period
Accepted for calibration	AC	9	8	15	17
Rejected (Mild)	OC	0	1	0	1
Rejected (Severe)	OC	0	0	0	0
Rejected (Precision)	OC	0	0	0	0
Invalidated calibration	LC	1	1	1	2
Aborted	XC	0	0	0	0
Total		10	10	16	20

CALIBRATION ATTEMPT SUMMARY



OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA

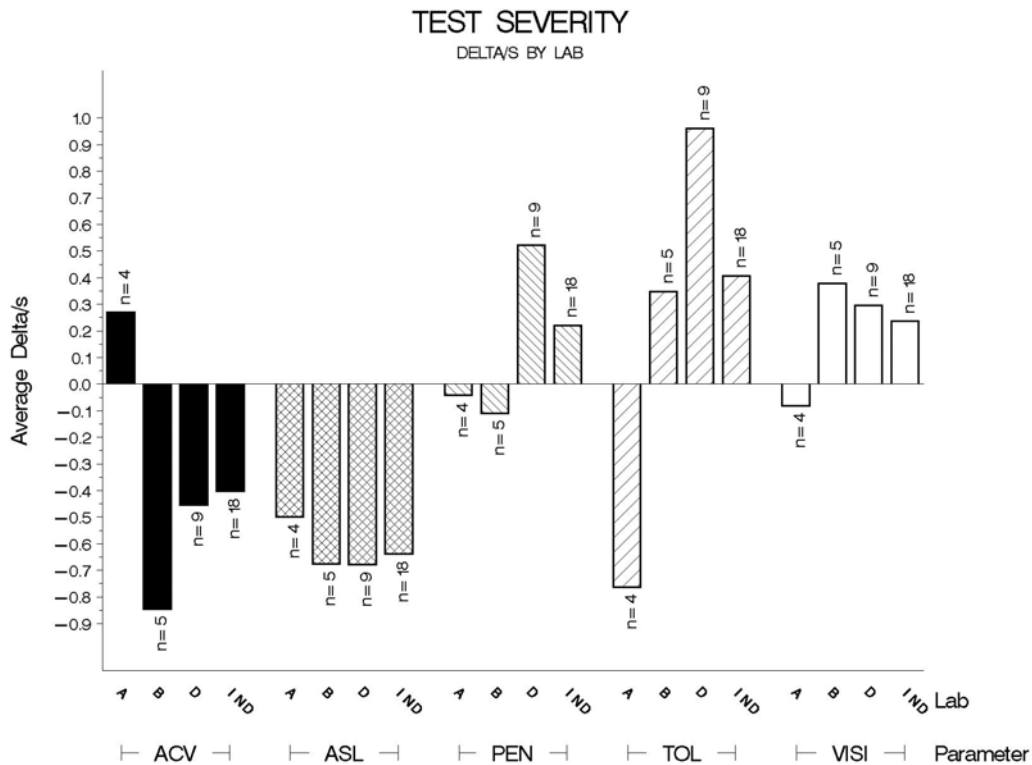


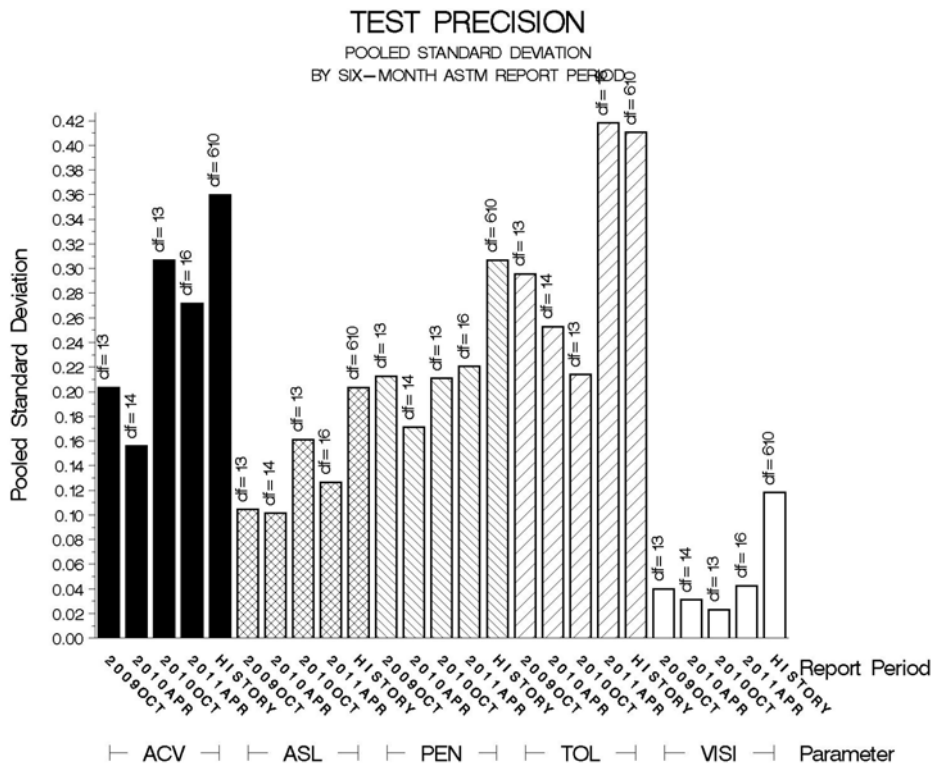
CAUSES FOR LOST TESTS:

Lab	Cause	Oil		Validity			Loss Rate		
		148-1	151-2	LC	RC	XC	Lost	Starts	%
B	High oil consumption and out-of-spec airflow.	●		●			2	7	29%
	High oil consumption.		●	●					
	Lost	1	1	2	0	0			
	Starts	10	10	20	20	20			
	%	10%	10%	10%	0%	0%			

Average Δ /s by Lab						
LAB	n	ACV	ASL	PEN	TOL	VISI
A	4	0.269	-0.498	-0.042	-0.763	-0.081
B	5	-0.846	-0.677	-0.109	0.349	0.379
D	9	-0.453	-0.678	0.521	0.960	0.297
Industry	18	-0.402	-0.638	0.221	0.408	0.236
Shift*	18	-0.346 merit	-0.064 merit	0.135%	0.297%	1.904%

*computed using severity adjustment standard deviation





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INDUSTRY CONTROL CHARTS:

The industry control charts are shown beginning on the following page.

