



Henkel:
Assembly Production Line
Production Transfer from Canton, MA to Salisbury, NC
Final White Paper

September 7, 2010

Approval:

A handwritten signature in blue ink that reads "Scott Hay" followed by the date "9/8/10".

Scott Hay
Senior Quality Manager
Henkel Electronics

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Change Title:

Henkel Canton to Henkel Salisbury, Assembly Manufacturing Site Change

PWP Date: 04/06/2010 **Revision:** 0

FWP Date: 08/26/2010 **Revision:** 0

Henkel Change Classification: Class A Class B Class C

Classification Justification:

Henkel regards a combination of a geographical site change for both the manufacturing site and the testing site as a Class A change requiring internal qualification as well as customer notification. The purpose of this white paper is to prove that there is no change in form, fit or function to the specified product families as a result of the proposed geographic site change.

Product Qualification List:

Family A			Family B
933-48	926-82-1	A-316-48	E-151-8
104MS	930-21	A-329-1	929-95-1
2651-1 BLK	99 BLK	A-359	E-1070
2662/14	A-304	A-401	E-151-3
281 BLK	A-304-10-1	A-401-12D	E-3040
2851FT BLK	A-304-29	A-401-37	UV-300
2851MT BLU	A-316-10	A-410-5P	
906-1	A-316-37	D-275	
906-9	A-316-4	G-508-9	
908-38	A-316-43	LA-4518-91	
925-13			

Family C				
2850FT BLK	2651 BLK	2741 BLK	2850FTFR BLK	E-1300
3050	2651 MIL-I-16923G	2741FR BLK	2850FTFR BLU	E-1400(A)
104(A)	2651-40 BLK	2741LV BLK	2850GT BLK	EC-210(A)
104MS(A) BLK	2651-40 MIL-I-16923G	2754(A)	2850GT BLU	LA-9823-76(A)
1090 BLK	2651-40 UNP	2760(A)	2850KT BLU	LX-3739-64
1090SI BLK	2651-40FR BLK	2762 BLK	2850MT BLK	SF-40(A)
1495K	2651-40TURCK BLU	2762FT BLK	2850MT BLU	T-538(A)
2057 BLK	2651MM BLK	285 BLK	45 BLK	XT-1203-6(A)
2057FR BLK	2651MM UNP	2850FT BLU	45LV BLK	XT-4064-3(A)
2072(A)	2651MMFR BLK	2850FT UNP	45SC BLK	XT-5038-6(A)
2075(A)	2662 BLK	2850FT WHT		

Family D	
LA-4373-92(A)	EC-200(A) CLR
88	L-28 RED
1217	MR-11
1264(A)	T-640(A)
1265(A)	W-19 RED
1266(A)	W-66 BLK
24(A)	W-66 UNP
286(A) WHT	XT-1122(A)
45 CLR	XT-1268(A)
55 WHT	

Family E
C-932-51
C-932-74
PM-500
PM-511

Family F		
23LV	15 CLR	B-67
9	15LV BLK	EC-200(B)
21	15LV CLR	EC-210(B)
28	15SC	LA-9823-76(B)
43	2075(B)	SF-40(B)
1264(B)	24(B)	T-538(B)
1265(B)	24FC	T-640(B)
1266(B)	24LV CLR	V-91(B)
1309HPX	24LV YEL	XT-1268(B)
15 BLK	286(B)	XT-B-118

Family G
E-1400(B)
2072(B)
2754(B)
2760(B)

Family H
17 UNP
14
104B
17M-1
XT-1122(B)

Supplier:

Henkel Corporation

Name of Originator:

Receiving Site Engineer:
 Sending Site Engineer:
 Lab Transfer Lead:
 Transfer Lead:

John Gilbert (Salisbury, NC)
 Zachary Channing (Canton, MA)
 Jimmy Hung (Rancho Dominguez, CA)
 Dan Fagan (Canton, MA)

Reason for Change:

The change will allow Henkel to continue to improve upon an already efficient global supply chain.

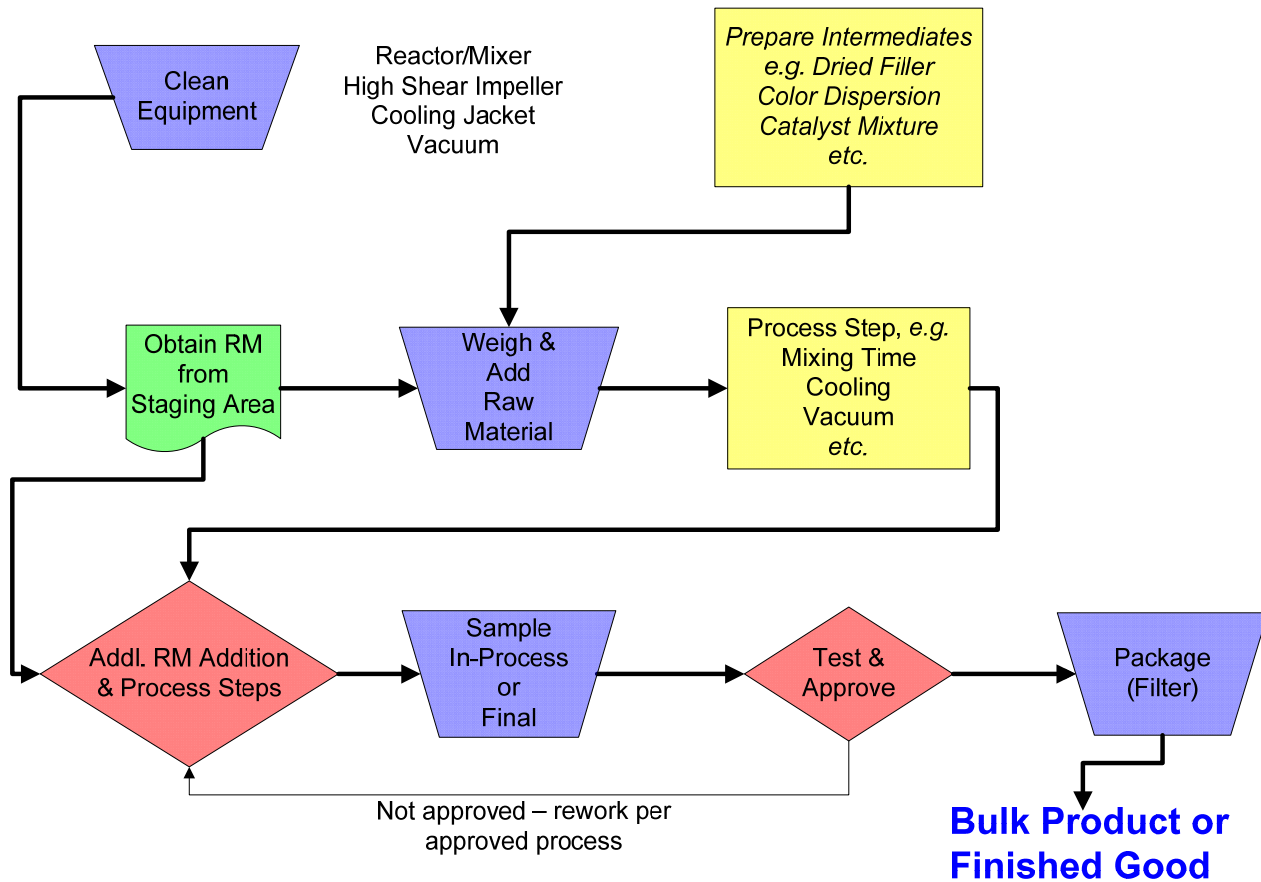
Description of Change:

This FWP demonstrates that Henkel Salisbury is capable of manufacturing products using identical or equivalent processes and equipment. The following table lists the changes associated with this FWP.

Location	Canton, MA	Salisbury, NC
Raw Material	Copy Exact	
Process Flow	Copy Exact/Copy Equivalent	
QC Test Methods	Copy Exact	
Process Factors	Copy Exact/Copy Equivalent	

“Copy Exact”	“Copy Equivalent”
Identical Raw Materials	Proven Equivalent Raw Materials
Identical Manufacturing Processes and Equipment	Identical Manufacturing Processes and Similar Equipment
Validated by Statistical Analysis	Validated by Statistical Analysis

TABLE 1
Generic Process Flow



A rigorous QC test & correlation study has been performed to establish that the test methods are equivalent and there is no testing bias between locations. A detailed report is available on request.

Listed below are the process factors for each process included in this whitepaper:

TABLE 2
PROCESS FACTORS

Product Families: A, B, C, D, E, F, and H

Process factor	Canton	Salisbury	Remark
Raw materials	Canton materials	Supplied by Canton	Copy Exact
Process flow	Canton instructions	Supplied by Canton	Copy Exact
Process equipment	Canton equipment	Supplied by Canton	Copy Exact

Product Family: G

Process factor	Canton	Salisbury	Remark
Raw materials	Canton materials	Supplied by Canton	Copy Exact
Process flow	Canton instructions	Supplied by Canton and Salisbury	Copy Equivalent
Process equipment	Canton equipment	Supplied by Canton and Salisbury	Copy Equivalent

Risk Assessment: Low Medium High

Explanation of Risk Assessment:

Henkel classifies this change as low risk based on the following assessment:

1. Raw Materials:

There is no change in source of raw materials or formulation.

2. Equipment:

Equipment between the two sites is copy exact and/or copy equivalent.

3. Operator Training:

Salisbury has trained & certified employees that will operate this production line. In addition, manufacturing engineering support from Canton was on site in Henkel Salisbury to supervise the qualification and start-up of manufacturing.

4. Quality Management System:

Location	ISO Certification	Date Certified
Henkel Salisbury	ISO-9000:2000	Sept. 04
	ISO-9001:2008	Aug. 09

Detailed Test Plan Description

1. Objective of the experiment:

Verify that Assembly products can be manufactured by Henkel Salisbury to specification and without a change to fit, form, or function of the end product.

2. Choice of experimental material:

For this qualification, the materials listed were divided up into product families based on similarities in chemistry, manufacturing techniques, required testing and/or end-use applications.

A lead product was selected to represent each family in the experiment. Families and lead products are shown below.

GROUP	DESCRIPTION	LEAD PRODUCT
A	Filled, one-component, epoxy based resins	933-48
B	Unfilled, one-component, epoxy based resins and UV cured products	E-151-8
C	Filled, two-component, epoxy based resins	2850FT BLK
D	Unfilled, two-component, epoxy based resins	LA-4373-92A
E	Ink products	C-932-51
F	Unfilled, epoxy hardeners	CAT23LV
G	Filled, epoxy hardeners	E-1400(B)
H	Anhydride based epoxy hardeners	CAT17 UNP

3. Experiment Design:

A minimum of one (1) control batch was made of each selected product using standard POR (Process of Record) raw materials at Henkel Canton, and three (3) experimental batches were manufactured at Henkel Salisbury using the same raw material lots.

4. Sample size for each quality characteristic:

The test method determines the sample size for each quality characteristic.

5. Sample selection:

Sample selection followed Henkel's POR for each of the Quality Characteristics as outlined in the test method for each test.

6. Experiment/material flow:

Control batches were made in Canton, MA. After the experimental batches were made in Henkel Salisbury, samples were sent to Henkel Canton QC Laboratory and tested side-by-side according to the POR control plan.

7. Statistical analysis methods:

The experimental batches were compared to the control batch and two years of historical data. For each standard release specification characteristic, control charts are shown for the experimental and control batches and the historical distribution.

Experimental data sets were compared to the historical population. Prior to conducting hypothesis test for equivalence of means, tests for normality and equivalence of variance were completed. This enabled the selection of the appropriate hypothesis test (2-sample Student t-test or Mann-Whitney). Hypothesis tests were interpreted in the following manner:

1. If the P-value is < 0.05 , reject hypothesis of equivalency.
2. If the P-value is ≥ 0.10 , do not reject hypothesis of equivalency.
3. Otherwise, results are inconclusive.

After the hypothesis tests were run, the quality characteristics were given one of the following grades:

SE = Statistically Equivalent

The t-test passes and the quality characteristic is deemed to be equivalent to the POR

TE = Technically Equivalent

The t-test fails or is inconclusive and the quality characteristic is deemed equivalent to the POR.

NE = Not Equivalent

The t-test passes but the quality characteristic is deemed not to be equivalent to the POR, or the t-test is inconclusive or fails, and the quality characteristic is deemed not to be equivalent to the POR.

Criteria for Success:

The criteria for success for all standard release characteristics are that each must be deemed technically equivalent or statistically equivalent.

In cases where the t-test result fails or is inconclusive, the parameters deemed technically equivalent have supporting evidence provided from POR results.

Timeline

Milestone	Target date
Henkel release approved FWP	September 2010
Sample availability	Per schedule
Last Time Buy	March 1 2011
End of Canton Manufacturing	April 30 2011

Quality Statistics Summary for Group A

933-48

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Specific Gravity, 25°C	1.4 – 1.5	1.466	0.0189	1.480	0.010	0.175	SE
Viscosity at 25°C, HAT #5 at 2.5 RPM	65,000–140,000 cP	116,484	19,045	92,880	15,965	0.051	TE
Hardness, Shore D	85 minimum	88.89	1.886	87.33	2.517	0.219	SE

For details, please refer to Appendix 1

Quality Statistics Summary for Group B

E-151-8

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Green, Uniform, Lump-Free Liquid	Pass	N/A	Pass	N/A	N/A	TE
Gel Time at 121°C	Gelled within 20 minutes	Pass	N/A	Pass	N/A	N/A	TE
Hardness, Shore D (Cure 2 hrs @ 121C)	50 - 65	60.97	4.18	66.33*	2.31	0.024	TE

For details, please refer to Appendix 2 (* justification for TE case for hardness is included in this appendix)

Quality Statistics Summary for Group C

2850FT BLK

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Homogenous, Black Liquid	Pass	N/A	Pass	N/A	N/A	TE
Viscosity at 25°C, HAT #7 at 10 RPM	200,000–300,000 cP	240,532	32,375	230,467	33,475	0.631	SE
Hegman –Fineness of grind	Run & record	1.63	0.77	2.00	0.16	0.28	SE

The table below includes data on some non-standard tests that were completed comparing product manufactured in Salisbury (2850FT BLK and Cat 17 UNP) to that made in Canton:

Test	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Tensile lap shear, Aluminum panels (psi)	1442	52	1388	94	0.46	SE
Volume resistivity (Ω -cm)	6.0E+15	7.9E+14	6.2E+15	5.2E+14	0.68	SE
Thermal conductivity (W/m-K)	0.566	0.026	0.559	0.024	0.74	SE

For details, please refer to Appendix 3

Quality Statistics Summary for Group D

LA-4373-92(A)

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Viscosity at 25°C, RVT #2 at 5 RPM	2,500 – 7,500 cP	5,314	879	6,456	623	0.029	TE
RVT Thixotropic Index	Record Only	1.243	0.087	1.337	0.090	0.096	TE
Hardness, Shore D (Cured 2 hrs at 85C)	70 minimum	75.79	3.65	77.67	4.62	0.471	SE

For details, please refer to Appendix 4

Quality Statistics Summary for Group E

C-932-51

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Black, Uniform, No Lumps	Pass	N/A	Pass	N/A	N/A	TE
Viscosity at 25°C, HAT #5 at 5 RPM	45,000 – 60,000 cP	47,249*	7,259	56,973*	12,063	0.175	SE
Conductivity (5 mins at 250°C)	10,000 – 15,000 Ohms/sq/mil	21,520*	19,562	36,977*	8,253	0.041	TE

For details, please refer to Appendix 5 (*the values above are for first pass results, see this appendix for additional explanation)

Quality Statistics Summary for Group F

CAT23LV

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Transparent – Colorless to Slightly Yellow Liquid	Pass	N/A	Pass	N/A	N/A	TE
RVT Viscosity, 25C	Run & record	33.7	2.6	35.3	3.1	0.317	SE
DSC Peak Exotherm Temperature	Run & record	131.7	2.3	132.2	1.3	0.671	SE

For details, please refer to Appendix 6

Quality Statistics Summary for Group G

E1400(B)

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Black Liquid	Pass	N/A	Pass	N/A	N/A	TE
Rheometer Viscosity at 5sec-1	Record Only	14.53	2.404	15.08	1.348	0.704	SE
Rheometer Viscosity at 50sec-1	Record Only	9.715	1.378	9.803	2.135	0.808	SE
Shear Thinning Index	Record Only	1.521	0.256	1.569	0.224	0.727	SE
Shore D Hardness	Record Only	78.5	4.3	81.7	2.9	0.195	SE

For details, please refer to Appendix 7

Quality Statistics Summary for Group H

CAT17 UNP

Test	Specification	POR μ	POR σ	Qual μ	Qual σ	P-value	Conclusion
Appearance	Off-White/Tan Paste	Pass	N/A	Pass	N/A	N/A	TE
Viscosity at 25°C, RVT #6 at 20 rpm	27,500 maximum	17,287	5,782	14,817	1,895	0.466	SE
Hegmann Fineness	7 mils maximum	2.904	1.507	1.497	1.422	0.129	SE
Gel Time (Oven at 250°F)	Record Only	27.94	8.815	38.67	2.31	0.030	TE

Some non-standard tests were also completed comparing Salisbury and Canton made products (Cat 17UNP was tested in combination with 2850FT BLK). Please see the quality statistics summary for Group C and appendix 3 for these results.

For details, please refer to Appendix 8

Conclusion

All quality characteristics were deemed technically equivalent or statistically equivalent to the POR. The criteria of success have been met for the following product families and products:

Family A			Family B	
933-48	926-82-1	A-316-48	E-151-8	
104MS	930-21	A-329-1	929-95-1	
2651-1 BLK	99 BLK	A-359	E-1070	
2662/14	A-304	A-401	E-151-3	
281 BLK	A-304-10-1	A-401-12D	E-3040	
2851FT BLK	A-304-29	A-401-37	UV-300	
2851MT BLU	A-316-10	A-410-5P		
906-1	A-316-37	D-275		
906-9	A-316-4	G-508-9		
908-38	A-316-43	LA-4518-91		
925-13				

Family C				
2850FT BLK	2651 BLK	2741 BLK	2850FTFR BLK	E-1300
3050	2651 MIL-I-16923G	2741FR BLK	2850FTFR BLU	E-1400(A)
104(A)	2651-40 BLK	2741LV BLK	2850GT BLK	EC-210(A)
104MS(A) BLK	2651-40 MIL-I-16923G	2754(A)	2850GT BLU	LA-9823-76(A)
1090 BLK	2651-40 UNP	2760(A)	2850KT BLU	LX-3739-64
1090SI BLK	2651-40FR BLK	2762 BLK	2850MT BLK	SF-40(A)
1495K	2651-40TURCK BLU	2762FT BLK	2850MT BLU	T-538(A)
2057 BLK	2651MM BLK	285 BLK	45 BLK	XT-1203-6(A)
2057FR BLK	2651MM UNP	2850FT BLU	45LV BLK	XT-4064-3(A)
2072(A)	2651MMFR BLK	2850FT UNP	45SC BLK	XT-5038-6(A)
2075(A)	2662 BLK	2850FT WHT		

Family D	
LA-4373-92(A)	EC-200(A) CLR
88	L-28 RED
1217	MR-11
1264(A)	T-640(A)
1265(A)	W-19 RED
1266(A)	W-66 BLK
24(A)	W-66 UNP
286(A) WHT	XT-1122(A)
45 CLR	XT-1268(A)
55 WHT	

Family E
C-932-51
C-932-74
PM-500
PM-511

Family F		
23LV	15 CLR	B-67
9	15LV BLK	EC-200(B)
21	15LV CLR	EC-210(B)
28	15SC	LA-9823-76(B)
43	2075(B)	SF-40(B)
1264(B)	24(B)	T-538(B)
1265(B)	24FC	T-640(B)
1266(B)	24LV CLR	V-91(B)
1309HPX	24LV YEL	XT-1268(B)
15 BLK	286(B)	XT-B-118

Family G
E-1400(B)
2072(B)
2754(B)
2760(B)

Family H
17 UNP
14
104B
17M-1
XT-1122(B)

Recommendation

It is recommended to accept Henkel Salisbury, NC site as a qualified site for the manufacture of all products within the validated product families. The qualification data presented in this report indicates that there is no change in form, fit or function as a result of the manufacturing site change.