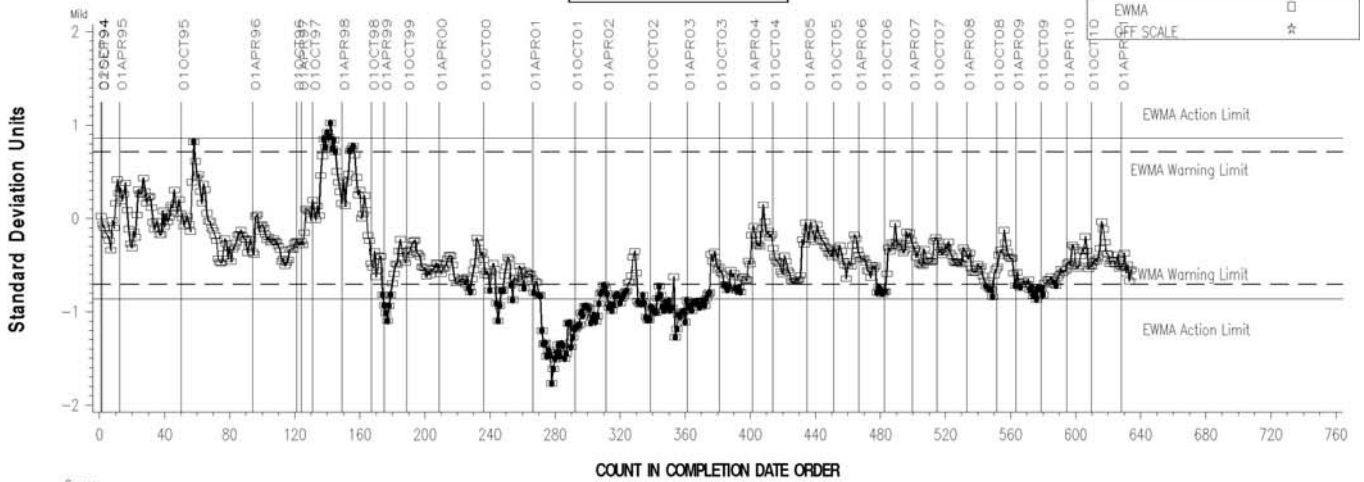
Sludge severity continues to trend severe (as it has since 2007). Toluene was also generally severe this period but two mild tests mid-period ($y_i = -1.906$ on 11-21 and $y_i = -1.542$ on 12-1) influenced the chart closer to target. Varnish continued its nearly-lifelong severe trend as well. Precision for all parameters has been good.

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

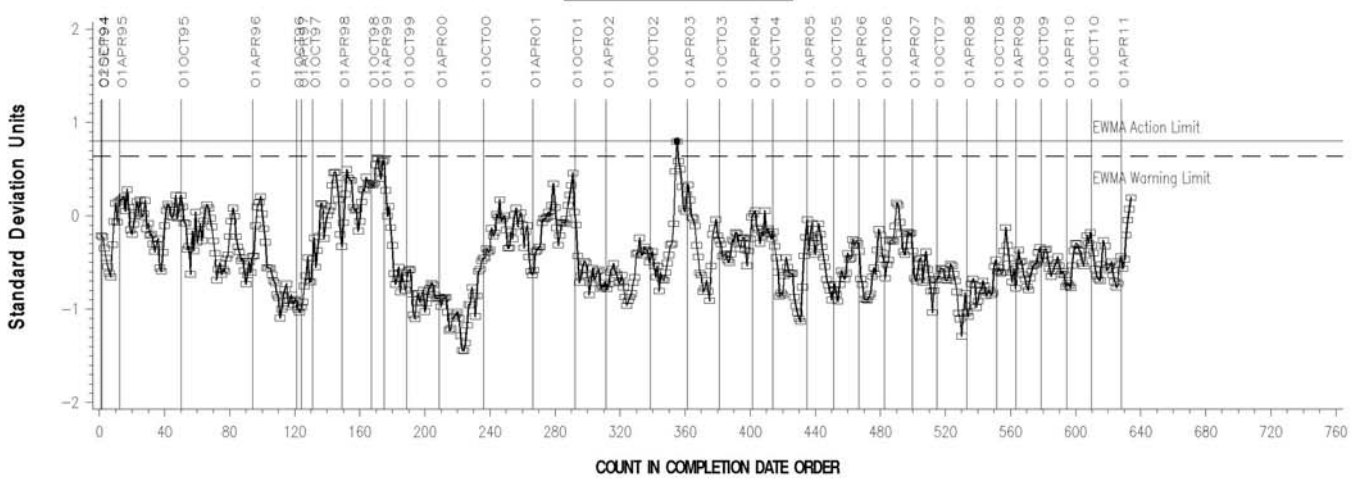


LTMS Severity Analysis



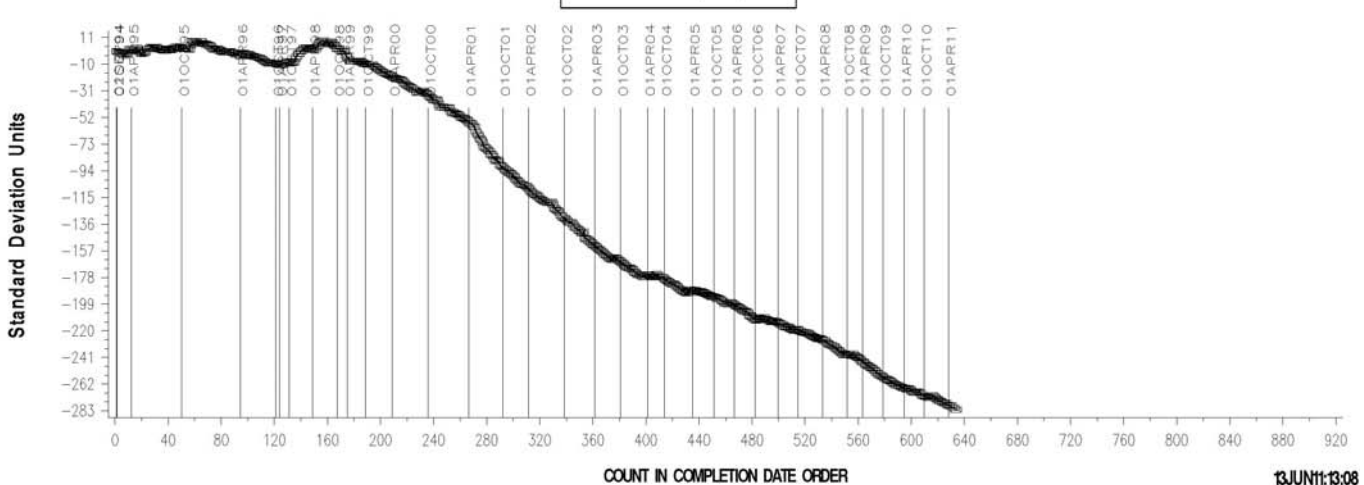
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