Appendix 1: Raw data for Family A: 933-48

DOM	Lot ID	Viscosity	Specific Gravity	Hardness	Site
1/16/2009	900663	93120	1.460	88	Canton
1/19/2009	900782	84400	1.450	90	Canton
1/22/2009	821817	75520	1.430	88	Canton
2/13/2009	901875	121000	1.480	90	Canton
2/24/2009	902410	101000	1.440	85	Canton
2/27/2009	902783	138200	1.500	92	Canton
3/13/2009	903139	83840	1.480	88	Canton
3/18/2009	903611	96960	1.450	90	Canton
3/20/2009	903798	109000	1.440	85	Canton
4/2/2009	904147	71680	1.460	88	Canton
4/2/2009	904180	71040	1.470	89	Canton
4/2/2009	904553	108000	1.430	90	Canton
4/13/2009	905191	99200	1.440	88	Canton
4/14/2009	905130	66240	1.480	90	Canton
4/15/2009	904882	91840	1.450	88	Canton
4/22/2009	905131	112000	1.470	90	Canton
4/24/2009	905849	94400	1.470	90	Canton
5/8/2009	906569	125000	1.459	90	Canton
5/18/2009	907007	117700	1.470	88	Canton
5/20/2009	907247	98560	1.470	89	Canton
5/26/2009	907130	104000	1.480	90	Canton
5/28/2009	906794	128000	1.470	90	Canton
6/5/2009	907897	87360	1.470	90	Canton
6/17/2009	908516	105000	1.410	85	Canton
6/19/2009	908895	133700	1.490	90	Canton
7/1/2009	909538	110000	1.470	86	Canton
7/8/2009	909670	136200	1.460	89	Canton
7/14/2009	909803	113600	1.440	88	Canton
7/21/2009	910276	100000	1.480	90	Canton
7/23/2009	910170	136300	1.480	92	Canton
7/24/2009	910504	125000	1.480	92	Canton
7/31/2009	910943	135800	1.470	88	Canton
8/7/2009	911231	138200	1.480	90	Canton
8/20/2009	911782	137000	1.440	90	Canton
8/20/2009	911971	105000	1.480	88	Canton
8/28/2009	912849	126400	1.459	86	Canton
8/31/2009	912239	115000	1.420	85	Canton
9/3/2009	912893	136000	1.440	85	Canton
9/8/2009	912523	131500	1.480	88	Canton
9/22/2009	913540	134000	1.480	85	Canton
9/30/2009	913374	88000	1.470	90	Canton
9/30/2009	914052	98240	1.480	90	Canton
10/1/2009	914120	131500	1.471	92	Canton
10/13/2009	914836	136400	1.480	90	Canton
10/19/2009	915326	134000	1.440	88	Canton
10/27/2009	915669	133000	1.480	90	Canton
10/30/2009	916042	136000	1.440	88	Canton
11/17/2009	917039	101100	1.480	89	Canton

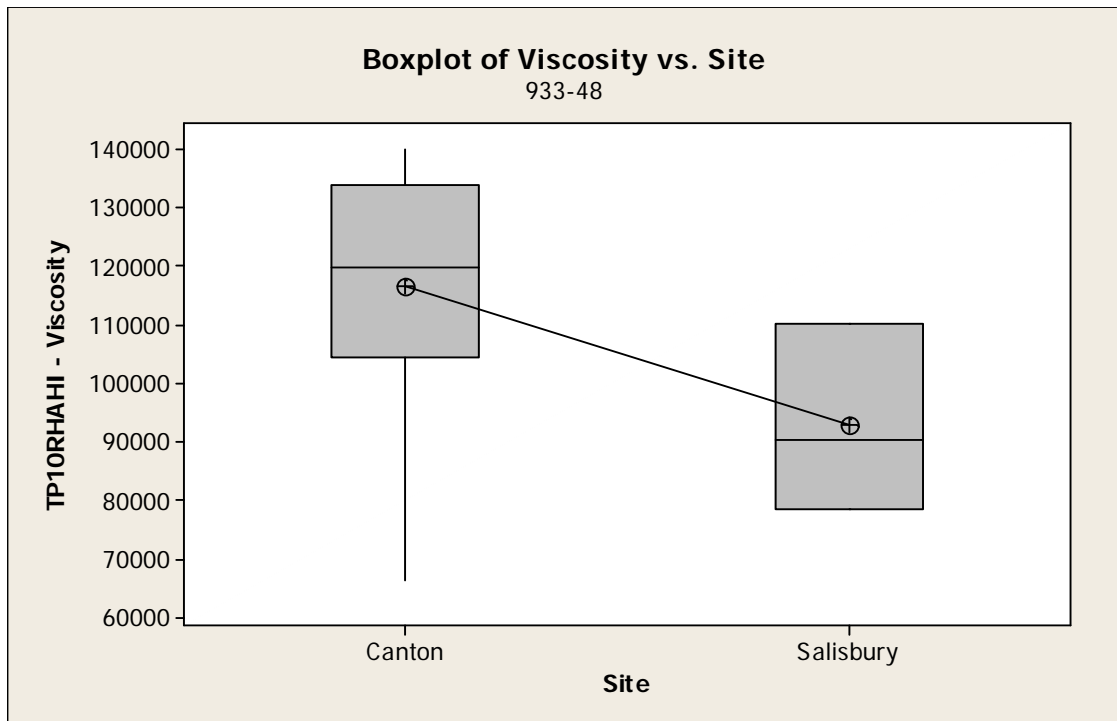
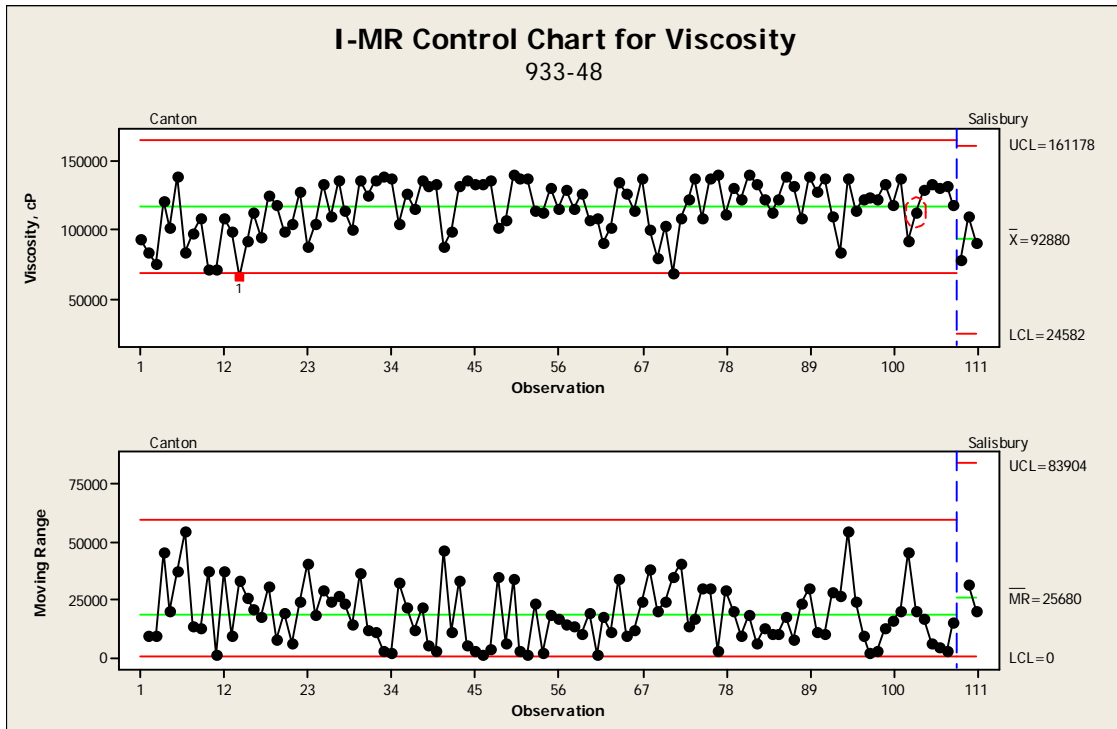
11/17/2009	917045	106500	1.471	90	Canton
11/17/2009	917052	140000	1.480	90	Canton
11/30/2009	917936	138000	1.490	86	Canton
12/1/2009	917532	137600	1.490	89	Canton
12/2/2009	917533	114200	1.447	85	Canton
12/15/2009	918545	112600	1.480	89	Canton
12/17/2009	918806	131000	1.500	90	Canton
12/21/2009	919027	115000	1.450	85	Canton
1/7/2010	919032	129000	1.430	89	Canton
1/8/2010	919031	116000	1.465	85	Canton
1/14/2010	010075	126000	1.470	90	Canton
1/14/2010	010078	107200	1.460	88	Canton
1/19/2010	010894	108000	1.420	87	Canton
1/21/2010	010527	90560	1.456	85	Canton
1/21/2010	010528	101000	1.472	86	Canton
1/21/2010	010982	134800	1.470	90	Canton
1/21/2010	010991	126000	1.450	88	Canton
1/23/2010	011005	114200	1.483	85	Canton
1/25/2010	011183	138000	1.440	88	Canton
2/6/2010	012231	100000	1.440	89	Canton
2/11/2010	011813	80000	1.470	85	Canton
2/13/2010	011529	103600	1.495	90	Canton
2/22/2010	012640	69100	1.420	90	Canton
2/25/2010	013100	109000	1.460	87	Canton
3/4/2010	013170	122000	1.483	90	Canton
3/9/2010	013348	138000	1.440	88	Canton
3/11/2010	013569	108800	1.447	90	Canton
3/19/2010	013941	138000	1.440	87	Canton
3/24/2010	014341	140000	1.460	90	Canton
3/26/2010	014113	111000	1.430	90	Canton
3/29/2010	014483	131000	1.480	90	Canton
4/5/2010	014620	122000	1.470	90	Canton
4/14/2010	014976	139800	1.470	90	Canton
4/14/2010	015006	134000	1.480	90	Canton
4/15/2010	015014	122000	1.480	90	Canton
4/15/2010	015020	112300	1.480	88	Canton
4/15/2010	015043	122000	1.480	90	Canton
4/20/2010	015328	139000	1.460	90	Canton
4/23/2010	015487	132000	1.480	90	Canton
5/3/2010	015738	109000	1.480	90	Canton
5/3/2010	016026	138800	1.471	87	Canton
5/4/2010	016028	128000	1.490	91	Canton
5/5/2010	016144	138000	1.480	90	Canton
5/6/2010	016030	110000	1.460	90	Canton
5/13/2010	016521	83520	1.480	90	Canton
5/20/2010	016707	138000	1.460	92	Canton
5/27/2010	017168	114000	1.480	90	Canton
6/1/2010	017591	122800	1.470	92	Canton
6/4/2010	017683	124000	1.480	90	Canton
6/7/2010	017708	122000	1.480	92	Canton
6/8/2010	017714	134000	1.480	90	Canton
6/16/2010	017892	118400	1.480	89	Canton

6/22/2010	018441	138000	1.480	90	Canton
6/25/2010	018306	92480	1.470	88	Canton
6/29/2010	017082	112000	1.470	90	Canton
6/30/2010	018760	128600	1.480	90	Canton
7/6/2010	018848	134000	1.480	90	Canton
7/16/2010	019337	130000	1.470	90	Canton
7/19/2010	019128	132400	1.470	90	Canton
7/29/2010	020103	118000	1.470	90	Canton
6/9/2010	T-0034	78400	1.490	87	Salisbury
6/9/2010	T-0035	110000	1.470	90	Salisbury
6/9/2010	T-0036	90240	1.480	85	Salisbury

Control batch in **blue** Qualification batches in **green**

Control Chart and Data Analyses Follow (the control batch is circled and the qualification batches are shown after the blue line):

Viscosity: 933-48

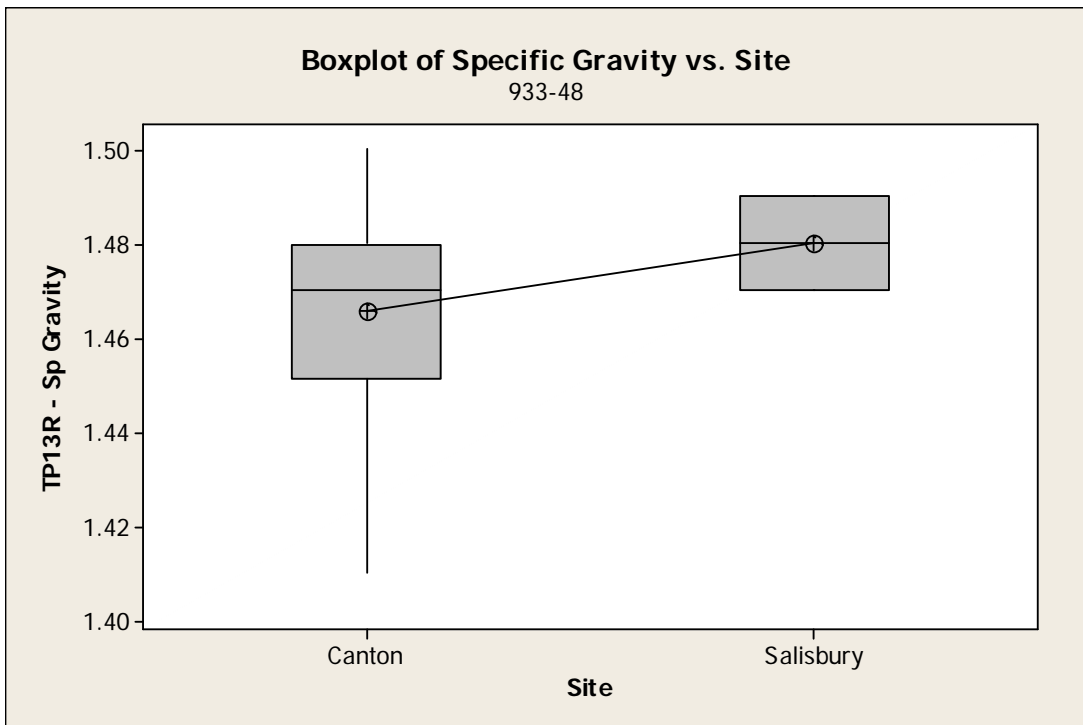
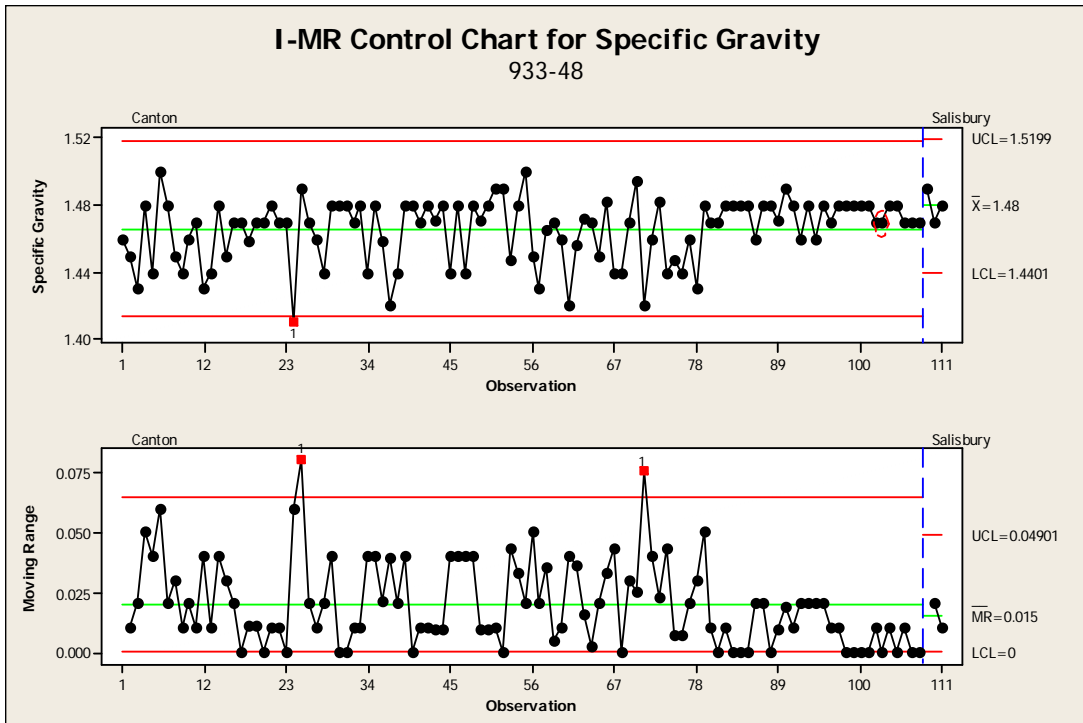


Case:

All three qualification lots are in specification for viscosity and the average viscosity for the qualification batches is reasonable close to the historical average (Z-Score for the qualification batches = -1.24).

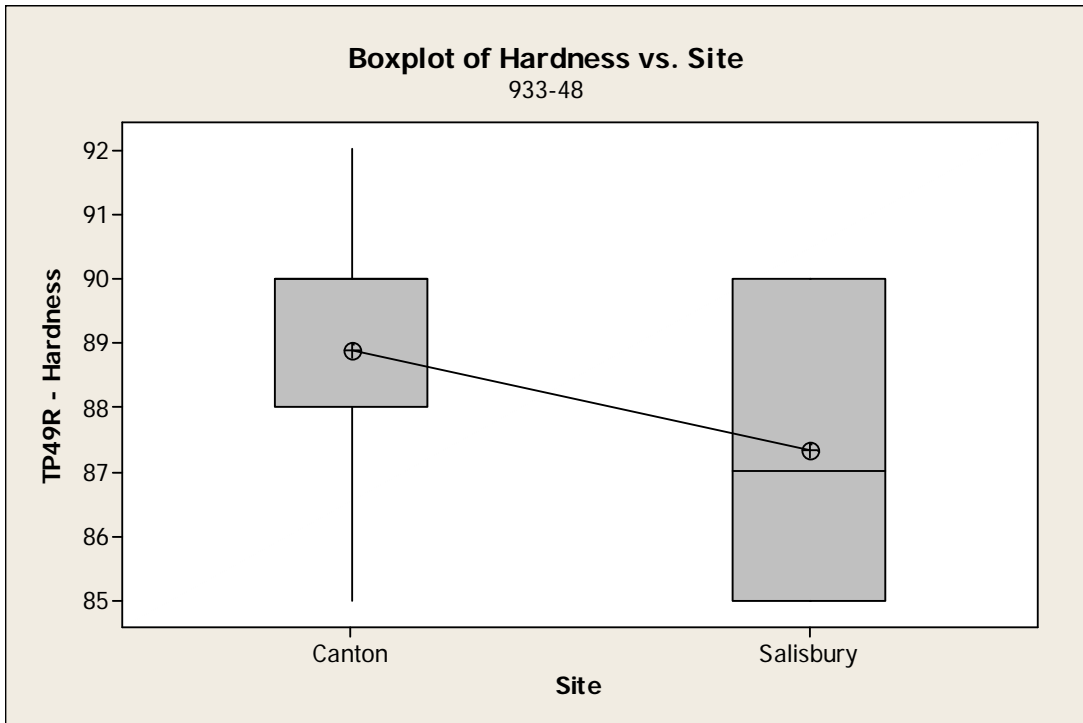
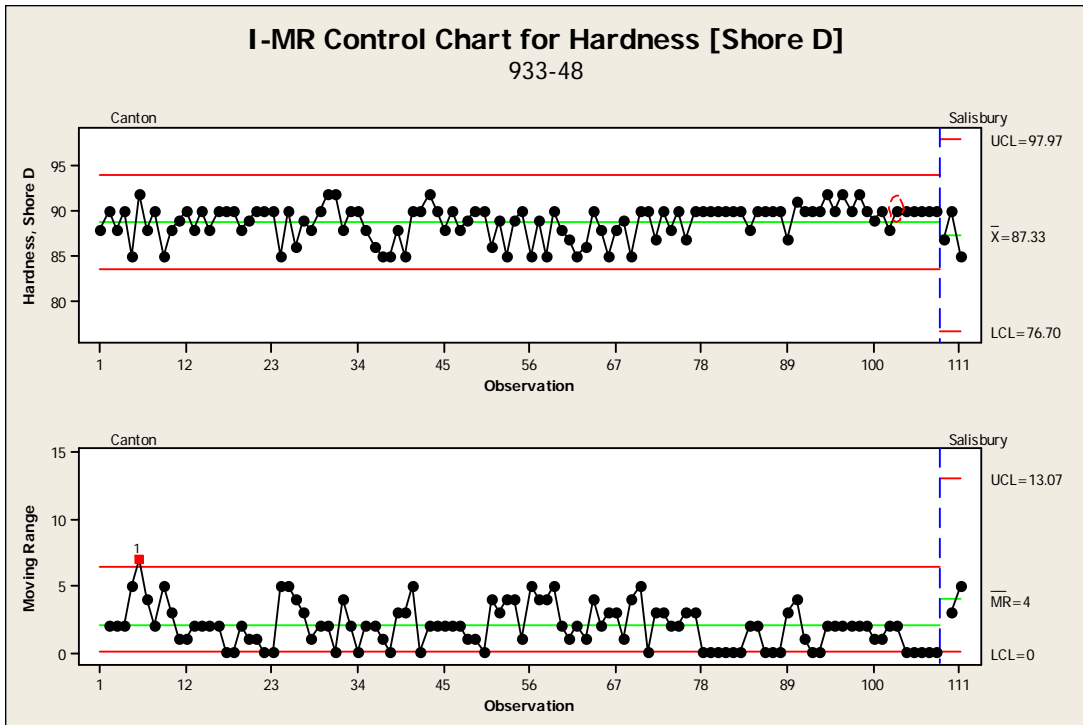
Technically Equivalent