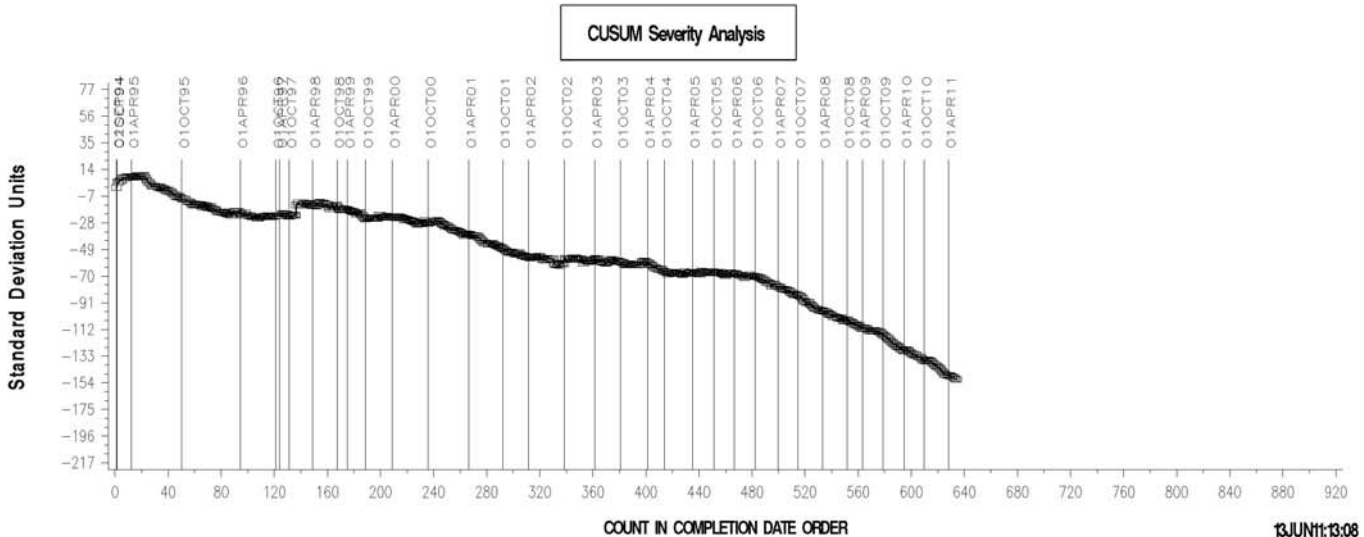
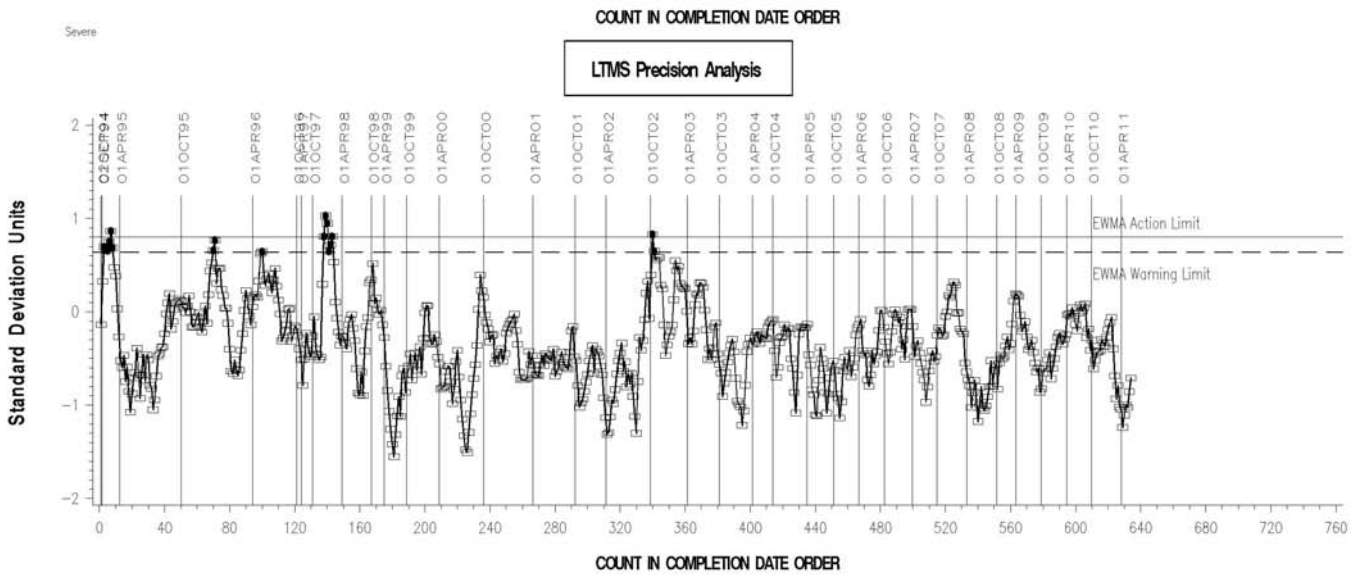
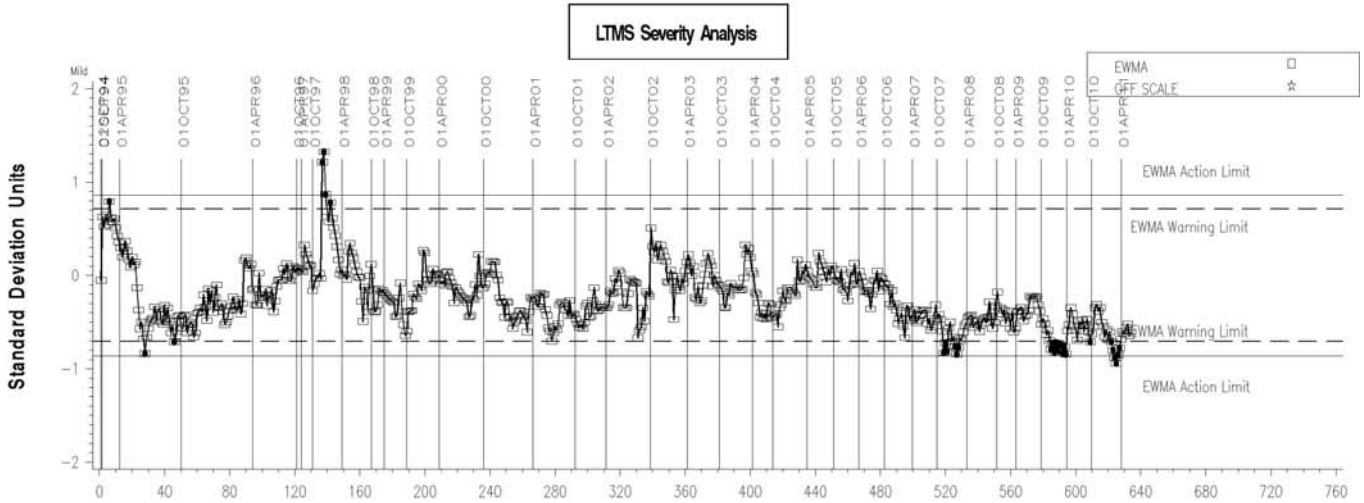