Specific Gravity: 933-48



Statistically Equivalent

Shore D Hardness: 933-48



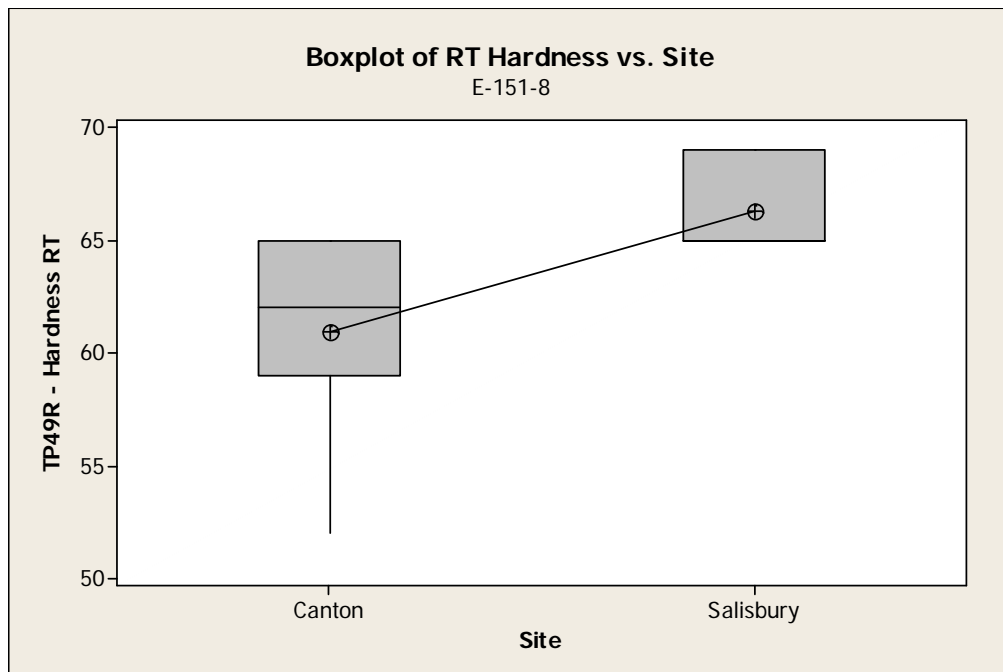
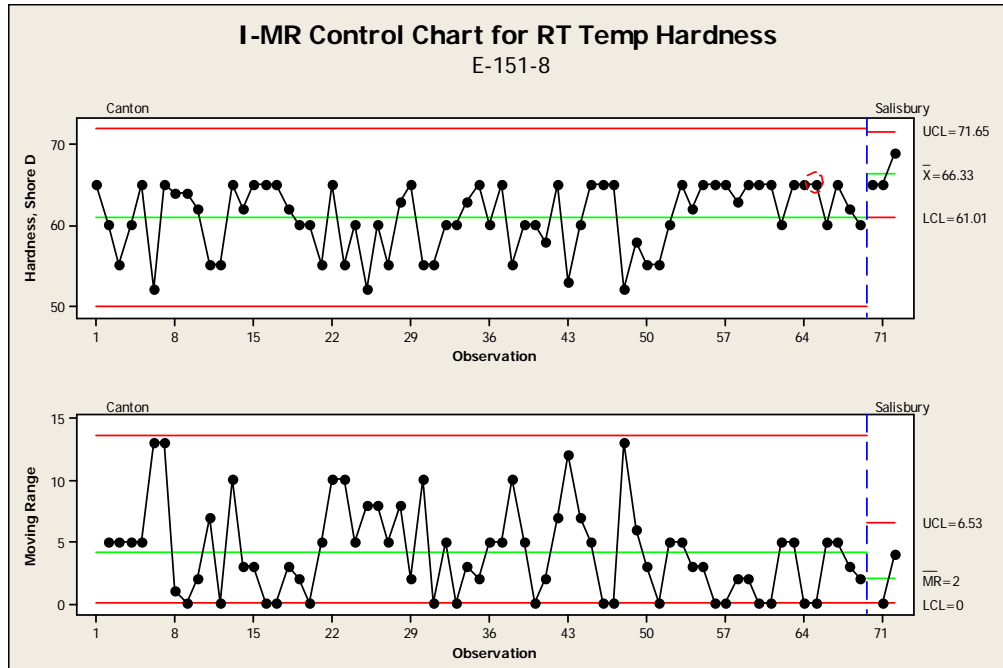
Statistically Equivalent

Appendix 2: Raw data for Family B: E-151-8

DOM	Lot ID	Site	RT Hardness	Appearance	Gel Time, min
4/8/2008	805628	Canton	65	Pass	20
4/10/2008	806094	Canton	60	Pass	20
4/28/2008	806976	Canton	55	Pass	20
4/29/2008	806977	Canton	60	Pass	20
5/13/2008	808239	Canton	65	Pass	20
5/13/2008	808240	Canton	52	Pass	20
5/23/2008	809216	Canton	65	Pass	20
7/14/2008	811894	Canton	64	Pass	20
7/15/2008	811896	Canton	64	Pass	20
7/23/2008	812169	Canton	62	Pass	20
8/8/2008	813580	Canton	55	Pass	20
8/12/2008	813582	Canton	55	Pass	20
8/27/2008	814683	Canton	65	Pass	20
9/3/2008	815095	Canton	62	Pass	20
9/4/2008	815099	Canton	65	Pass	20
10/1/2008	816804	Canton	65	Pass	20
10/2/2008	816806	Canton	65	Pass	20
10/10/2008	817576	Canton	62	Pass	20
10/10/2008	817579	Canton	60	Pass	20
10/28/2008	818273	Canton	60	Pass	20
10/29/2008	818278	Canton	55	Pass	20
12/5/2008	820160	Canton	65	Pass	20
12/30/2008	821823	Canton	55	Pass	20
1/29/2009	901105	Canton	60	Pass	20
2/10/2009	901891	Canton	52	Pass	20
2/12/2009	901896	Canton	60	Pass	20
2/25/2009	900341	Canton	55	Pass	20
3/17/2009	902787	Canton	63	Pass	20
4/2/2009	904045	Canton	65	Pass	20
5/1/2009	905137	Canton	55	Pass	20
6/1/2009	906687	Canton	55	Pass	20
6/16/2009	908520	Canton	60	Pass	20
6/25/2009	908714	Canton	60	Pass	20
7/14/2009	909613	Canton	63	Pass	20
7/28/2009	910290	Canton	65	Pass	20
8/11/2009	911059	Canton	60	Pass	20
8/21/2009	911784	Canton	65	Pass	20
8/31/2009	911689	Canton	55	Pass	20
9/9/2009	913339	Canton	60	Pass	20
9/9/2009	T11904	Canton	60	Pass	20
10/1/2009	914643	Canton	58	Pass	20
10/2/2009	914642	Canton	65	Pass	20
10/12/2009	914732	Canton	53	Pass	20
10/20/2009	915333	Canton	60	Pass	20
10/28/2009	914937	Canton	65	Pass	20
11/9/2009	915217	Canton	65	Pass	20
12/1/2009	916672	Canton	65	Pass	20
12/2/2009	917226	Canton	52	Pass	20
12/9/2009	918234	Canton	58	Pass	20
1/15/2010	010532	Canton	55	Pass	20
1/28/2010	010353	Canton	55	Pass	20
1/29/2010	011077	Canton	60	Pass	20
3/2/2010	012237	Canton	65	Pass	20

3/16/2010	013102	Canton	62	Pass	20
3/23/2010	013660	Canton	65	Pass	20
3/23/2010	014255	Canton	65	Pass	20
3/31/2010	014457	Canton	65	Pass	20
4/20/2010	014622	Canton	63	Pass	20
5/11/2010	015896	Canton	65	Pass	20
5/26/2010	017475	Canton	65	Pass	20
5/27/2010	017194	Canton	65	Pass	20
6/1/2010	016625	Canton	60	Pass	20
6/9/2010	017807	Canton	65	Pass	20
6/10/2010	017806	Canton	65	Pass	20
6/21/2010	017068	Canton	65	Pass	20
6/23/2010	018401	Canton	60	Pass	20
6/24/2010	017689	Canton	65	Pass	20
7/2/2010	017688	Canton	62	Pass	20
7/20/2010	018569	Canton	60	Pass	20
6/7/2010	T-0029	Salisbury	65	Pass	20
6/7/2010	T-0030	Salisbury	65	Pass	20
6/7/2010	T-0031	Salisbury	69	Pass	20

Room Temperature Shore D Hardness: E-151-8



Case:

The average hardness of the qualification lots is reasonably close to the historical average (Z-score for the qualification batches = 1.28). The qualification batch samples were tested along side the Canton control batch in Canton. The qualification batch hardness results are 65, 65 and 69. The control batch result is 65. Based on test error, these results are considered technically equivalent.

Technically Equivalent

Appendix 3: Raw data for Family C: 2850FT BLK

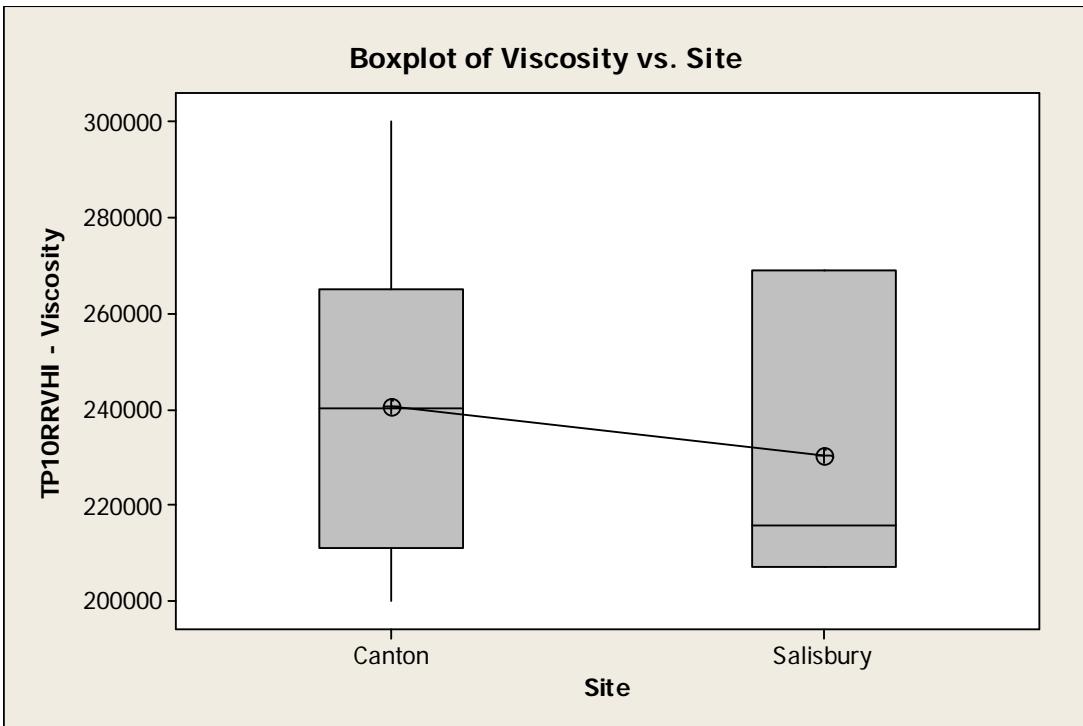
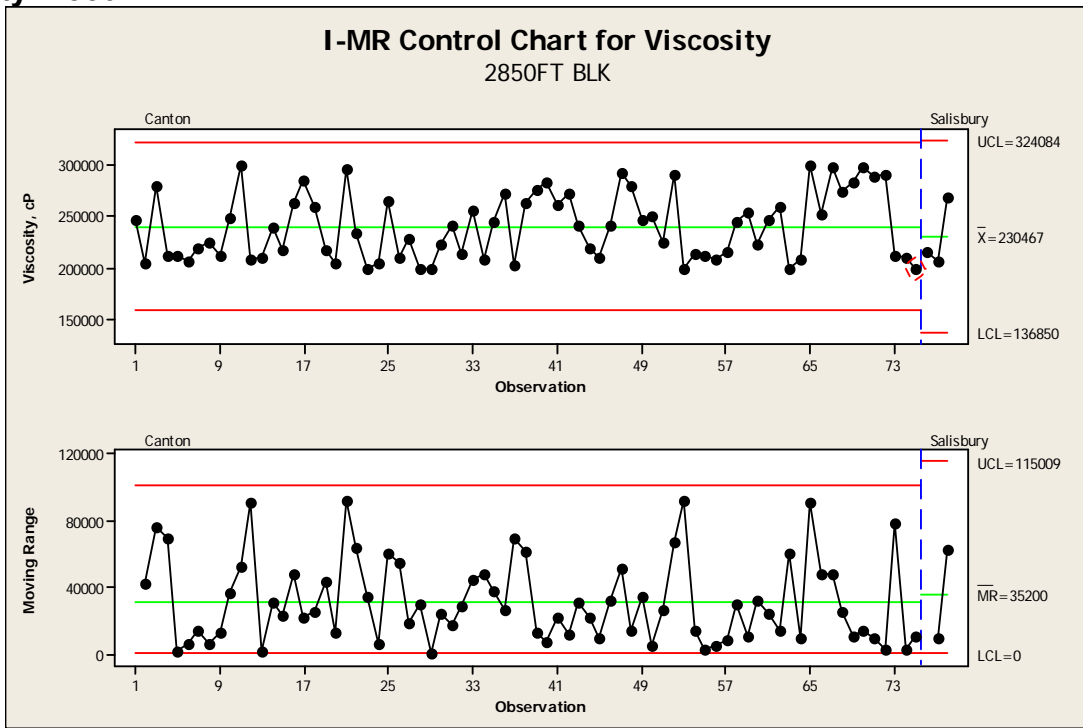
DOM	Batch	Site	Appearance	Viscosity	Hegman
12/14/2009	918366	Canton	Pass	246800	1.5
12/15/2009	918946	Canton	Pass	205000	1.5
12/16/2009	918720	Canton	Pass	280400	1.33
1/4/2010	919304	Canton	Pass	211400	2.5
1/5/2010	010006	Canton	Pass	212400	2.5
1/5/2010	918945	Canton	Pass	207000	2
1/5/2010	919228	Canton	Pass	220000	2
1/7/2010	919122	Canton	Pass	225000	1.5
1/8/2010	919123	Canton	Pass	212300	3
1/9/2010	919230	Canton	Pass	248000	1.25
1/11/2010	010431	Canton	Pass	300000	1.5
1/11/2010	010432	Canton	Pass	209000	1.5
1/11/2010	919121	Canton	Pass	210000	1
1/13/2010	010430	Canton	Pass	240000	2
1/14/2010	010767	Canton	Pass	217000	1.5
1/25/2010	011269	Canton	Pass	264000	2
1/25/2010	011270	Canton	Pass	285000	1.33
1/28/2010	011665	Canton	Pass	260000	1.5
2/3/2010	011971	Canton	Pass	217200	2.5
2/10/2010	011890	Canton	Pass	205000	1.5
2/16/2010	012500	Canton	Pass	297000	1.83
2/17/2010	011519	Canton	Pass	234000	1.75
2/17/2010	011520	Canton	Pass	200000	1.5
2/17/2010	012603	Canton	Pass	205000	1.16
2/18/2010	012499	Canton	Pass	265000	2
2/24/2010	011972	Canton	Pass	211000	1.08
2/26/2010	012972	Canton	Pass	229000	2
3/1/2010	013193	Canton	Pass	200000	0
3/5/2010	012501	Canton	Pass	200000	1.5
3/5/2010	012502	Canton	Pass	224000	1.25
3/8/2010	013590	Canton	Pass	241000	1
3/8/2010	013591	Canton	Pass	213000	1.5
3/9/2010	013194	Canton	Pass	257000	1.33
3/9/2010	013538	Canton	Pass	209000	1.16
3/11/2010	013710	Canton	Pass	246000	2
3/19/2010	013929	Canton	Pass	272000	1.33
3/19/2010	014141	Canton	Pass	203000	2.5
3/22/2010	013195	Canton	Pass	264400	1.5
3/23/2010	014199	Canton	Pass	276800	0.5
3/25/2010	014302	Canton	Pass	283000	0
4/1/2010	014669	Canton	Pass	261200	0
4/2/2010	014671	Canton	Pass	272000	2
4/6/2010	014760	Canton	Pass	241000	2.5
4/7/2010	014761	Canton	Pass	220000	0
4/8/2010	014852	Canton	Pass	211000	2
4/12/2010	015122	Canton	Pass	242400	2
4/12/2010	015123	Canton	Pass	293800	2
4/12/2010	015127	Canton	Pass	280000	2
4/16/2010	015169	Canton	Pass	246400	2.5
4/22/2010	015674	Canton	Pass	251000	2.5
4/23/2010	015766	Canton	Pass	225000	0.5
4/26/2010	015784	Canton	Pass	292000	2.5
4/30/2010	015914	Canton	Pass	200000	0.5
5/3/2010	015201	Canton	Pass	214000	2.5
5/3/2010	015202	Canton	Pass	212000	2
5/3/2010	016095	Canton	Pass	208000	2.5
5/4/2010	015996	Canton	Pass	216000	1.5
5/7/2010	016489	Canton	Pass	245000	0.5
5/10/2010	016490	Canton	Pass	255000	2
5/13/2010	016761	Canton	Pass	223000	1.5

5/14/2010	016762	Canton	Pass	247000	1
5/26/2010	017011	Canton	Pass	260000	1.08
5/26/2010	017410	Canton	Pass	200000	1.5
6/7/2010	017702	Canton	Pass	209000	3.5
6/7/2010	017771	Canton	Pass	300000	1.5
6/8/2010	017836	Canton	Pass	252000	1.08
6/10/2010	017912	Canton	Pass	299000	3.166
6/11/2010	017012	Canton	Pass	274000	3
6/11/2010	017539	Canton	Pass	284000	2.5
6/11/2010	017540	Canton	Pass	298000	0.83
6/11/2010	018095	Canton	Pass	289000	1
6/18/2010	018410	Canton	Pass	291000	1
6/22/2010	018437	Canton	Pass	212400	2
6/23/2010	018575	Canton	Pass	210000	0.5
6/28/2010	017071	Canton	Pass	200000	3
6/10/2010	T-0022	Salisbury	Pass	215600	2.16
6/17/2010	T-0023A	Salisbury	Pass	207000	2
6/10/2010	T-0024	Salisbury	Pass	268800	1.83

2850FT BLK with CAT 17 UNP: non-standard test data

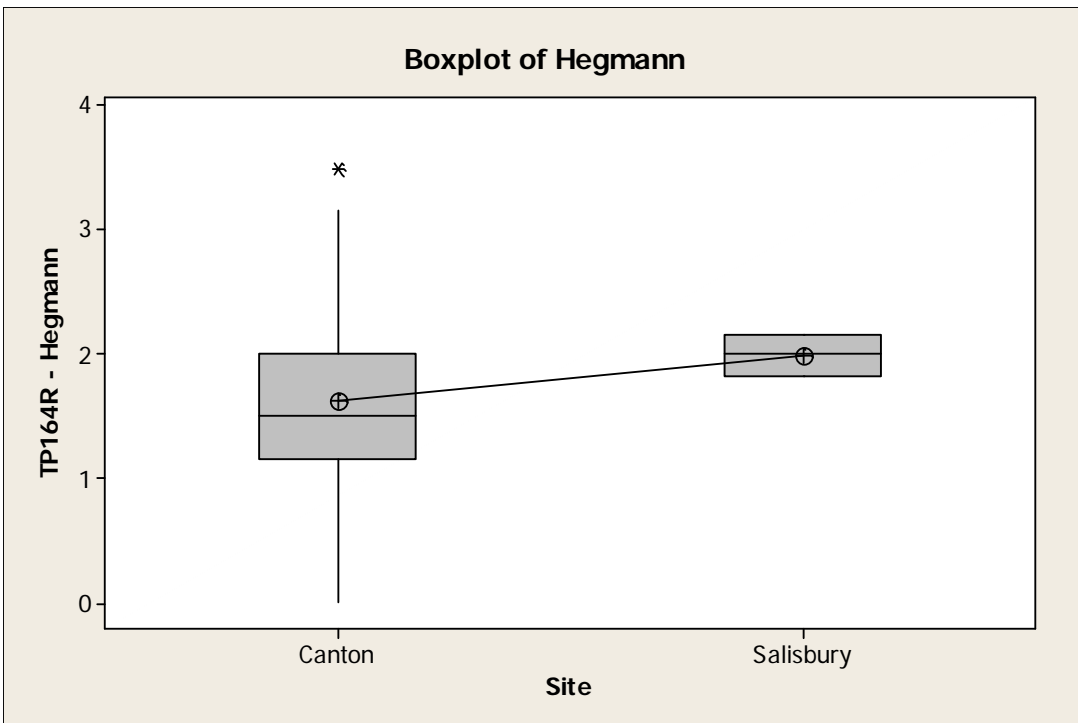
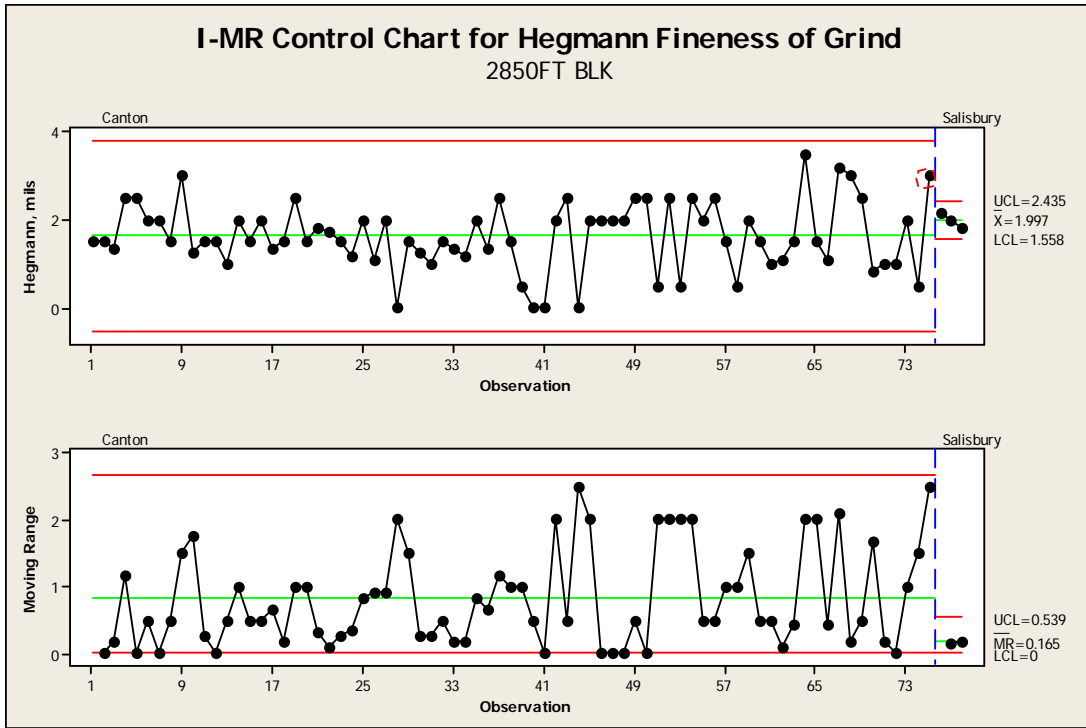
Location	Lot 2850FT	Lot Cat 17	Lap Shear	Vol. Resist.	Thermal K
Canton	017071	017076	1437	7.11E+15	0.5578
Canton	018095	017571	1509	5.92E+15	0.5940
Canton	017539	016295	1382	5.44E+15	0.5794
Canton	018437	013713	1441	5.43E+15	0.5341
Salisbury	T-0022	T-0037	1485	5.88E+15	0.5665
Salisbury	T-0023	T-0038	1381	6.80E+15	0.5322
Salisbury	T-0024	T-0039	1298	5.90E+15	0.5792

Viscosity: 2850FT BLK



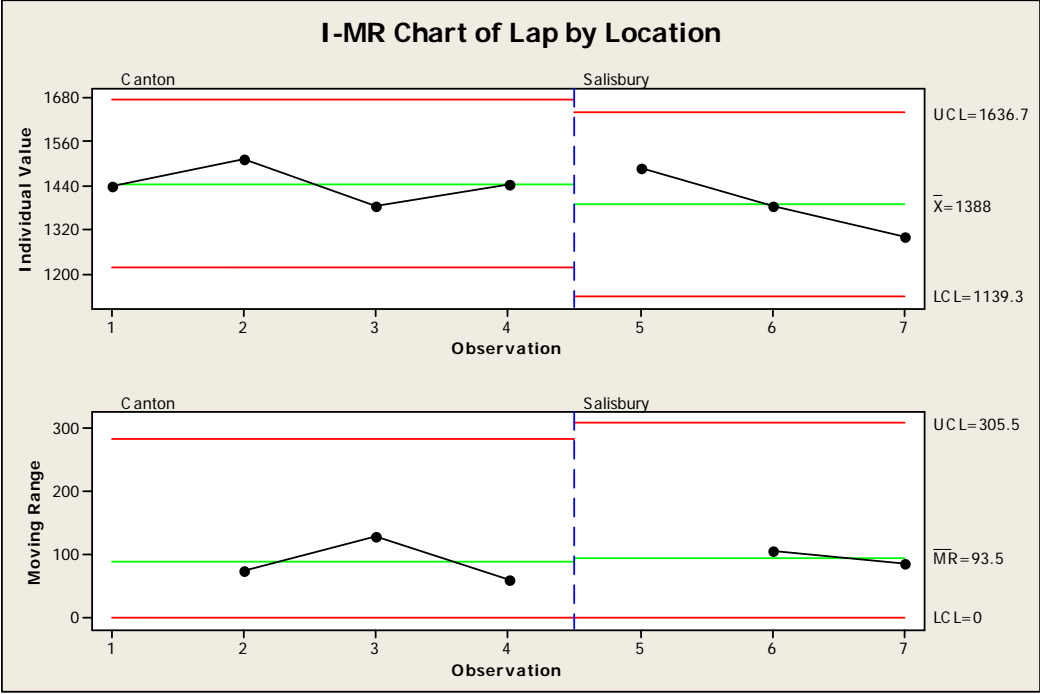
Statistically Equivalent

Hegmann – Fineness of Grind: 2850FT BLK



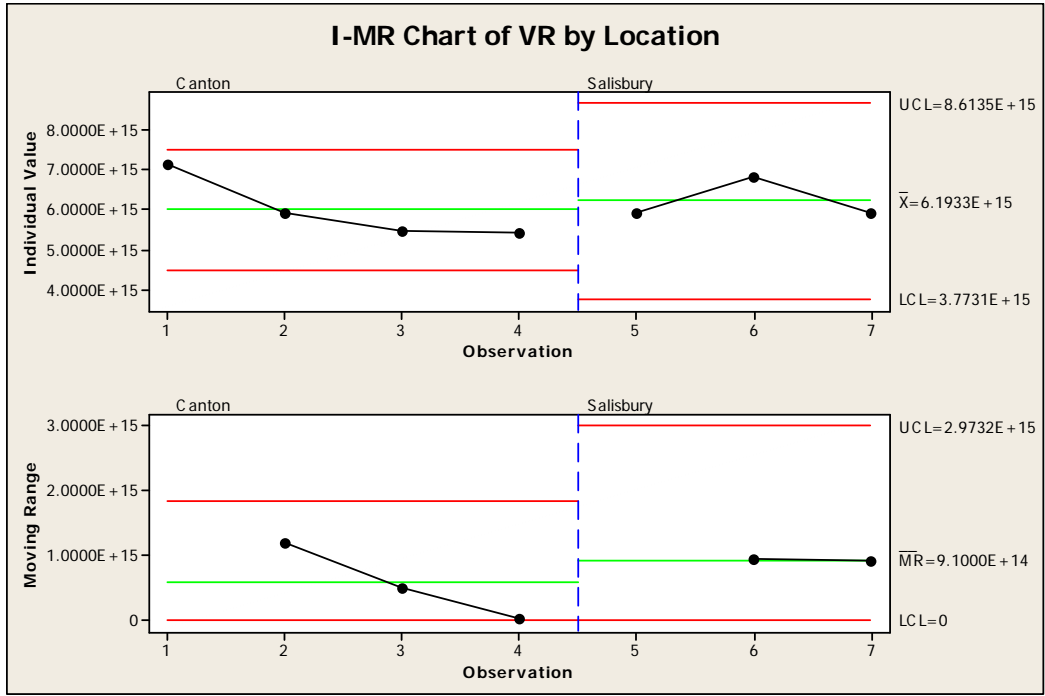
Statistically Equivalent

Tensile Lap Shear (Aluminum) psi: 2850FT BLK & CAT 17 UNP



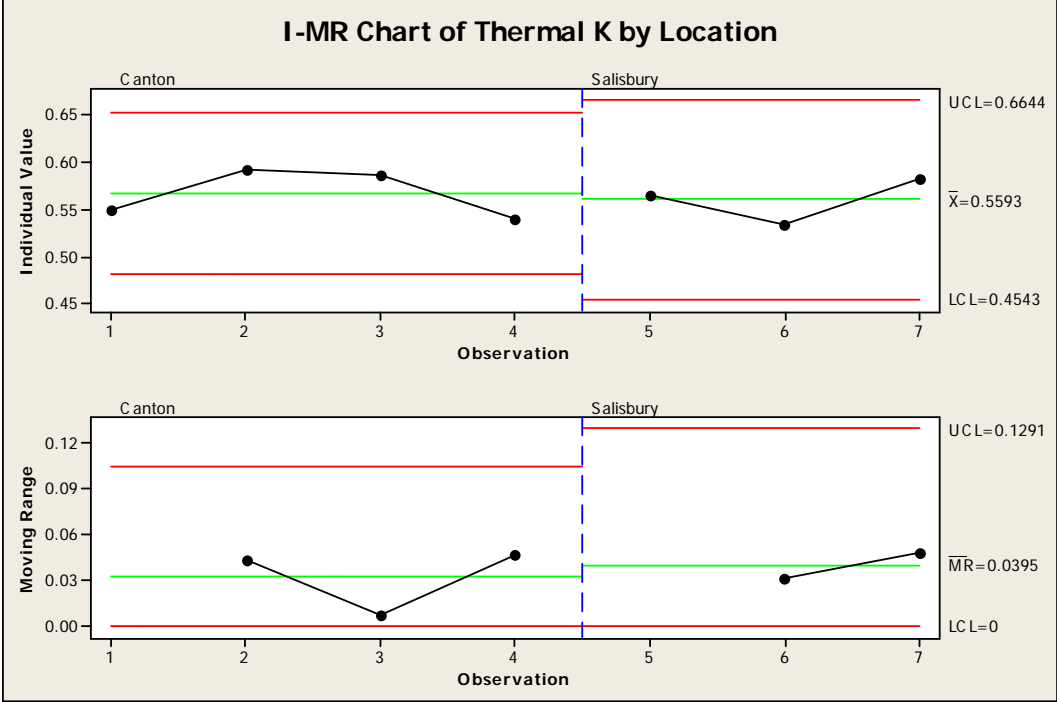
Statistically Equivalent

Volume Resistivity – Ω -cm: 2850FT BLK & CAT 17 UNP



Statistically Equivalent

Thermal Conductivity: 2850FT BLK & CAT 17 UNP



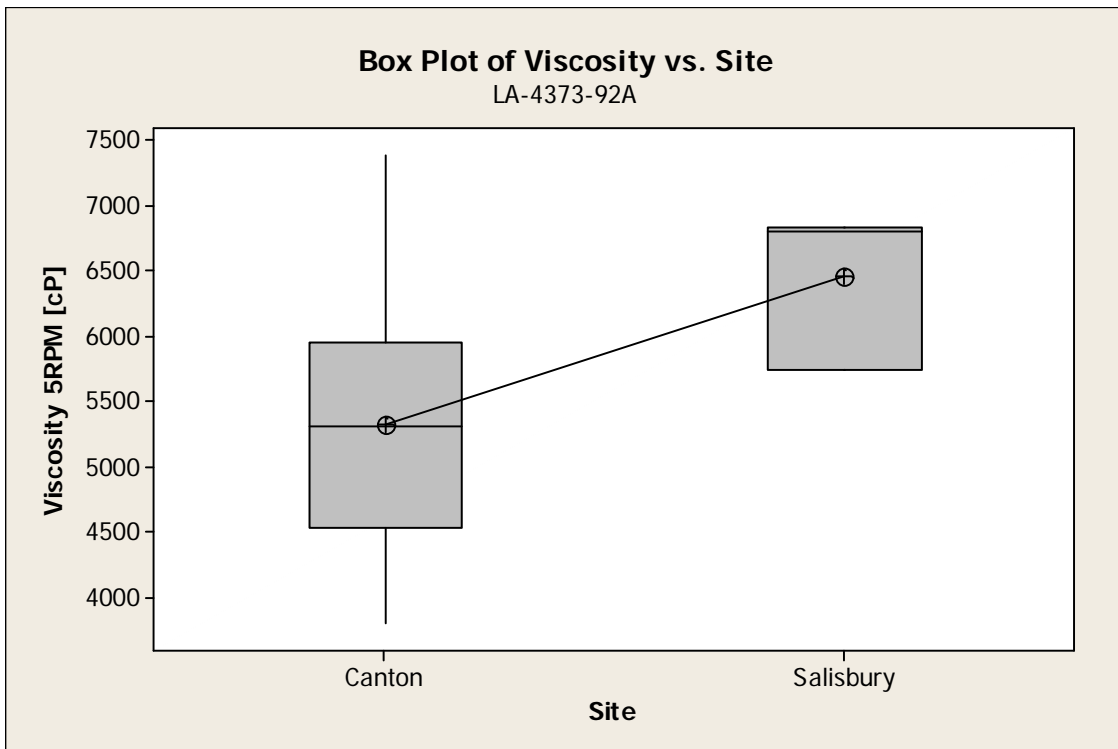
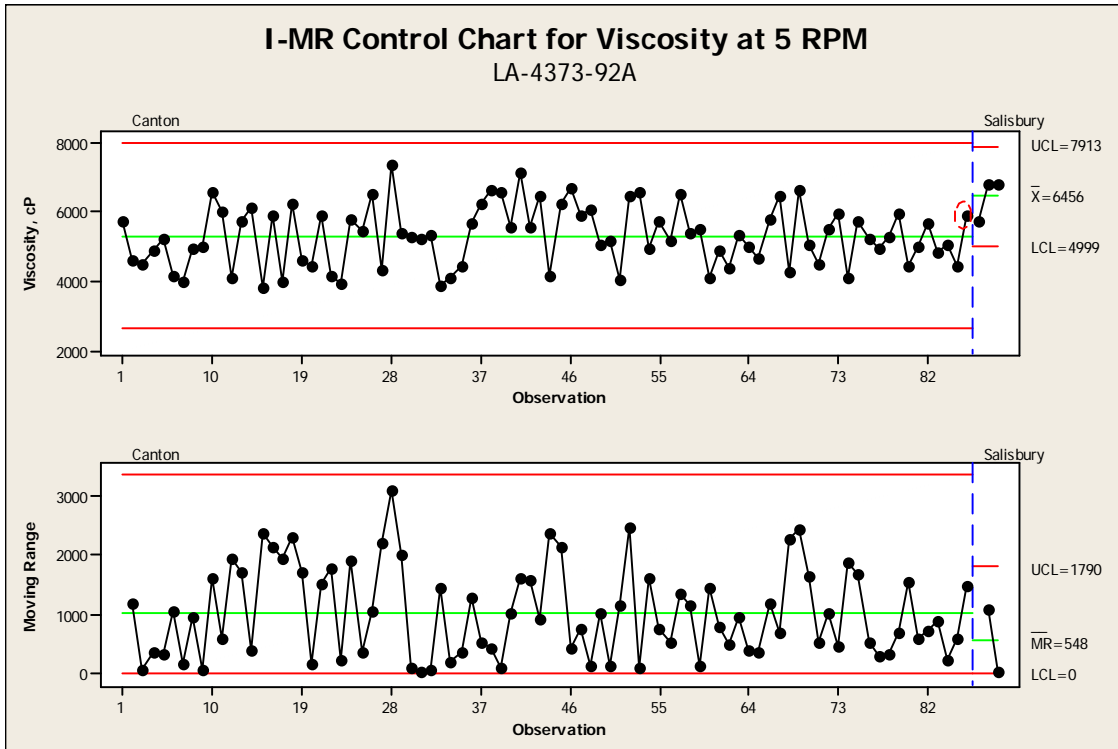
Statistically Equivalent

Appendix 4: Raw data for Family D: LA-4373-92(A)

DOM	Lot ID	Viscosity 5 RPM	Thixo Index	Hardness	Site
5/2/2008	807699	5770	1.100	75	Canton
5/5/2008	807700	4592	1.200	73	Canton
5/12/2008	807841	4520	1.390	75	Canton
5/12/2008	807842	4888	1.200	80	Canton
5/15/2008	807843	5208	1.300	80	Canton
5/27/2008	808975	4168	1.280	75	Canton
6/5/2008	809761	3992	1.320	72	Canton
6/10/2008	809762	4944	1.300	78	Canton
6/10/2008	809763	5008	1.300	72	Canton
6/19/2008	810307	6616	1.260	74	Canton
6/19/2008	810308	6016	1.370	72	Canton
7/1/2008	810667	4080	1.350	75	Canton
7/15/2008	811667	5760	1.208	75	Canton
7/15/2008	811668	6144	1.170	70	Canton
7/23/2008	812618	3800	1.300	75	Canton
7/24/2008	812621	5920	1.160	75	Canton
8/5/2008	813903	4000	1.300	75	Canton
8/7/2008	813588	6280	1.100	70	Canton
8/7/2008	813590	4592	1.210	72	Canton
9/3/2008	815101	4424	1.300	75	Canton
9/3/2008	815103	5920	1.120	75	Canton
11/4/2008	819369	4144	1.190	75	Canton
11/5/2008	819371	3920	1.200	90	Canton
11/25/2008	820724	5824	1.110	70	Canton
11/26/2008	820726	5460	1.100	75	Canton
12/1/2008	819640	6512	1.130	75	Canton
12/1/2008	820513	4320	1.100	80	Canton
1/22/2009	901012	7376	1.120	80	Canton
1/26/2009	901123	5380	1.230	75	Canton
1/27/2009	901014	5296	1.190	82	Canton
1/29/2009	901125	5256	1.160	75	Canton
2/5/2009	901523	5320	1.200	75	Canton
2/17/2009	902412	3880	1.160	80	Canton
2/19/2009	902026	4080	1.430	78	Canton
2/20/2009	902455	4448	1.190	76	Canton
3/5/2009	902870	5712	1.120	70	Canton
6/2/2009	907563	6240	1.370	75	Canton
6/12/2009	908261	6670	1.310	76	Canton
6/19/2009	908582	6584	1.410	75	Canton
6/22/2009	908814	5560	1.280	80	Canton
7/7/2009	909295	7160	1.430	75	Canton
7/16/2009	910082	5592	1.220	75	Canton
7/27/2009	910928	6500	1.500	75	Canton
7/30/2009	910951	4136	1.130	75	Canton
9/22/2009	913864	6256	1.200	70	Canton
9/23/2009	913933	6688	1.220	75	Canton
9/29/2009	913934	5936	1.230	80	Canton
10/14/2009	915191	6072	1.230	70	Canton
10/29/2009	915757	5048	1.260	70	Canton
11/3/2009	916142	5176	1.270	70	Canton
11/10/2009	916485	4024	1.290	80	Canton
12/1/2009	917872	6480	1.210	80	Canton
12/9/2009	918337	6584	1.430	75	Canton
12/10/2009	918335	4976	1.250	78	Canton
12/10/2009	918336	5728	1.240	78	Canton

1/14/2010	010535	5200	1.270	72	Canton
1/14/2010	010536	6544	1.200	75	Canton
1/21/2010	010921	5400	1.210	73	Canton
1/21/2010	010922	5536	1.230	78	Canton
2/3/2010	011821	4088	1.340	76	Canton
2/3/2010	011822	4872	1.190	78	Canton
2/11/2010	011823	4400	1.180	78	Canton
2/11/2010	011824	5360	1.150	75	Canton
2/19/2010	012577	4984	1.210	80	Canton
2/19/2010	012578	4640	1.220	80	Canton
3/1/2010	013177	5808	1.210	70	Canton
3/29/2010	014458	6496	1.200	75	Canton
4/5/2010	014459	4248	1.280	75	Canton
4/16/2010	015335	6672	1.340	85	Canton
4/21/2010	015336	5048	1.290	77	Canton
5/3/2010	016196	4520	1.220	72	Canton
5/3/2010	016197	5520	1.140	72	Canton
5/7/2010	016339	5960	1.170	82	Canton
5/11/2010	016626	4096	1.180	75	Canton
5/12/2010	016627	5768	1.262	75	Canton
5/21/2010	016858	5256	1.200	72	Canton
6/10/2010	017894	4968	1.300	75	Canton
6/18/2010	018245	5300	1.200	80	Canton
7/12/2010	019079	5967	1.200	75	Canton
7/13/2010	019080	4424	1.340	78	Canton
7/13/2010	019081	5000	1.260	74	Canton
7/23/2010	020024	5700	1.200	75	Canton
7/28/2010	020105	4832	1.350	80	Canton
7/28/2010	020106	5056	1.350	80	Canton
8/11/2010	020763	4456	1.330	75	Canton
8/17/2010	017072	5912	1.320	80	Canton
6/11/2010	T-0019	5736	1.440	75	Salisbury
6/11/2010	T-0020	6800	1.280	83	Salisbury
6/11/2010	T-0021	6832	1.290	75	Salisbury

Viscosity at 5 RPM: LA-4373-92(A)