COUNT IN COMPLETION DATE ORDER

L-60-1 INDUSTRY OPERATIONALLY VALID DATA



REF. FINAL AVERAGE SLUDGE

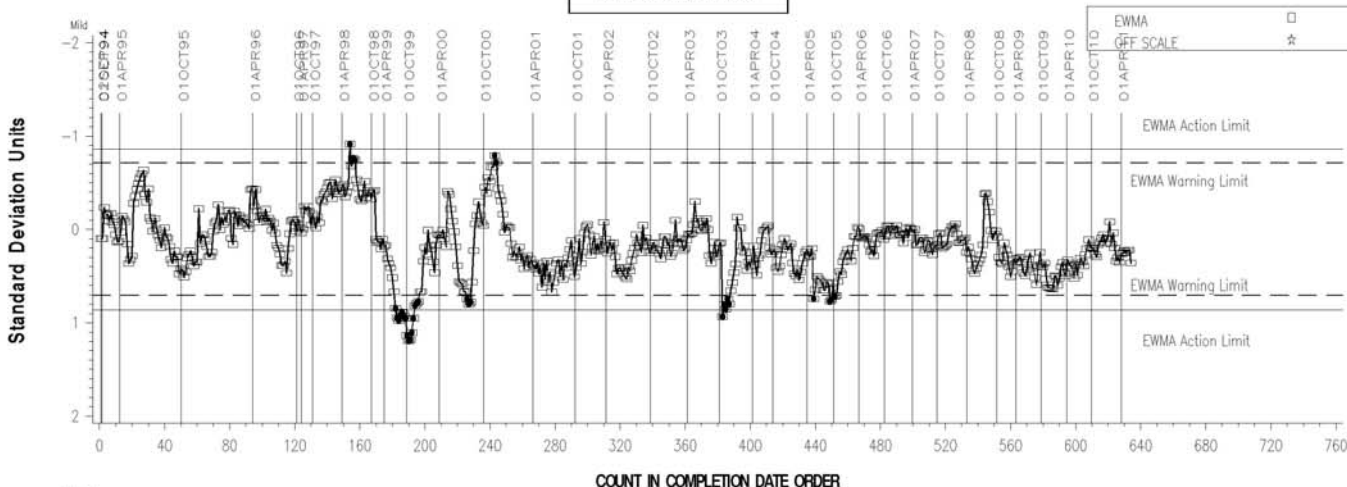


L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

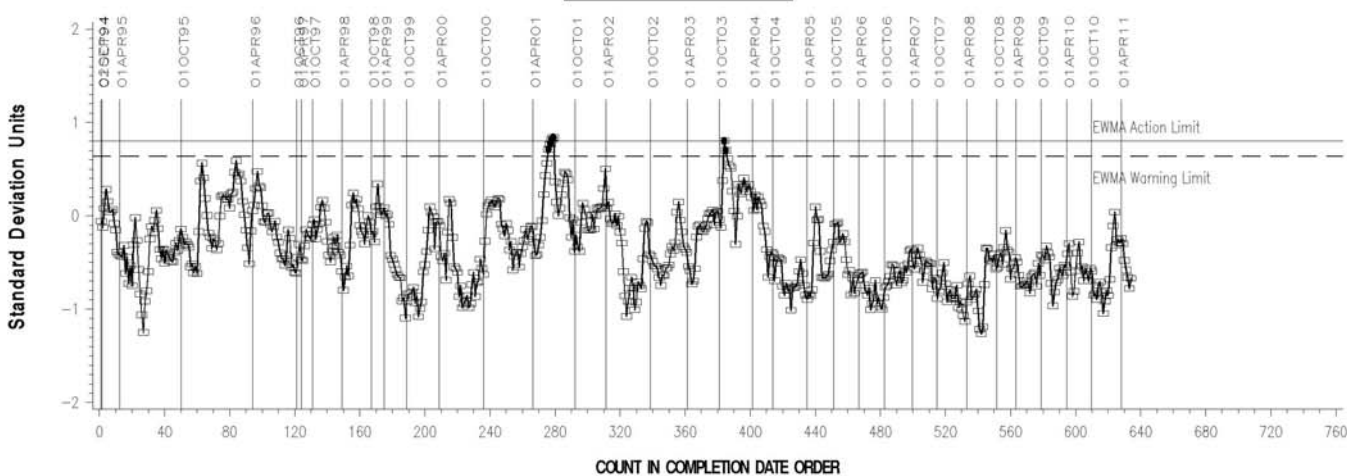


LTMS Severity Analysis



COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

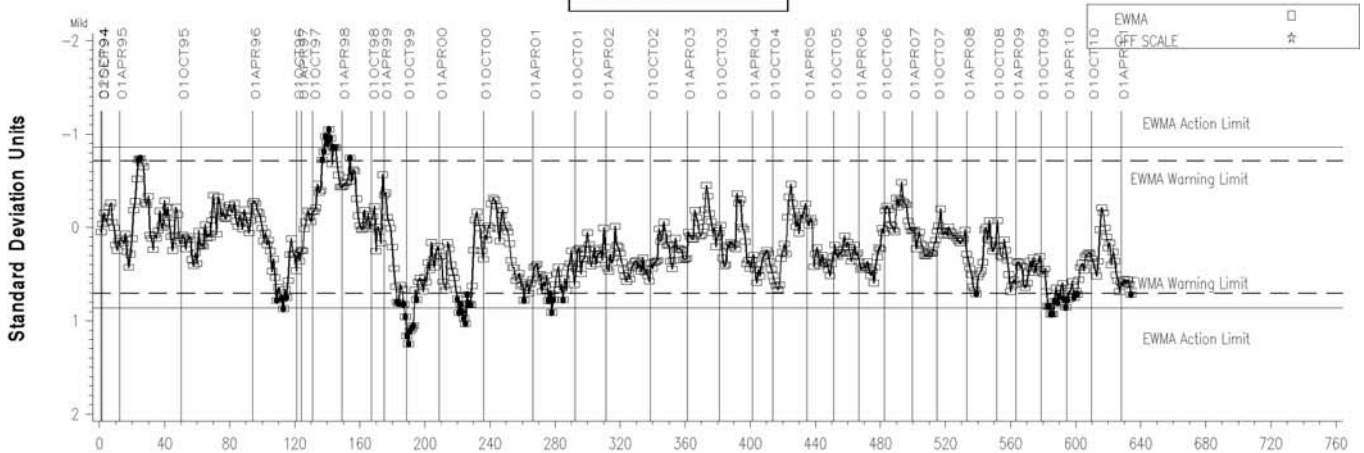


L-60-1 INDUSTRY OPERATIONALLY VALID DATA

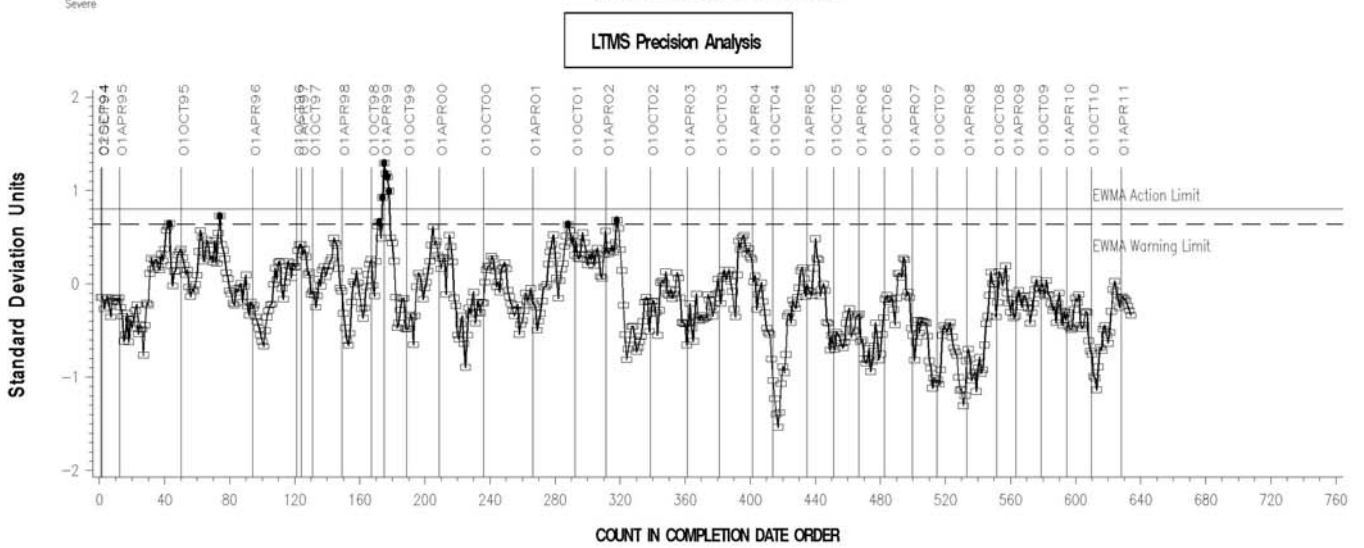
REF. FINAL TOLUENE INSOLUBLES



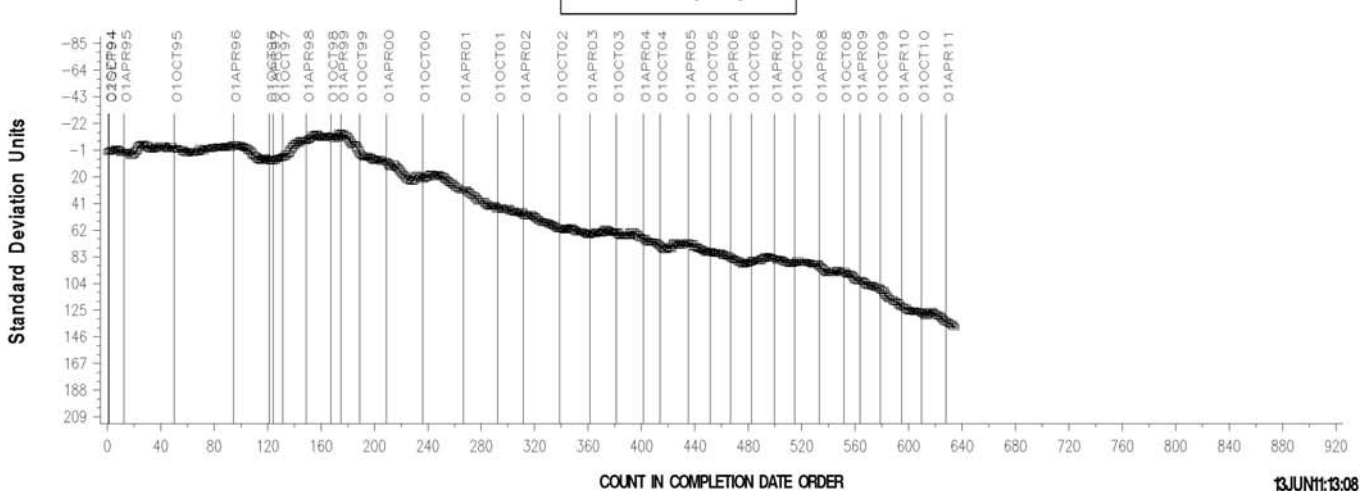
LTMS Severity Analysis



LTMS Precision Analysis