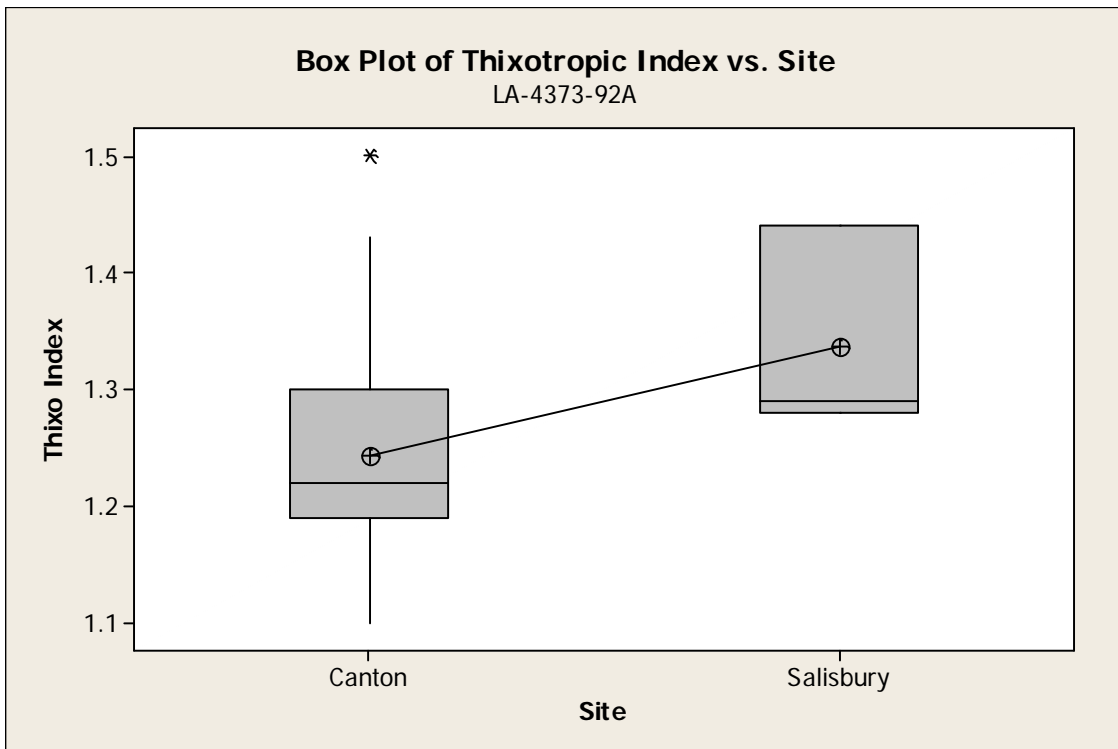
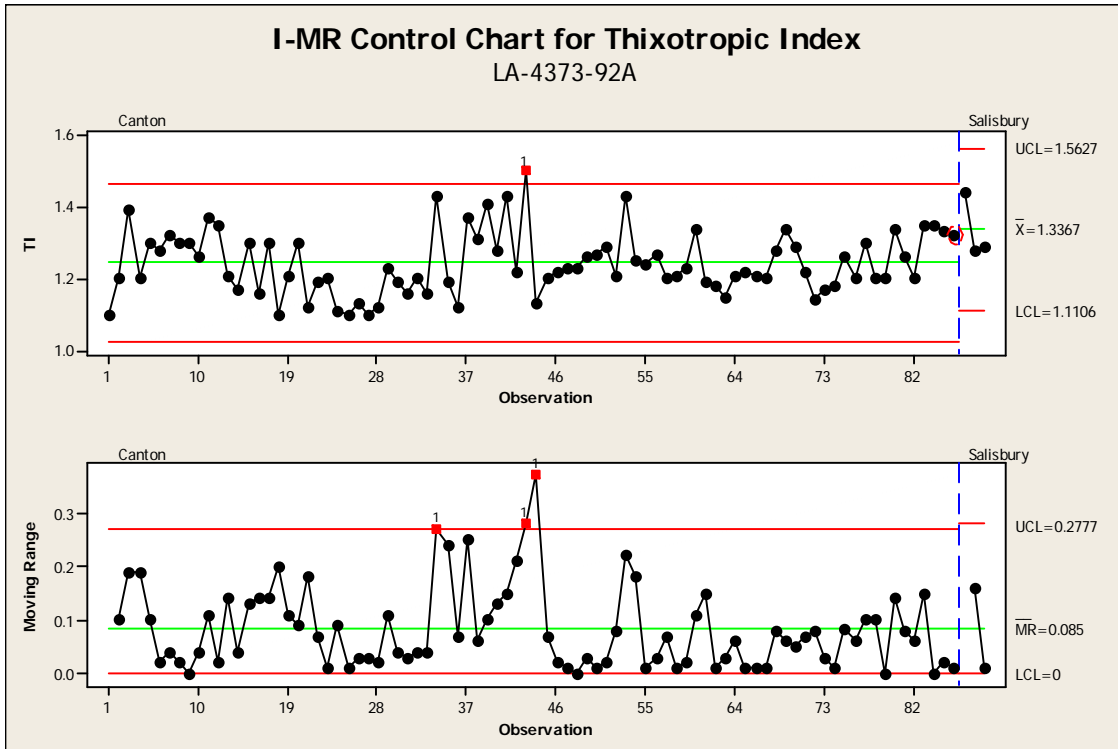


Case:

All three qualification lots are in specification for viscosity and the average viscosity for the qualification batches is reasonable close to the historical average (Z-Score for the qualification batches = 1.30).

Technically Equivalent

Thixotropic Index: LA-4373-92(A)

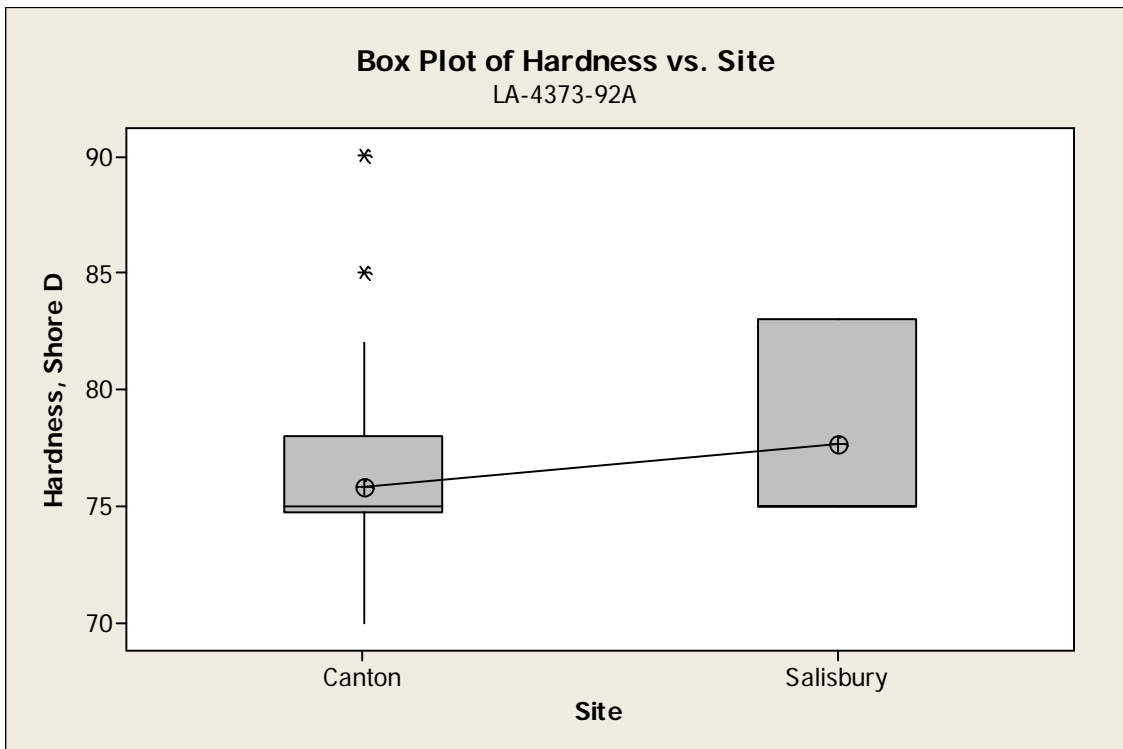
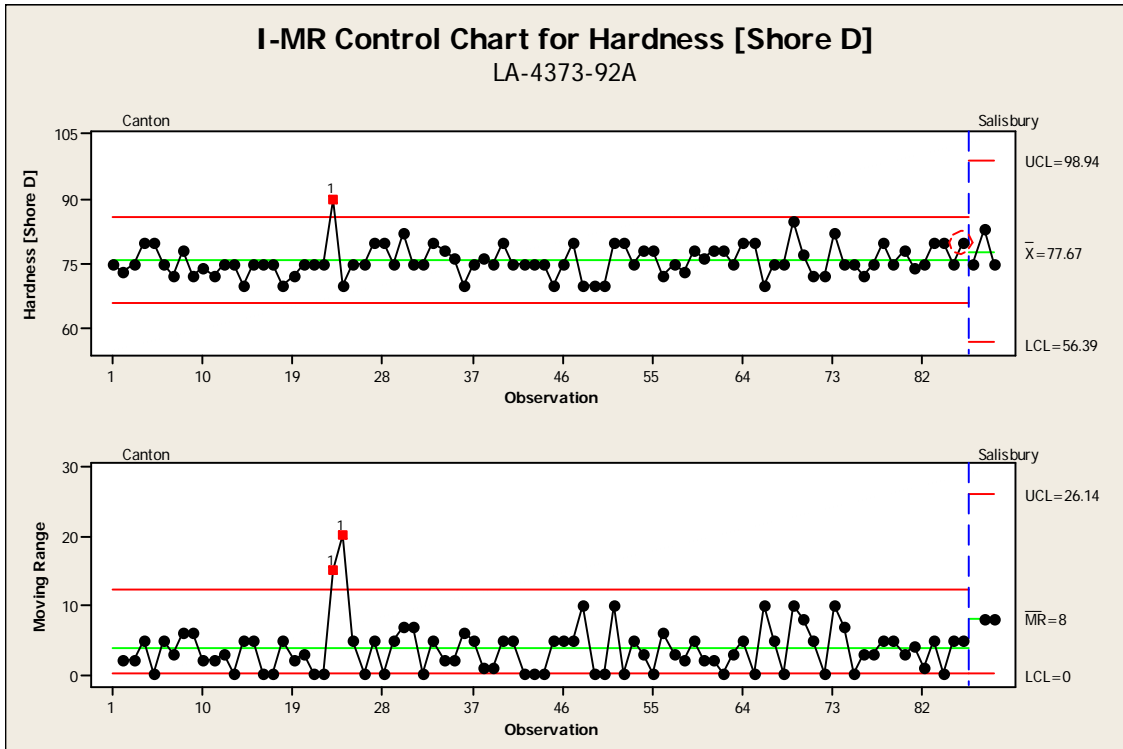


Case:

All three qualification lots are in specification for thixotropic index and the average TI value for the qualification batches is reasonable close to the historical average (Z-Score for the qualification batches = 1.08).

Technically Equivalent

Shore D Hardness: LA-4373-92(A)



Statistically Equivalent

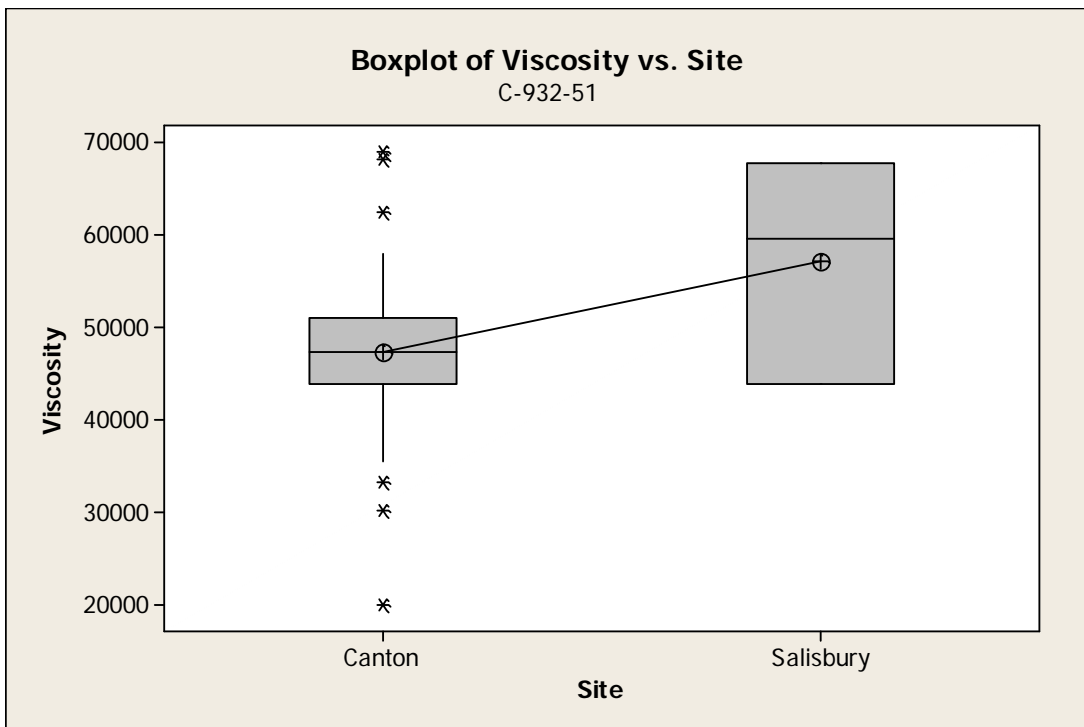
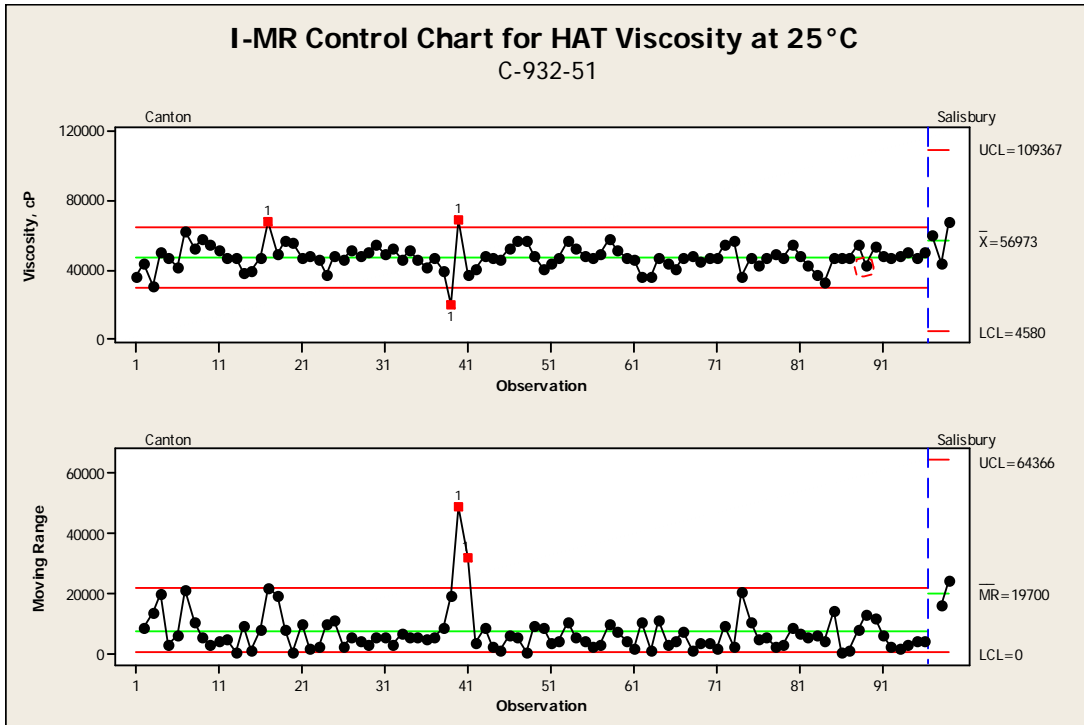
Appendix 5: Raw data for Family E: C-932-51

The table below includes first pass data. This product is frequently adjusted to bring the characteristics into specification. When the initial viscosity is outside of the limits, the conductivity test is not always performed until after the batch is adjusted. In these cases, no value for conductivity is shown (*). Please note the process flow shown on page 5.

DOM	Lot ID	Site	Appearance	Viscosity	Conductivity
4/10/2008	806468	Canton	PASS	35500	*
4/11/2008	806469	Canton	PASS	43680	*
4/11/2008	806470	Canton	PASS	30200	*
4/23/2008	806475	Canton	PASS	49760	14278.4
4/24/2008	806476	Canton	PASS	47360	13846.0
4/24/2008	806477	Canton	PASS	41600	13689.0
5/14/2008	807907	Canton	PASS	62280	*
5/14/2008	807908	Canton	PASS	52480	20017.0
5/15/2008	807909	Canton	PASS	57280	50341.0
6/11/2008	809749	Canton	PASS	55040	10212.5
6/11/2008	809750	Canton	PASS	51360	11792.0
6/12/2008	809748	Canton	PASS	46720	14882.0
9/5/2008	815073	Canton	PASS	46720	14046.0
9/8/2008	815072	Canton	PASS	38080	*
9/8/2008	815074	Canton	PASS	38880	*
9/22/2008	815469	Canton	PASS	46680	11769.0
9/22/2008	815471	Canton	PASS	68000	*
9/22/2008	815473	Canton	PASS	48800	13550.0
10/14/2008	816958	Canton	PASS	56320	14020.0
10/14/2008	816959	Canton	PASS	56160	12215.0
10/14/2008	816960	Canton	PASS	46600	13189.0
12/5/2008	820898	Canton	PASS	47680	12325.4
12/5/2008	820899	Canton	PASS	46080	14674.1
12/5/2008	820900	Canton	PASS	36800	*
12/15/2008	820904	Canton	PASS	47520	10784.0
12/15/2008	820905	Canton	PASS	46000	10415.0
12/16/2008	820903	Canton	PASS	51300	12420.0
1/7/2009	821978	Canton	PASS	47680	13130.6
1/7/2009	821979	Canton	PASS	50008	14126.1
1/7/2009	821980	Canton	PASS	54720	11398.3
1/29/2009	900873	Canton	PASS	49440	13978.0
1/29/2009	900874	Canton	PASS	52000	13625.0
1/29/2009	900875	Canton	PASS	46000	14734.0
2/18/2009	901284	Canton	PASS	50800	37950.0
2/18/2009	901285	Canton	PASS	46000	43281.0
2/18/2009	901286	Canton	PASS	41920	*
3/18/2009	903184	Canton	PASS	47200	14966.0
3/23/2009	903183	Canton	PASS	38880	*
3/23/2009	903185	Canton	PASS	20000	*
6/3/2009	907142	Canton	PASS	68800	*
6/4/2009	907134	Canton	PASS	37120	*
6/4/2009	907135	Canton	PASS	40000	*
6/30/2009	908299	Canton	PASS	48160	89586.0
7/1/2009	908298	Canton	PASS	46600	88343.0
7/1/2009	908300	Canton	PASS	46240	89522.0
8/4/2009	910258	Canton	PASS	51840	13900.0
8/5/2009	910255	Canton	PASS	56820	14401.8
8/5/2009	910257	Canton	PASS	56800	14023.7
10/9/2009	914439	Canton	PASS	48320	13012.0

10/9/2009	914440	Canton	PASS	40200	*
10/9/2009	914441	Canton	PASS	43200	*
10/29/2009	914463	Canton	PASS	47200	14511.0
10/30/2009	914461	Canton	PASS	57000	14869.0
10/30/2009	914462	Canton	PASS	51840	10999.6
11/6/2009	915910	Canton	PASS	48180	13523.0
11/6/2009	915911	Canton	PASS	46400	14021.0
11/6/2009	915912	Canton	PASS	48640	14884.0
11/12/2009	915932	Canton	PASS	57760	14446.0
11/12/2009	915933	Canton	PASS	50900	12380.0
11/12/2009	915934	Canton	PASS	47360	14740.0
1/21/2010	010601	Canton	PASS	46200	12726.0
1/21/2010	010603	Canton	PASS	36320	*
1/22/2010	010602	Canton	PASS	35680	*
2/3/2010	010771	Canton	PASS	46400	13449.3
2/3/2010	010772	Canton	PASS	43680	*
2/3/2010	010773	Canton	PASS	40160	*
3/19/2010	013829	Canton	PASS	46800	11541.0
3/19/2010	013830	Canton	PASS	47620	13174.0
3/22/2010	013831	Canton	PASS	44500	*
3/22/2010	013832	Canton	PASS	47300	13462.0
3/22/2010	013833	Canton	PASS	46400	13740.9
3/22/2010	013834	Canton	PASS	54880	14679.4
5/12/2010	015809	Canton	PASS	56800	11062.0
5/12/2010	015810	Canton	PASS	36482	*
5/13/2010	015811	Canton	PASS	46400	14261.0
5/25/2010	016441	Canton	PASS	42240	*
5/25/2010	016442	Canton	PASS	47200	14884.0
5/26/2010	016443	Canton	PASS	49120	13585.9
5/26/2010	016444	Canton	PASS	46500	14107.0
5/26/2010	016445	Canton	PASS	54400	11086.0
6/4/2010	016768	Canton	PASS	47840	14584.0
6/4/2010	016769	Canton	PASS	42800	*
6/4/2010	016770	Canton	PASS	37280	*
6/4/2010	016771	Canton	PASS	33280	*
6/7/2010	016772	Canton	PASS	46880	46913.0
6/17/2010	017302	Canton	PASS	46740	13656.0
6/17/2010	017303	Canton	PASS	47040	14024.0
6/17/2010	017304	Canton	PASS	54800	12736.0
7/6/2010	017305	Canton	PASS	42400	14982.0
7/6/2010	017306	Canton	PASS	53960	82609.0
7/21/2010	019448	Canton	PASS	48320	14894.0
7/21/2010	019448	Canton	PASS	46440	46357.0
7/21/2010	019449	Canton	PASS	47560	61507.0
7/21/2010	019451	Canton	PASS	50000	47643.2
7/22/2010	019450	Canton	PASS	46500	24478.0
7/22/2010	019452	Canton	PASS	50080	27474.0
6/25/2010	T-0058	Salisbury	PASS	59520	45894.0
6/25/2010	T-0059	Salisbury	PASS	43840	29607.0
6/25/2010	T-0060	Salisbury	PASS	67560	35429.0

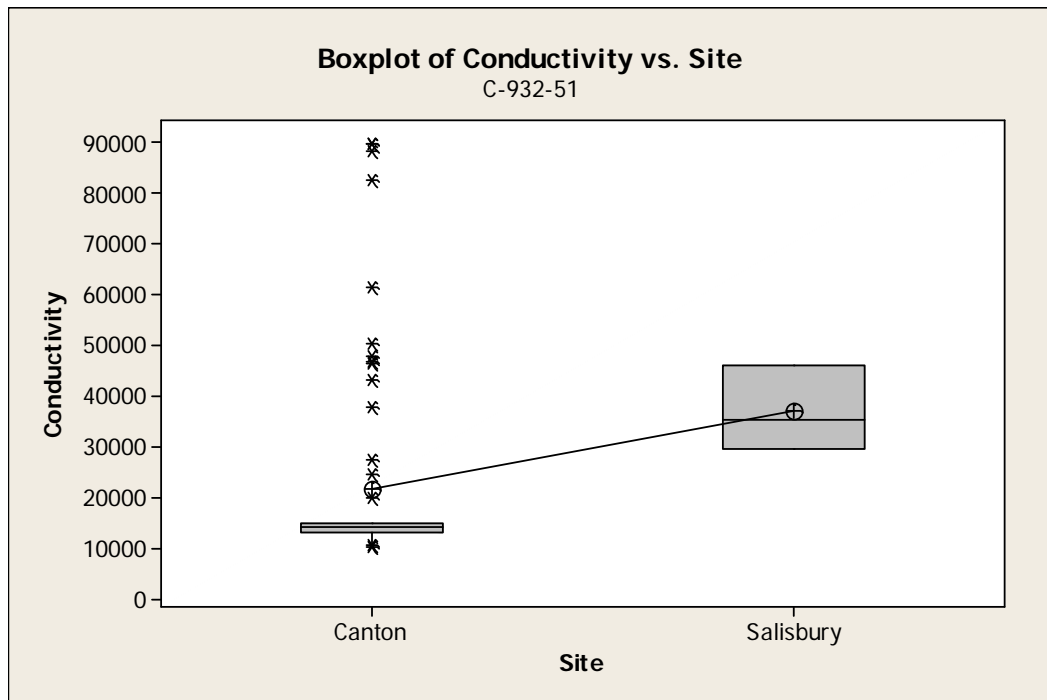
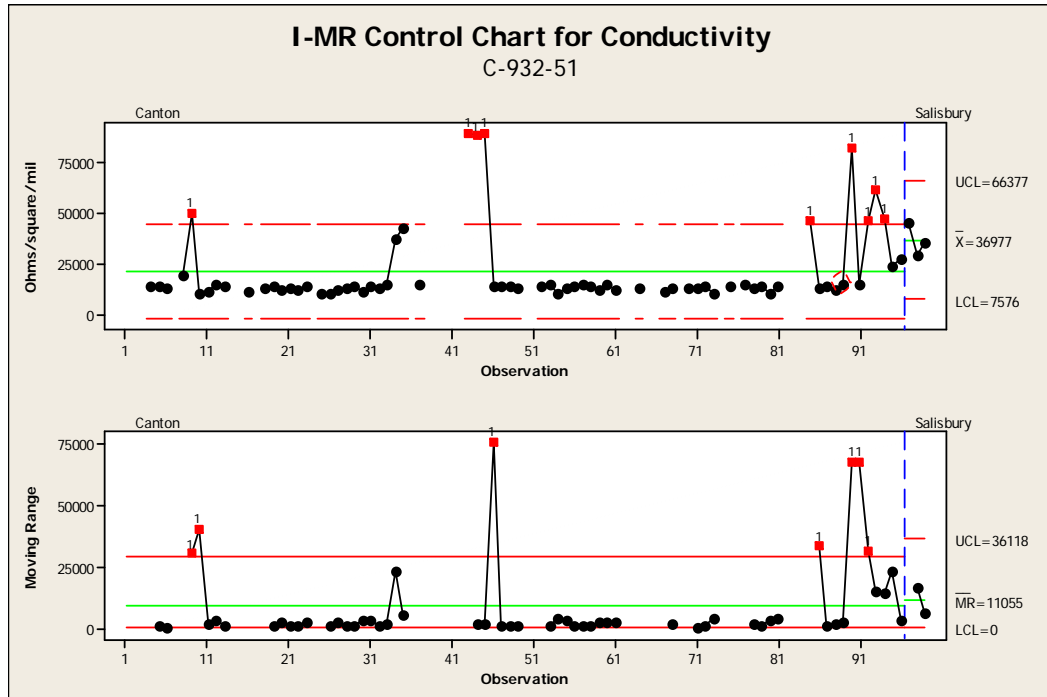
Viscosity: C-932-51



The reported viscosity values are first pass results only. The Salisbury first pass results are statistically equivalent to Canton's historical first pass results. First pass results for product manufactured at both sites are frequently outside the specification limits. This product is then regularly adjusted to bring the viscosity into specification. This adjustment process was followed for Batch T-0058 and a final viscosity of 57,200 cP (in specification) was recorded.

Statistically Equivalent

Conductivity:



Case:

The reported viscosity values are first pass results only. The Salisbury first pass results are technically equivalent to Canton's historical first pass results. The average value of the qualification batches is reasonably close to the historical average of first pass data (Z-score of the qualification batches = 0.79). First pass results for product manufactured at both sites are frequently outside the specification limits. This product is then regularly adjusted to bring the conductivity into specification. This adjustment process was followed for Batch T-0058 and a final conductivity of 14,681 Ohms/sq/mil (in specification) was recorded.

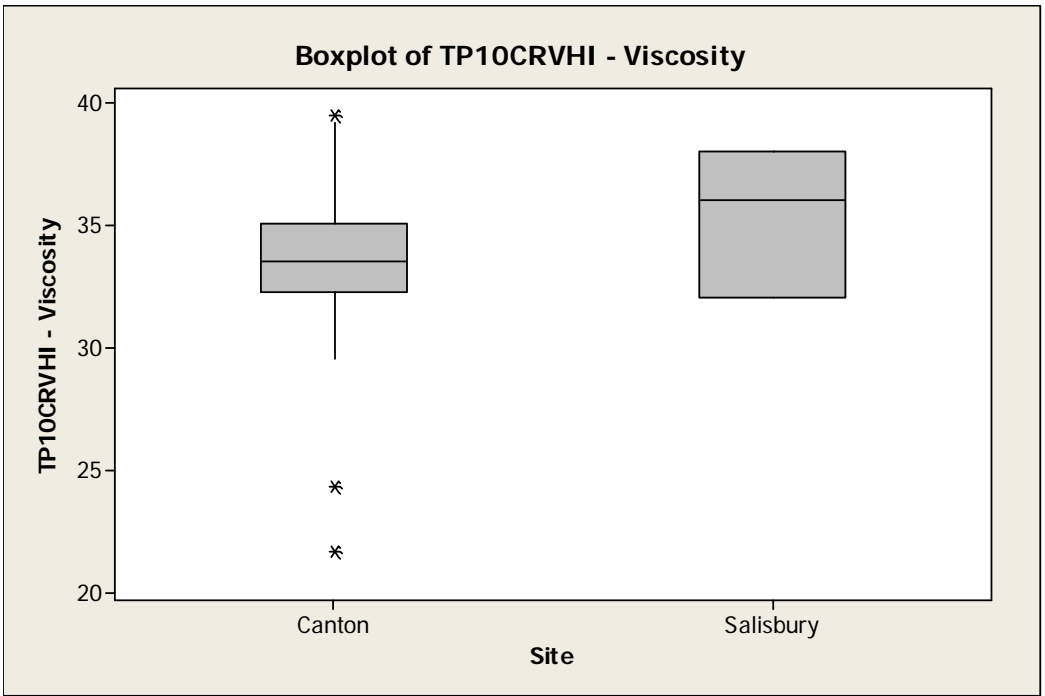
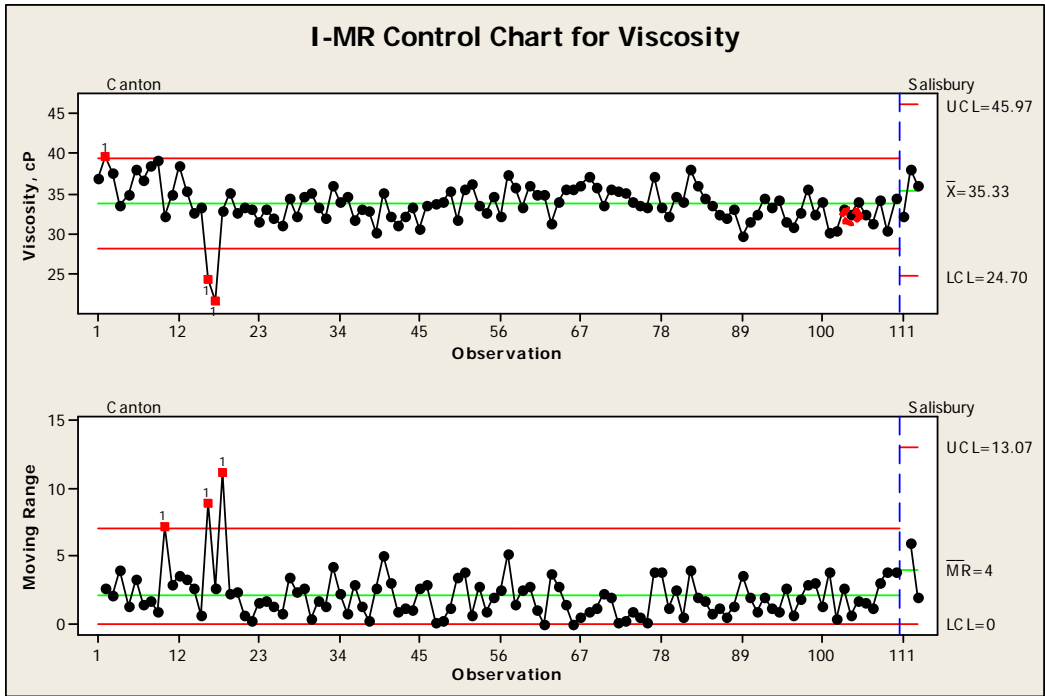
Technically Equivalent

Appendix 6: Raw data for Family F: CAT23LV

DOM	Batch	Site	Appearance	Viscosity	DSC Peak
4/7/2008	806032	Canton	Pass	36.8	129.29
4/7/2008	806061	Canton	Pass	39.5	130.43
4/14/2008	806540	Canton	Pass	37.4	132.16
4/17/2008	806777	Canton	Pass	33.4	132.78
4/22/2008	807116	Canton	Pass	34.7	132.78
4/22/2008	807228	Canton	Pass	38	131.85
4/25/2008	807531	Canton	Pass	36.5	134.72
5/2/2008	807632	Canton	Pass	38.3	129.54
5/2/2008	807633	Canton	Pass	39.2	127.17
5/9/2008	808168	Canton	Pass	32	130.6
5/13/2008	808590	Canton	Pass	34.9	128.62
5/20/2008	809041	Canton	Pass	38.5	132.23
6/18/2008	810421	Canton	Pass	35.2	131.84
6/25/2008	811146	Canton	Pass	32.5	127.26
6/28/2008	811253	Canton	Pass	33.2	125.13
7/2/2008	811836	Canton	Pass	24.3	133.48
7/2/2008	811837	Canton	Pass	21.6	130.36
7/9/2008	812133	Canton	Pass	32.7	128.01
7/15/2008	812547	Canton	Pass	35	130.72
7/18/2008	812788	Canton	Pass	32.6	131.05
7/18/2008	812789	Canton	Pass	33.3	132.94
7/22/2008	813040	Canton	Pass	33	126.41
7/23/2008	813050	Canton	Pass	31.4	130.48
7/24/2008	813147	Canton	Pass	33.1	130.68
8/1/2008	813507	Canton	Pass	31.8	131.02
8/1/2008	813673	Canton	Pass	31	131.54
8/5/2008	813823	Canton	Pass	34.4	127.3
8/7/2008	814101	Canton	Pass	32	129.59
8/8/2008	814258	Canton	Pass	34.6	130.74
8/13/2008	810456	Canton	Pass	35	128.08
8/15/2008	814684	Canton	Pass	33.2	128.4
8/19/2008	814869	Canton	Pass	31.8	132.55
8/27/2008	815279	Canton	Pass	36	129.87
9/8/2008	815858	Canton	Pass	33.8	132.84
9/11/2008	816213	Canton	Pass	34.6	132.12
9/11/2008	816286	Canton	Pass	31.7	131.8
9/18/2008	816632	Canton	Pass	33	131.87
9/29/2008	817231	Canton	Pass	32.7	129.08
10/20/2008	818168	Canton	Pass	30	132.74
10/21/2008	818169	Canton	Pass	35	135.06
10/31/2008	819327	Canton	Pass	32	133.6
11/4/2008	819483	Canton	Pass	31	129.63
11/5/2008	819661	Canton	Pass	32.2	132.82
11/6/2008	819782	Canton	Pass	33.3	134.62
11/7/2008	819853	Canton	Pass	30.6	131.35
11/19/2008	819783	Canton	Pass	33.5	132.69
11/19/2008	820474	Canton	Pass	33.7	133.91
12/5/2008	821302	Canton	Pass	34	133.58
12/8/2008	821338	Canton	Pass	35.2	134.61
12/10/2008	821616	Canton	Pass	31.7	129.45
12/10/2008	821690	Canton	Pass	35.5	129.31
12/11/2008	821601	Canton	Pass	36.2	133.1
12/12/2008	821794	Canton	Pass	33.4	131.88
12/17/2008	822251	Canton	Pass	32.5	133.35
1/8/2009	900249	Canton	Pass	34.5	133.36
1/9/2009	900250	Canton	Pass	32	131.85
1/13/2009	900570	Canton	Pass	37.2	133.6
1/30/2009	901403	Canton	Pass	35.7	131.77
1/30/2009	901545	Canton	Pass	33.2	131.22

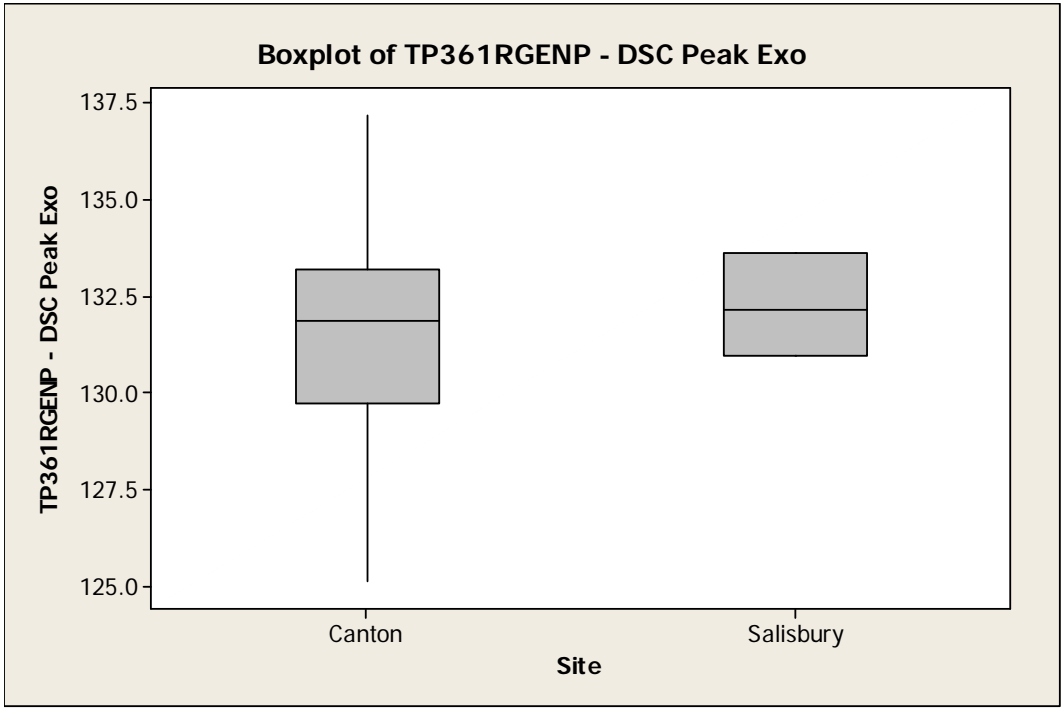
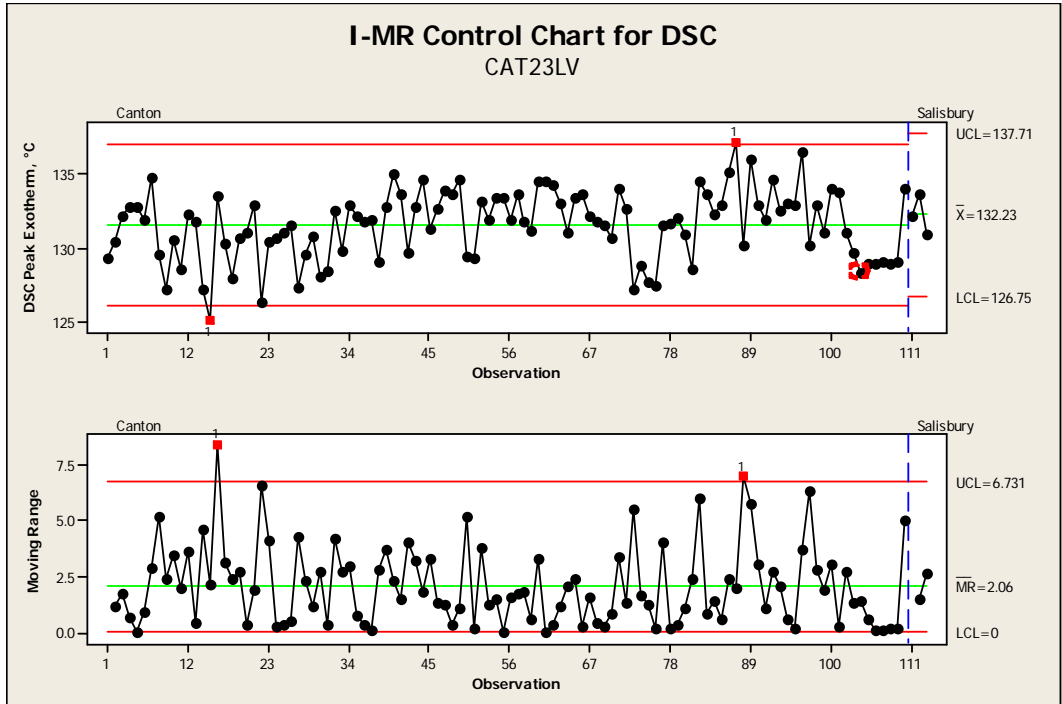
2/17/2009	902313	Canton	Pass	36	134.51
3/3/2009	903104	Canton	Pass	34.9	134.51
3/3/2009	903105	Canton	Pass	34.9	134.21
3/19/2009	903930	Canton	Pass	31.2	133.06
3/24/2009	904007	Canton	Pass	34	131.04
4/10/2009	905074	Canton	Pass	35.5	133.45
4/10/2009	905075	Canton	Pass	35.5	133.68
5/12/2009	906724	Canton	Pass	36	132.14
5/27/2009	907377	Canton	Pass	37	131.76
5/29/2009	907740	Canton	Pass	35.8	131.5
6/9/2009	908185	Canton	Pass	33.5	130.66
6/25/2009	909257	Canton	Pass	35.5	133.99
7/7/2009	909739	Canton	Pass	35.3	132.67
7/7/2009	909740	Canton	Pass	35	127.18
7/15/2009	910330	Canton	Pass	34	128.85
8/11/2009	911836	Canton	Pass	33.4	127.65
8/12/2009	911846	Canton	Pass	33.2	127.5
8/24/2009	912186	Canton	Pass	37.1	131.48
9/10/2009	913322	Canton	Pass	33.2	131.65
9/10/2009	913323	Canton	Pass	32	132
9/15/2009	913412	Canton	Pass	34.5	130.92
9/25/2009	914433	Canton	Pass	34	128.57
10/7/2009	914971	Canton	Pass	38	134.51
11/18/2009	917455	Canton	Pass	36	133.7
11/18/2009	917456	Canton	Pass	34.3	132.32
11/23/2009	917664	Canton	Pass	33.5	132.85
12/11/2009	918367	Canton	Pass	32.3	135.18
1/4/2010	919305	Canton	Pass	31.8	137.16
1/18/2010	011026	Canton	Pass	33.1	130.23
1/28/2010	011667	Canton	Pass	29.5	135.98
2/8/2010	012170	Canton	Pass	31.5	132.92
3/1/2010	013312	Canton	Pass	32.4	131.9
3/2/2010	013313	Canton	Pass	34.4	134.57
3/3/2010	013445	Canton	Pass	33.2	132.5
3/9/2010	013539	Canton	Pass	34.1	133.03
3/15/2010	013931	Canton	Pass	31.4	132.87
4/5/2010	014899	Canton	Pass	30.7	136.54
4/23/2010	015660	Canton	Pass	32.6	130.2
4/26/2010	015785	Canton	Pass	35.5	132.96
5/17/2010	016880	Canton	Pass	32.4	131.05
5/25/2010	017273	Canton	Pass	33.8	134.06
5/28/2010	017222	Canton	Pass	30	133.8
5/28/2010	017223	Canton	Pass	30.4	131.07
6/3/2010	017703	Canton	Pass	33	129.73
6/16/2010	017074	Canton	Pass	32.3	128.34
6/17/2010	017822	Canton	Pass	34	128.91
6/22/2010	018442	Canton	Pass	32.4	129
7/13/2010	019421	Canton	Pass	31.2	129.05
7/19/2010	018268	Canton	Pass	34.2	128.91
7/22/2010	019601	Canton	Pass	30.4	129.06
7/28/2010	020299	Canton	Pass	34.3	134.07
6/9/2010	T-0004	Salisbury	Pass	32	132.12
6/9/2010	T-0005	Salisbury	Pass	38	133.6
6/9/2010	T-0006	Salisbury	Pass	36	130.96