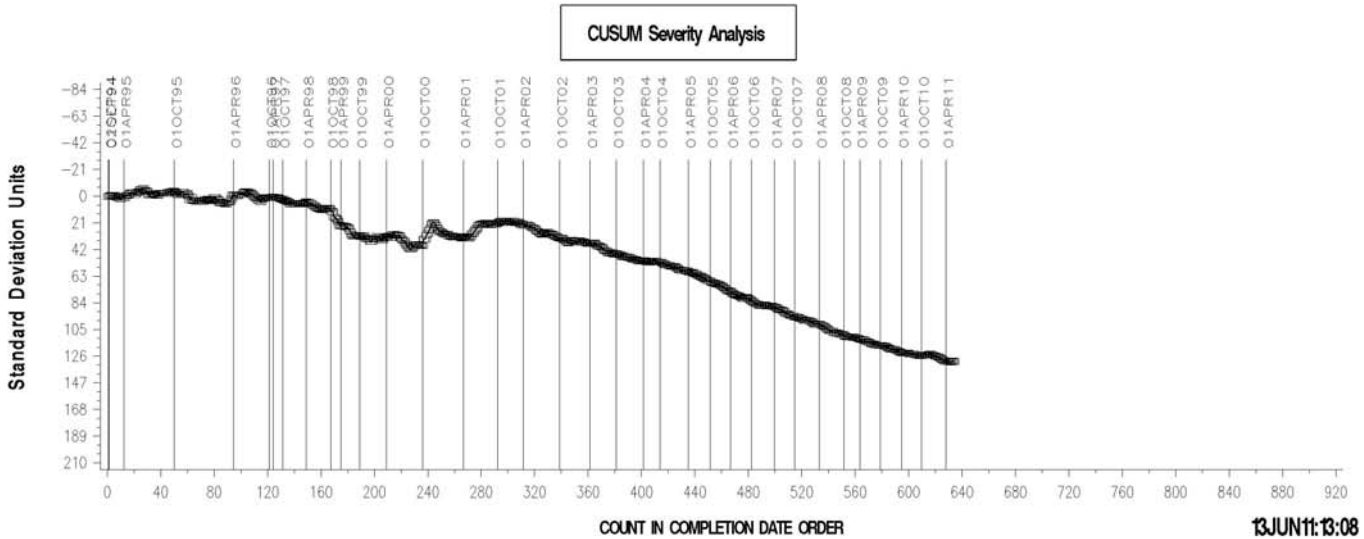
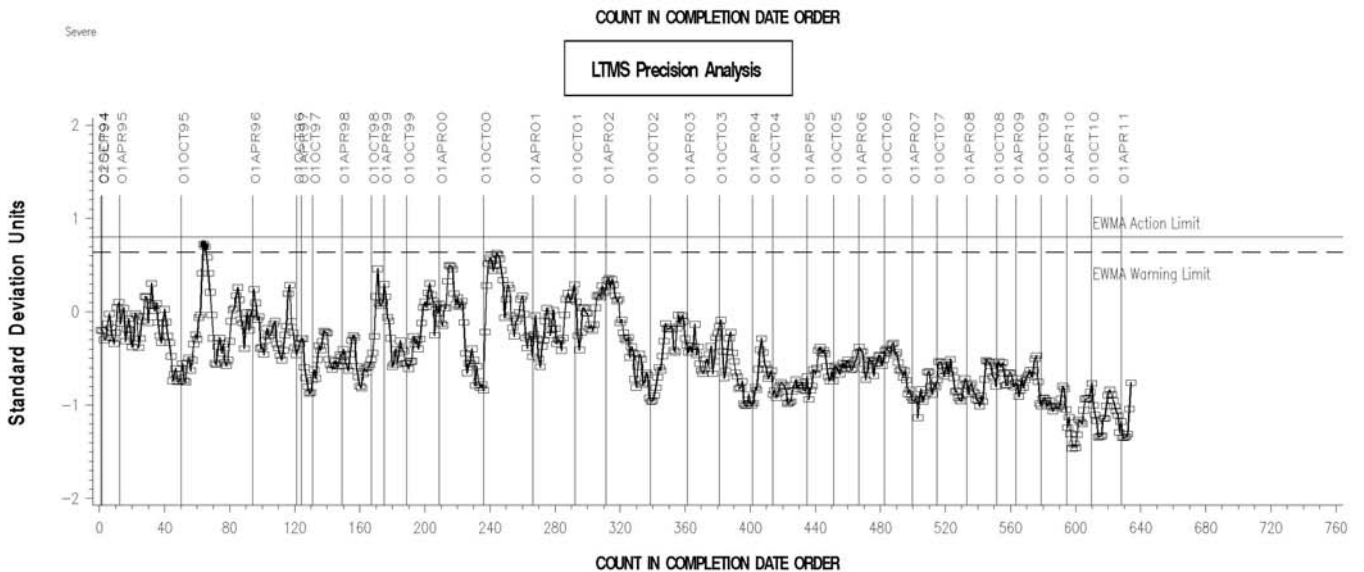
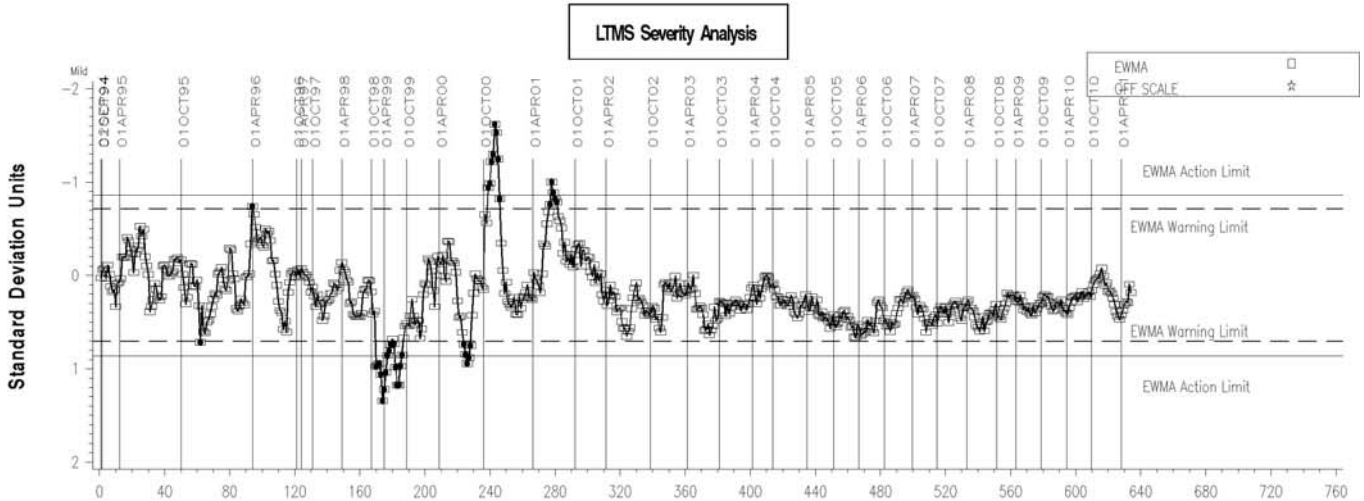
CUSUM Severity Analysis



L-60-1 INDUSTRY OPERATIONALLY VALID DATA



REF. FINAL VISCOSITY INCREASE



TIMELINE OF SIGNIFICANT EVENTS IN THE HISTORY OF THE L-60-1 TEST:

Effective Date	Information Letter	Event
19950901	95-1	Test Stand Motor Speed Change
19950901	95-1	Alternator Part Number Change
19950901	95-1	Air Box Heater Part Number Correction
19951026	95-2	Alternator Load Circuit Schematic Addition
19951103	95-1	Report Forms and Dictionary Version 19950912
19951115	95-1	Transforms./Correction Factors
19960122	96-1	Severity Adjustment Calculation Method
19960430	96-2	TMC One Page Addition
19960430	96-2	TMC New Address
19960531	96-3	Perfect Seal Gasket Maker Use
19960531	96-3	Use of Modified Gear Case Housing
19960531	96-3	Report Forms and Dictionary Version 19960408
19970530	97-1	Revised Test Method Designation, Alternator Load Tolerance Revisions
19970530	97-1	Operational Validity Criteria, Zero Value Test Reporting
19970530	97-1	Report Forms and Data Dictionary, Test Reporting Clarifications(19970411)
19970530	97-1	Report Forms and Data Dictionary, Test Reporting Clarifications(19970411)
19970605	97-2	Air Flow Specification Revision and Air Supply Pressure Specification Removal
19971107	97-3	Revised Report Forms & Data Dictionary Version 19970902
19971107	97-3	Revised Precision & Bias Statement
19980612	98-1	Air Flow Calibration Requirement
19980623	98-2	Cleaning Agent Revision (Toluene)
19981123	98-3	Air Flow Calibration Requirement
19990100		Gear Problem (Manufacturer Changed Steel to Lead-Free Metallurgy)
19990101	98-3	Addition of CRC Gear Rating Workshop Training
19990215	99-1	Revised Gear Case Disassembly Procedure
19990301	99-2	Air Supply Line Note Addition
19990301	99-2	Data Logging Requirements
19990301	99-2	Strip Chart Requirements
19990301	99-2	Repeatability Term Change
19990609	99-3	Definition of Acceptable Gears for Testing Due to Severe Carbon Severity
19991016	99-4	Clarified test method for measuring Pentane and Toluene Insolubles
20000427		New Gear Batch 7-99 Introduced
20000427	00-1	Testing With Used Gears Discontinued
20020501	02-1	CRC Rating Manual 20
20020501	02-1	Report Forms and Data Dictionary
20020710	02-2	Test Gear Preparation
20020710	02-2	Shaft Oil Lip Seal
20020710	02-2	Speedi-Sleeve
20020710	02-2	Joint Radial Seal (V ring)
20020710	02-2	End of Test Oil Drain
20020710	02-2	Instrument Calibration Frequency
20021201	03-1	Revised end of test oil drain procedure
20021201	03-1	Pre-test gear preparation
20030205	03-2	Revised end of test oil drain procedure

Effective Date	Information Letter	Event
20030430	03-2	Heater blower air output
20030430	03-3	Revised heater blower air output verification
20030430	03-3	Digital manometer
20030506	03-3	Non-interpetable tests
20030506	03-3	Revisions to the use of warning statements
20030801	03-4	Revised heater blower air output verification
20030801	03-4	Preso low loss venturi meter and Dwyer digital manometer calibration
20040101	03-5	Cleaning solvent specification
20040401	04-1	Revised Gear Case Clening Procedure
20040401	04-1	Revised Carbon Depth Rating Guidelines
20040401	04-1	Editorial Changes to Precision Statement
20040630	04-2	Editorial Changes to Precision Statement
20040630	04-2	Air Flow Controller Calibration Standard Model Number Addition
20050225	05-1	Revised Solvent Specification
20050225	05-1	Carbon Varnish Rating Procedure
20050225	05-1	Donated Reference Oil Test Programs/Calibration period Length Adjustment
20050421	05-2	Updated Test Precision
20050421	05-2	Rounding Test Results Using ASTM E 29
20051010	05-3	Nitrile and Latex Gloves for Catalyst Handling
20060711	06-1	Revised Copper Catalyst Strip Cleaning Procedure
20060711	06-1	Editorial Revision
20061011	06-2	Phase Out of Manufacturer's Name and Updated Part Number for Lip Seal, Speedi-Sleeve Seal, and Joint Radial Seal.
20071115	07-1	Revised Downtime Wording
20090707	09-1	Revised Figure A2.1
20100510	10-1	Revised instrumentation calibration requirements and clarified validity of tests experiencing excessive oil loss.

TMC LAB VISITS:

Two L60-1 lab visits were conducted during this report period. As directed by the participating labs, the TMC completed its audit of all three calibrated labs for conformance to ASTM standard D893. A number of lab-to-lab differences were discovered and presented to the surveillance panel. None of the differences seem to be the likely cause of anything observable in a test result. The chairman of the committee responsible for D893 participated in the L60-1 meeting where these findings were discussed and has drafted several D893 ballot items to address them.

INFORMATION LETTERS:

No information letters were issued this period.

STATUS OF REFERENCE OIL SUPPLY:

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

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
133	11	1693	105.8
148-1	16	601	37.6
151-2	15	140	8.8
Total	42	2434	152.1

While only 8.8 gallons of 151-2 remain, that does provide 140 tests at the quantity used by L60-1. A reblend of 151-2 (151-3) was acquired by TMC in 1999 but has since been consumed in other test types. That oil was then replaced by 155 which is also nearly depleted. A 155 reblend (155-1) is on hand at TMC and will be available for L60-1 testing should the need eventually arise.

SDP/sdp/astm0411.doc/mem11-031.sdp.doc

cc: Frank Farber

Jeff Clark

<ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/semiannualreports/l601-04-2011.pdf>

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