Viscosity: 23LV



Statistically Equivalent

DSC Peak Exotherm Temperature: 23LV

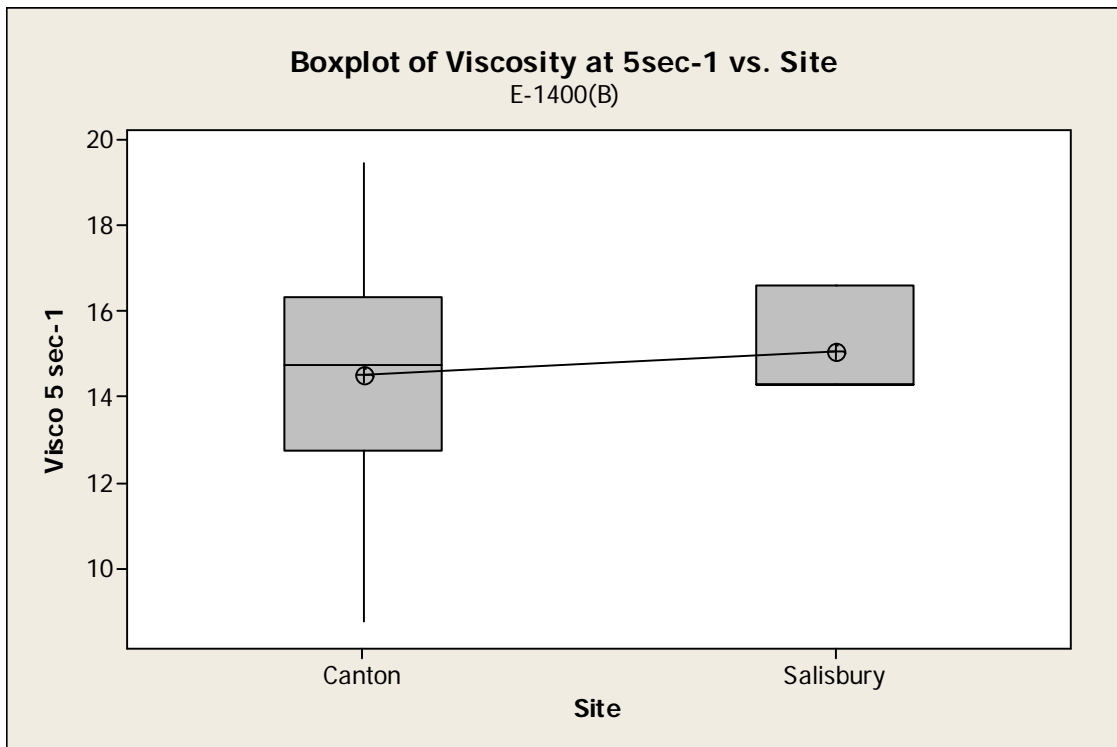
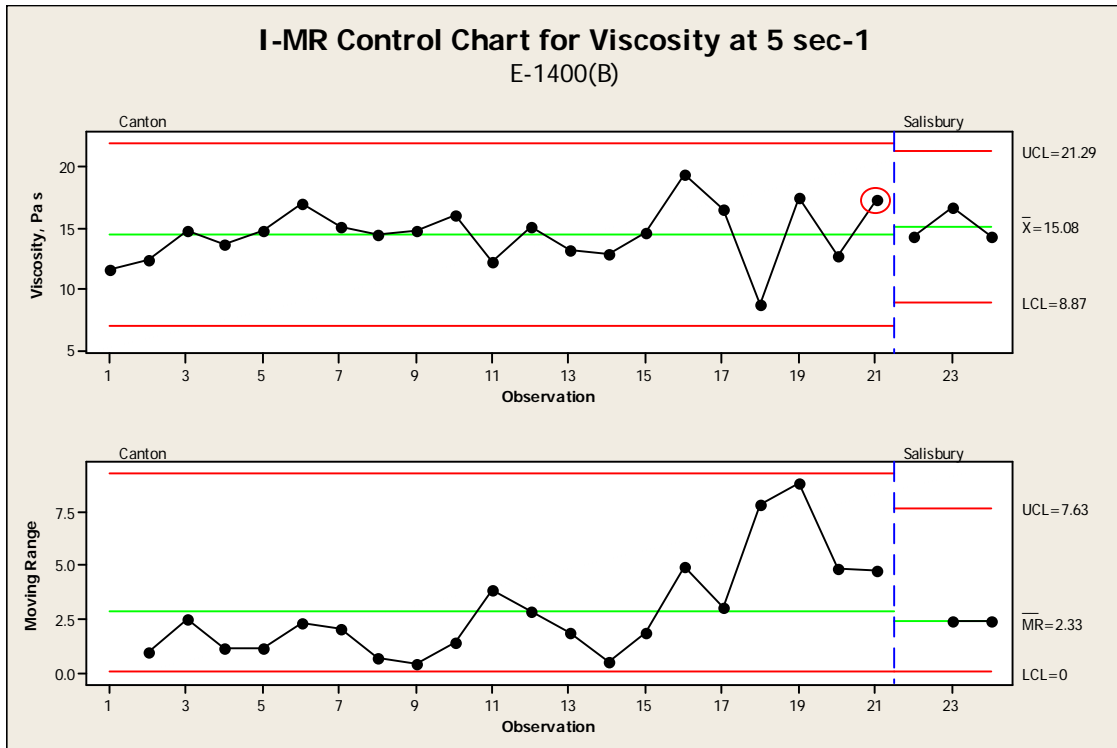


Statistically Equivalent

Appendix 7: Raw data for Family G: E-1400(B)

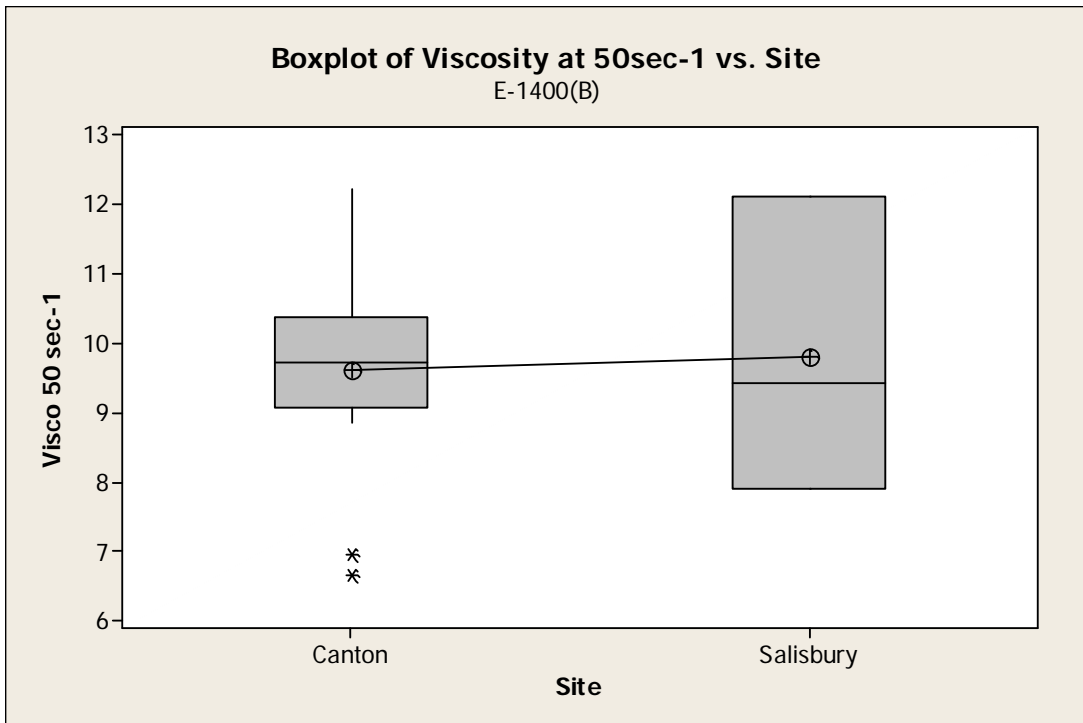
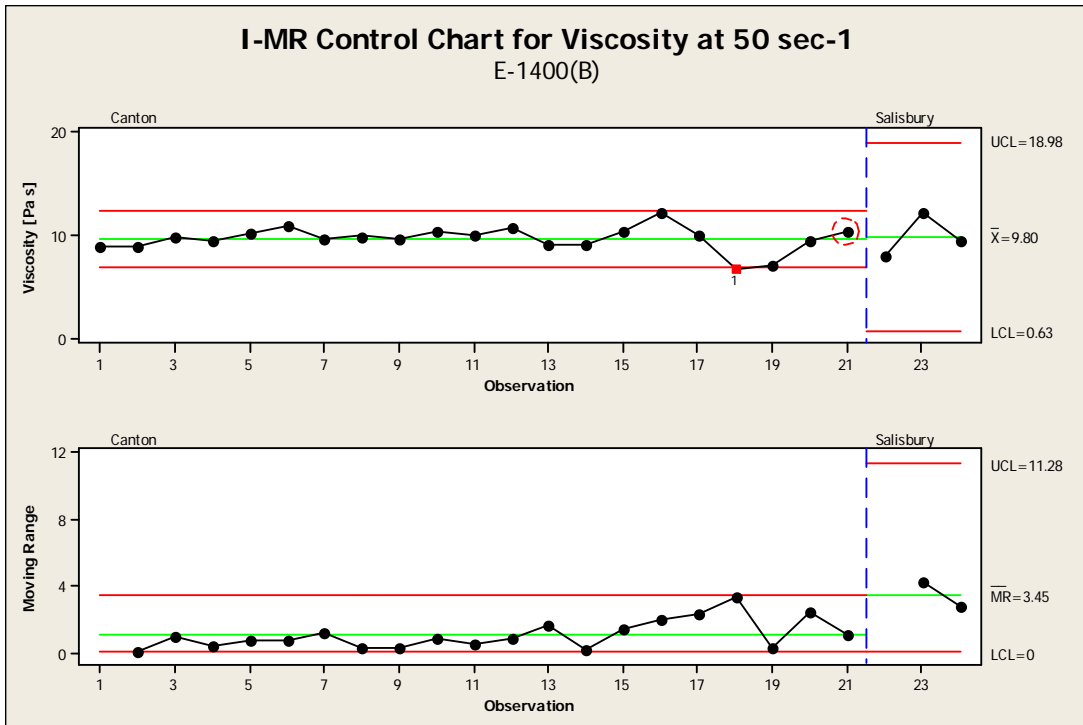
DOM	Lot ID	Site	Appearance	Viscosity 5/s	Viscosity 50/s	STI	Hardness
1/16/2008	724000	Canton	Pass	11.535	8.877	1.299	80
1/22/2008	800535	Canton	Pass	12.437	8.854	1.405	80
2/26/2008	802988	Canton	Pass	14.848	9.72	1.528	83
3/11/2008	803595	Canton	Pass	13.726	9.391	1.462	80
3/31/2008	805192	Canton	Pass	14.768	10.102	1.462	80
7/21/2008	812249	Canton	Pass	17.054	10.796	1.58	80
8/21/2008	814502	Canton	Pass	15.071	9.608	1.569	75
10/8/2008	817276	Canton	Pass	14.485	9.854	1.47	80
10/21/2008	817850	Canton	Pass	14.799	9.596	1.542	75
11/14/2008	819446	Canton	Pass	16.121	10.398	1.55	82
1/7/2009	822468	Canton	Pass	12.286	9.907	1.24	75
1/7/2009	822470	Canton	Pass	15.058	10.65	1.414	83
1/22/2009	900518	Canton	Pass	13.225	9.113	1.45	75
2/18/2009	901886	Canton	Pass	12.814	9.024	1.42	75
3/27/2009	904019	Canton	Pass	14.614	10.331	1.415	75
7/20/2009	910176	Canton	Pass	19.486	12.227	1.594	75
9/17/2009	913291	Canton	Pass	16.54	9.919	1.667	80
1/15/2010	919290	Canton	Pass	8.749	6.661	1.314	80
3/24/2010	014052	Canton	Pass	17.491	6.935	2.522	75
5/18/2010	016564	Canton	Pass	12.661	9.315	1.359	90
6/23/2010	017075	Canton	Pass	17.34	10.382	1.67	70
8/17/2010	T-0061	Salisbury	Pass	14.304	7.887	1.814	80
8/17/2010	T-0062	Salisbury	Pass	16.638	12.104	1.375	80
8/9/2010	T-0063	Salisbury	Pass	14.304	9.419	1.519	85

Rheometer Viscosity at 5 sec-1: E-1400(B)



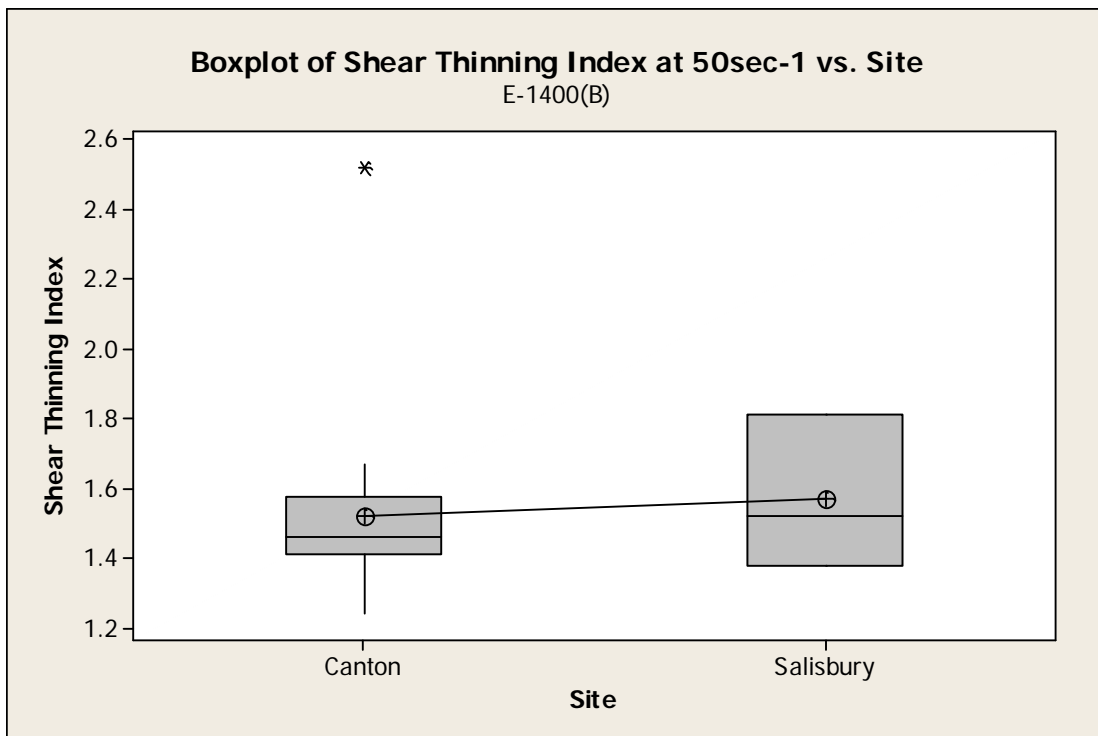
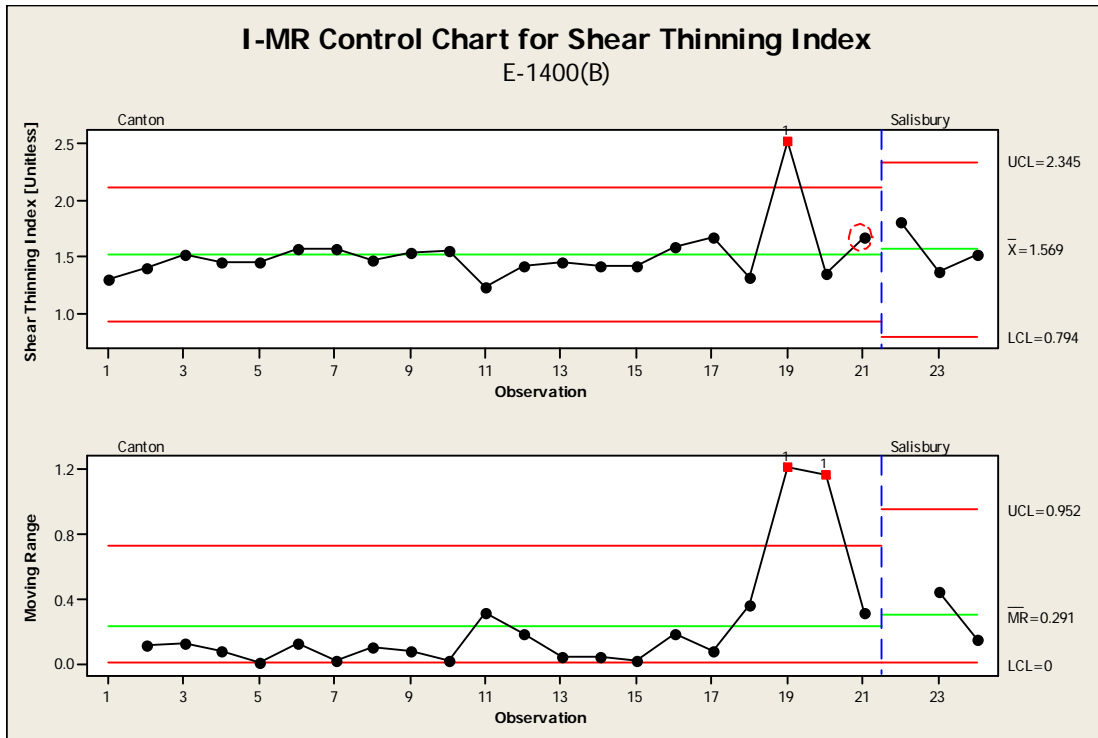
Statistically Equivalent

Rheometer Viscosity at 50 sec-1: E-1400(B)



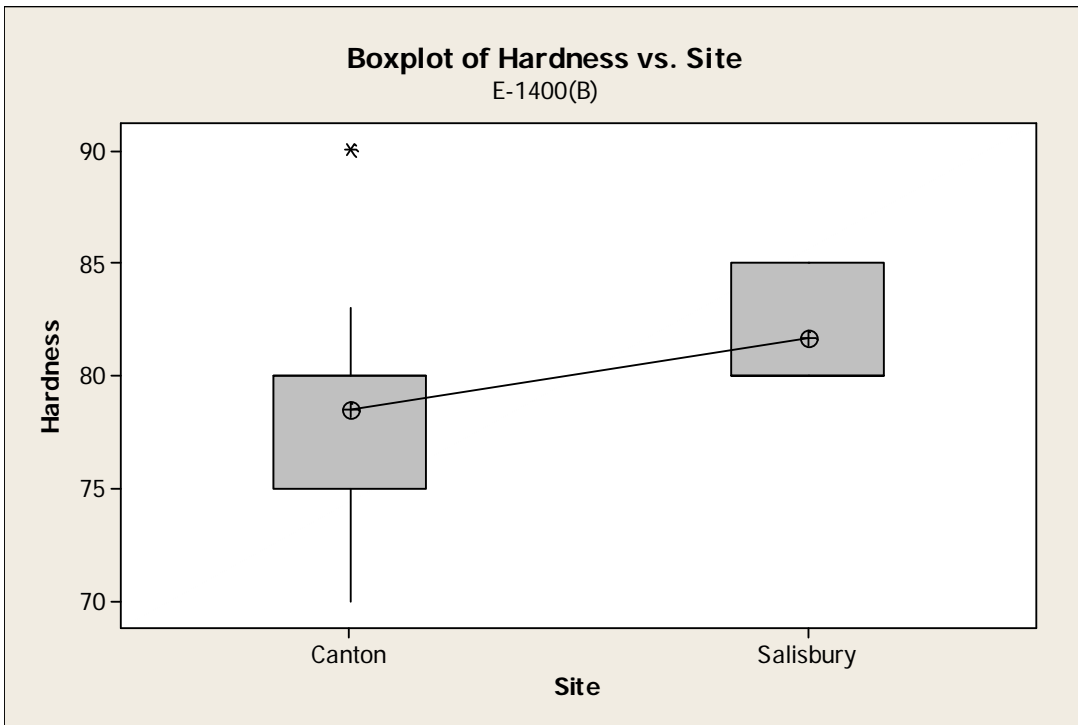
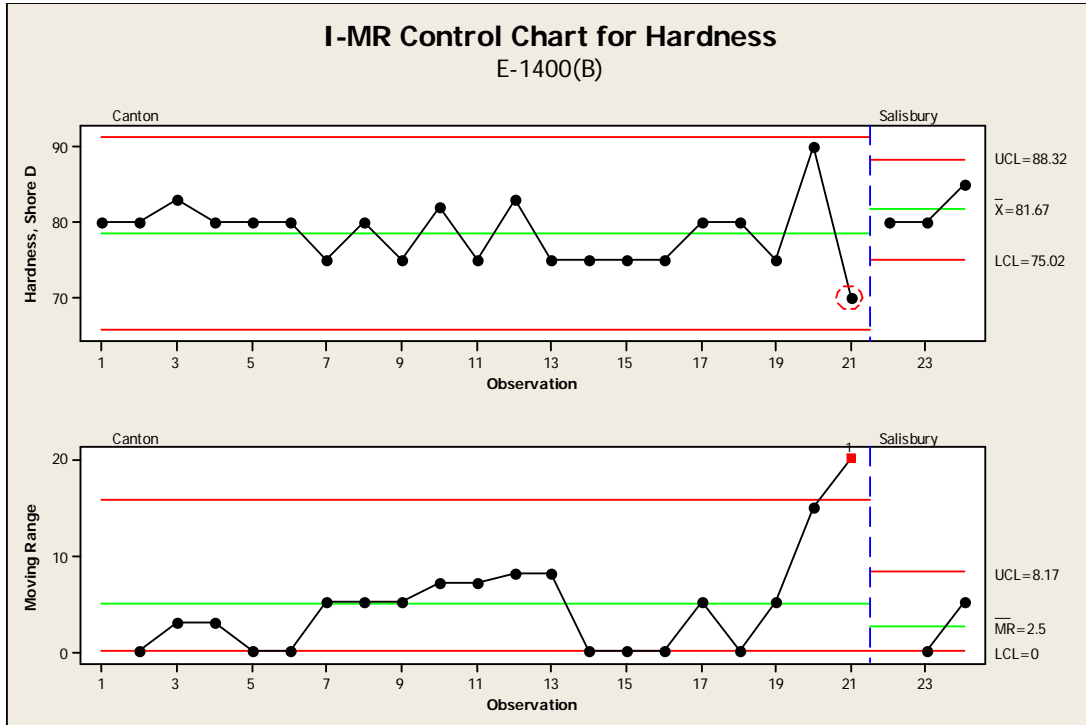
Statistically Equivalent

Shear Thinning Index: E-1400(B)



Statistically Equivalent

Hardness: E-1400(B)



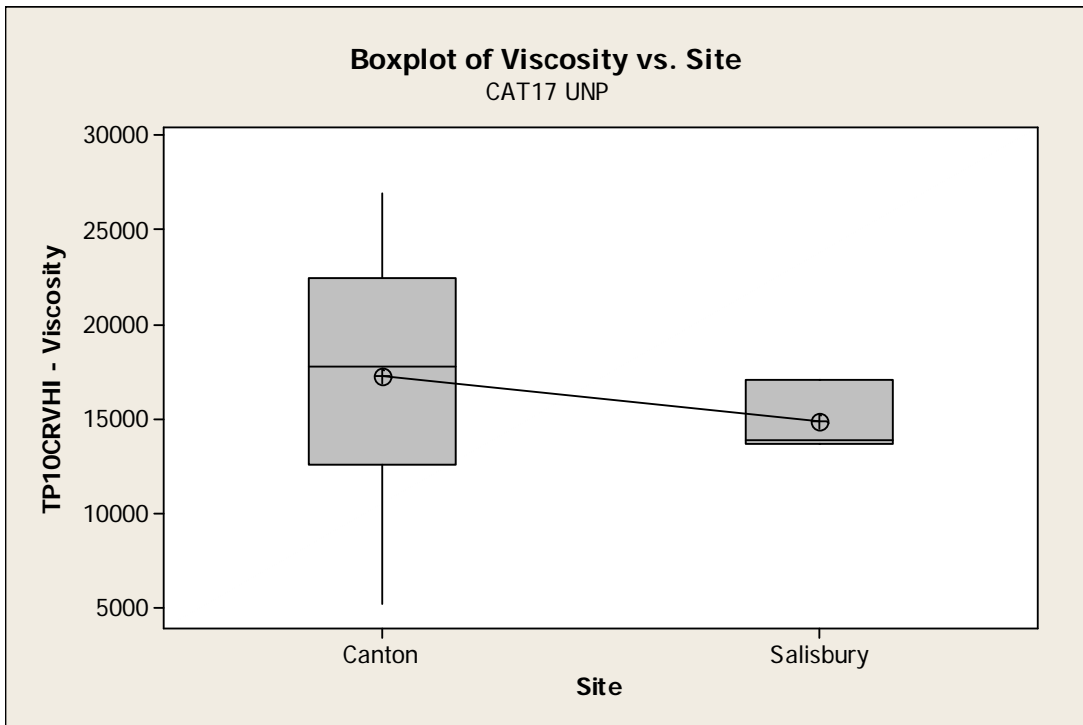
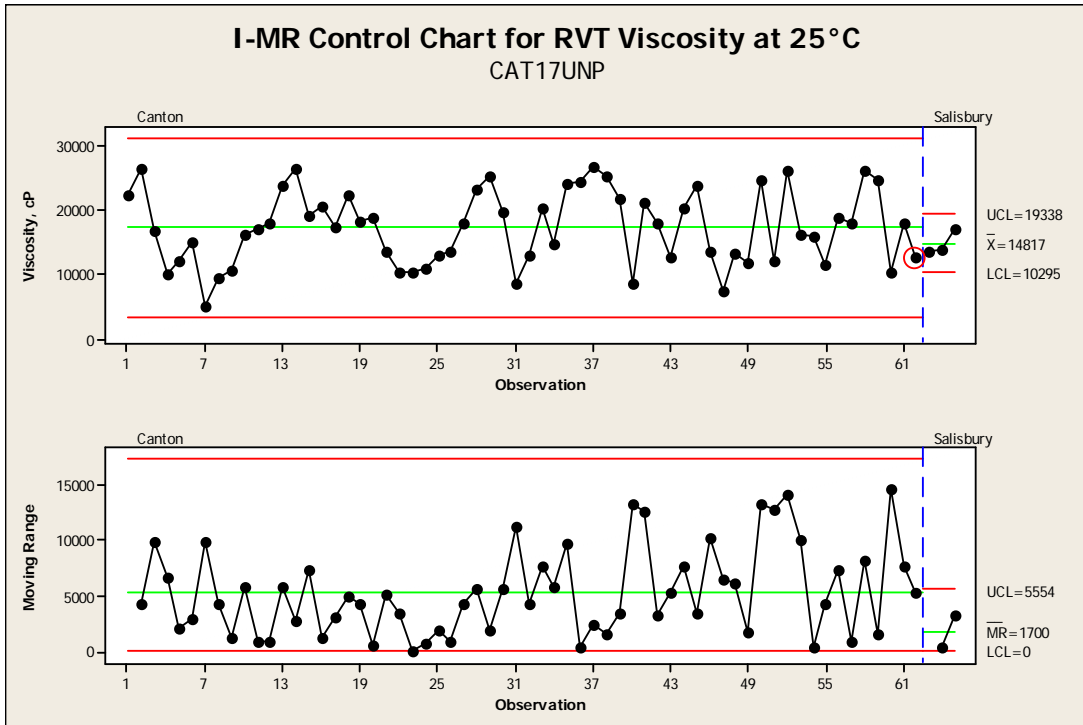
Statistically Equivalent

Appendix 8: Raw data for Family H: CAT17 UNP

DOM	Lot ID	Site	Appearance	Viscosity	Hegmann	Gel Time
4/1/2008	805651	Canton	PASS	22400	2.00	20
4/16/2008	806680	Canton	PASS	26650	4.00	25
5/20/2008	807929	Canton	PASS	16800	3.00	20
6/3/2008	809458	Canton	PASS	10150	4.00	20
6/11/2008	810212	Canton	PASS	12200	4.00	20
6/26/2008	811059	Canton	PASS	15000	4.00	30
7/2/2008	811447	Canton	PASS	5150	2.00	35
7/11/2008	812127	Canton	PASS	9450	4.00	25
7/16/2008	812529	Canton	PASS	10550	4.00	20
8/6/2008	813859	Canton	PASS	16300	4.00	25
8/22/2008	815038	Canton	PASS	17150	4.00	20
9/17/2008	815979	Canton	PASS	18050	2.00	25
9/30/2008	815388	Canton	PASS	23800	2.00	25
10/7/2008	817508	Canton	PASS	26500	4.41	40
10/16/2008	817748	Canton	PASS	19250	4.00	25
10/28/2008	818839	Canton	PASS	20500	4.00	30
11/4/2008	819326	Canton	PASS	17550	2.30	60
11/19/2008	819879	Canton	PASS	22500	4.00	20
11/26/2008	820289	Canton	PASS	18250	3.00	25
12/17/2008	821336	Canton	PASS	18800	6.00	30
12/19/2008	821771	Canton	PASS	13700	3.00	25
1/20/2009	900248	Canton	PASS	10300	5.30	30
2/2/2009	901484	Canton	PASS	10350	4.00	30
2/6/2009	901791	Canton	PASS	11000	6.00	30
2/19/2009	902203	Canton	PASS	12850	3.00	25
3/3/2009	902989	Canton	PASS	13600	3.00	50
3/6/2009	903318	Canton	PASS	17850	1.25	45
3/13/2009	903362	Canton	PASS	23400	2.00	30
3/18/2009	903736	Canton	PASS	25300	2.00	20
3/30/2009	904361	Canton	PASS	19800	1.67	30
4/6/2009	904581	Canton	PASS	8650	2.50	25
4/14/2009	905073	Canton	PASS	12850	3.00	25
5/8/2009	906040	Canton	PASS	20450	4.00	45
5/12/2009	906540	Canton	PASS	14650	4.00	20
5/21/2009	907029	Canton	PASS	24300	5.00	20
5/29/2009	907376	Canton	PASS	24600	5.00	30
6/22/2009	908669	Canton	PASS	26900	5.00	20
7/28/2009	910843	Canton	PASS	25350	4.00	20
8/18/2009	911891	Canton	PASS	21900	5.00	30
9/18/2009	913411	Canton	PASS	8700	5.00	20
10/8/2009	914412	Canton	PASS	21250	1.50	45
10/22/2009	915388	Canton	PASS	18050	1.42	20
10/29/2009	915809	Canton	PASS	12800	4.00	20
11/6/2009	916399	Canton	PASS	20400	1.75	45
11/20/2009	917563	Canton	PASS	23800	0.00	30
12/9/2009	918296	Canton	PASS	13700	2.00	30
12/17/2009	918509	Canton	PASS	7300	0.00	30
1/5/2010	919135	Canton	PASS	13350	2.00	25
2/1/2010	011025	Canton	PASS	11700	1.00	20
2/3/2010	011582	Canton	PASS	24900	1.33	20
2/13/2010	012167	Canton	PASS	12150	1.25	25
2/25/2010	012910	Canton	PASS	26150	1.60	40
3/12/2010	013713	Canton	PASS	16200	0.00	20
3/23/2010	014160	Canton	PASS	15950	4.00	25
4/9/2010	014862	Canton	PASS	11650	2.00	30

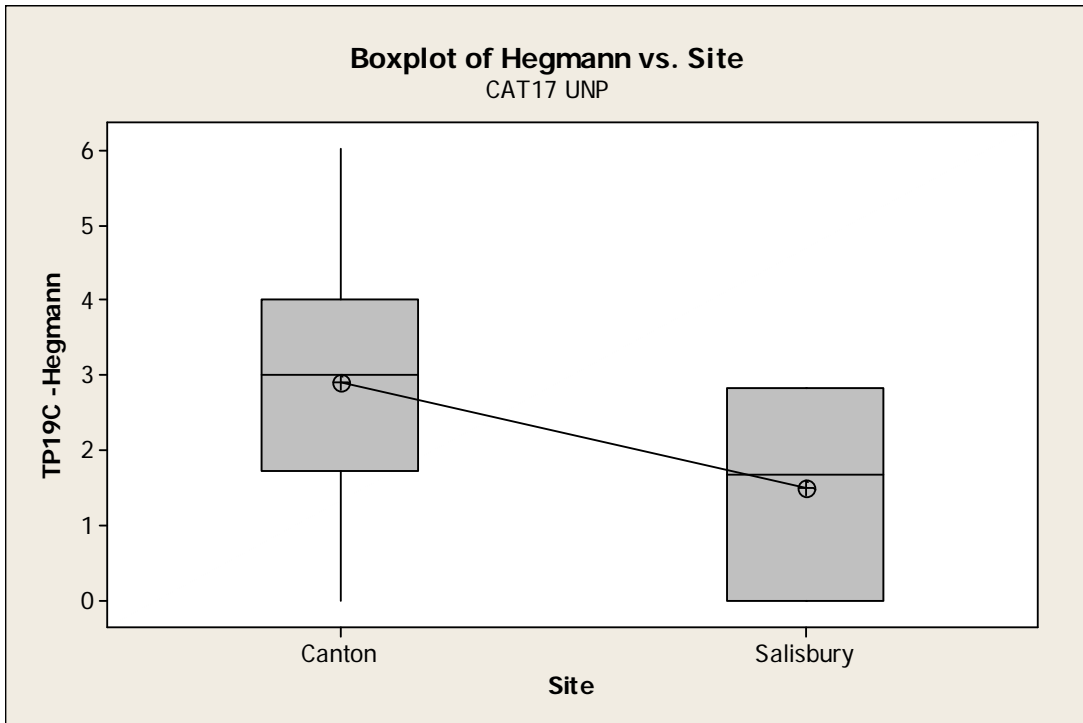
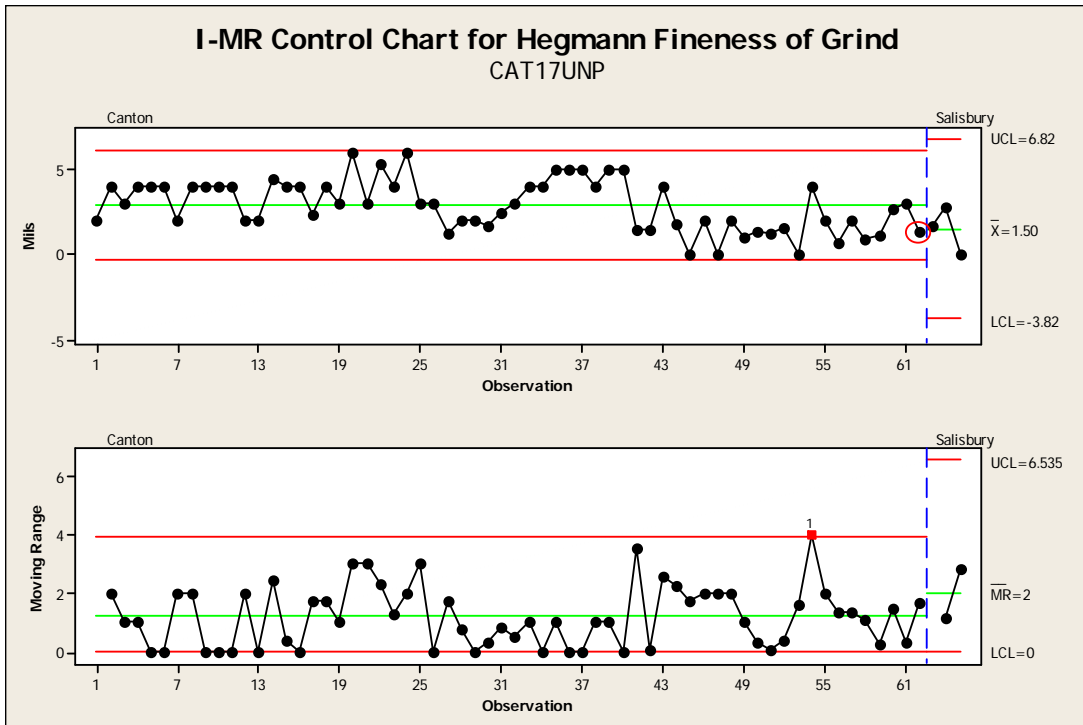
4/20/2010	015091	Canton	PASS	19000	0.66	32
5/12/2010	015682	Canton	PASS	18100	2.00	25
5/26/2010	016295	Canton	PASS	26300	0.92	20
6/4/2010	017571	Canton	PASS	24800	1.17	45
6/9/2010	017918	Canton	PASS	10250	2.66	25
6/21/2010	018343	Canton	PASS	17850	3.00	25
6/24/2010	017076	Canton	PASS	12650	1.33	25
6/9/2010	T-0037	Salisbury	PASS	13600	1.66	40
6/9/2010	T-0038	Salisbury	PASS	13850	2.83	40
6/9/2010	T-0039	Salisbury	PASS	17000	0.00	36

Viscosity: CAT17 UNP



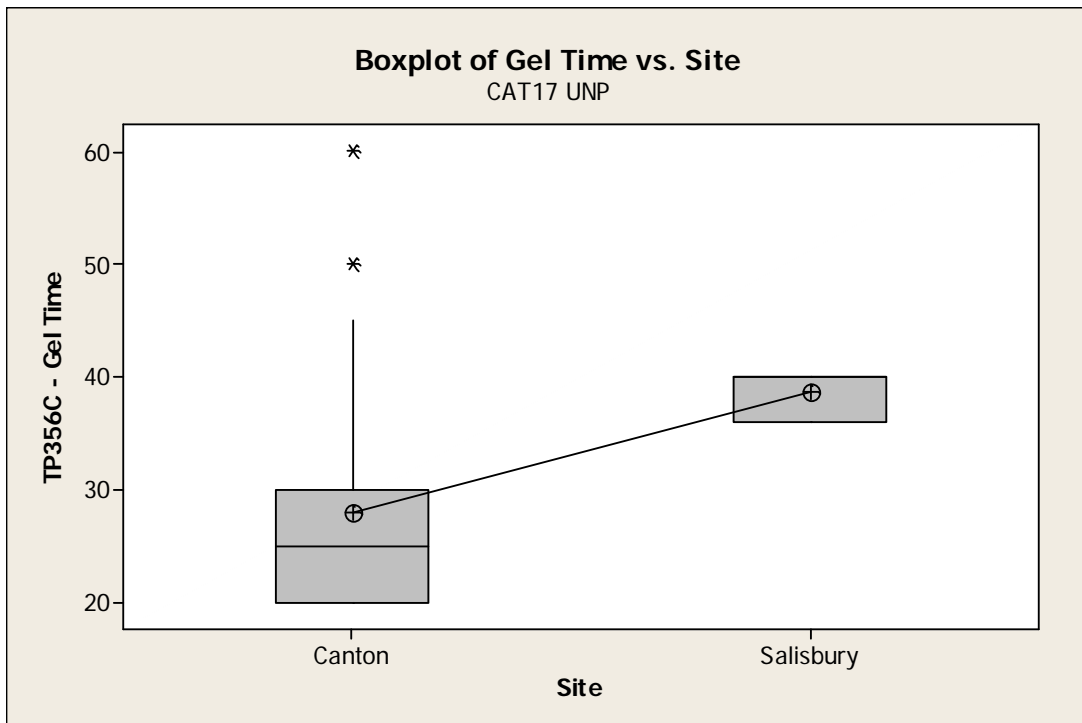
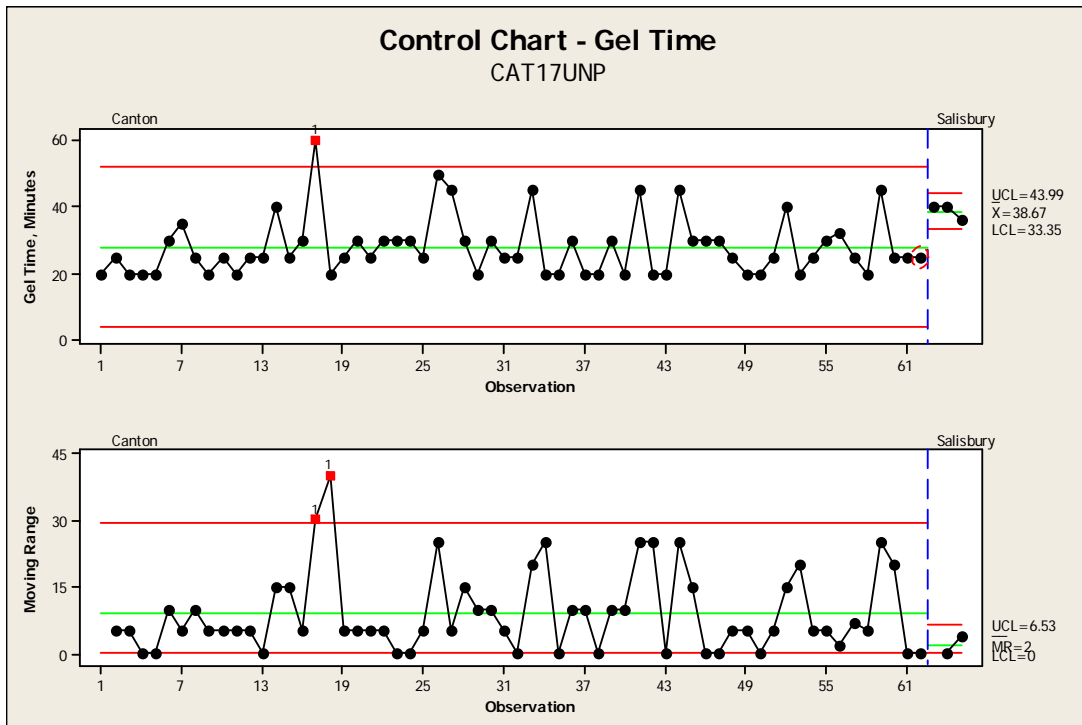
Statistically Equivalent

Hegmann Fineness of Grind: CAT17 UNP



Statistically Equivalent

Gel Time: CAT17 UNP



Case:

All three qualification lots have a gel time well within the expected range of 20-70 minutes, and the average gel time for the qualification batches is reasonably close to the historical average (Z-Score of qualification batches = 1.22).

Technically Equivalent