



Institute of Paper Science and Technology

**CONTINUOUS BASE-LINE STUDY
(MULTI-WALL BAG PAPER DATA FOR JAN-FEB, MAR-APR, MAY-JUN, 1992)**

A Progress Report

to

THE KRAFT & PACKAGING PAPERS DIVISION

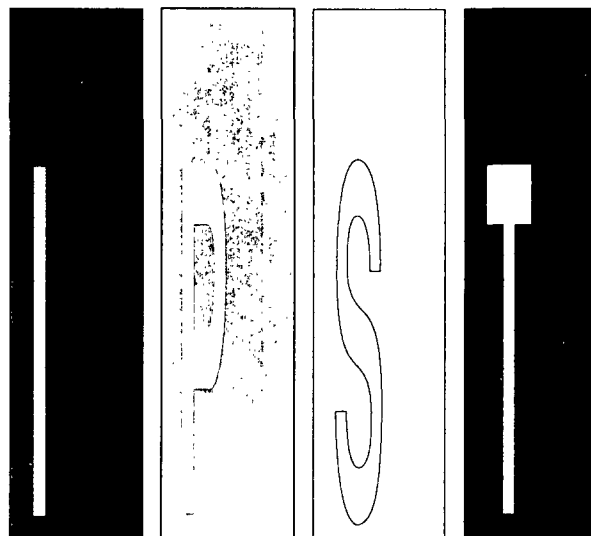
OF THE

AMERICAN PAPER INSTITUTE

Project 3710

Report Four

September 1, 1992



Atlanta, Georgia

**KPPD BASE-LINE
1st HALF, 1992**

THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY

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September 1, 1992

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Part I: SUMMARY OF MOISTURE CONTENT DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Moisture Content, %		
40 lb. Flat	AVG	5.3 (10)	5.7 (11)	5.6 (11)
	S.D.	0.73	0.46	0.58
50 lb. Flat	AVG	5.4 (12)	5.7 (15)	5.7 (16)
	S.D.	0.82	0.66	0.75
60 lb. Flat	AVG	5.6 (11)	5.6 (13)	5.7 (15)
	S.D.	1.09	0.72	0.69
50 lb. Ext.	AVG	4.0 (3)	4.6 (5)	4.3 (4)
	S.D.	0.36	0.87	0.91
60 lb. Ext.	AVG	4.0 (3)	4.7 (5)	4.6 (4)
	S.D.	0.35	0.74	0.81

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

Part II: SUMMARY OF ADJUSTED BASIS WEIGHT DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Adjusted Basis Weight, lb/3000 sq.ft.		
40 lb. Flat	AVG	42.6 (10)	42.1 (11)	42.1 (11)
	S.D.	1.44	1.40	1.06
50 lb. Flat	AVG	52.7 (12)	52.6 (15)	52.5 (16)
	S.D.	1.19	1.15	1.14
60 lb. Flat	AVG	62.3 (11)	62.4 (13)	62.5 (15)
	S.D.	1.65	1.36	1.37
50 lb. Ext.	AVG	52.3 (3)	52.7 (5)	52.9 (4)
	S.D.	1.32	1.71	1.98
60 lb. Ext.	AVG	61.9 (3)	62.6 (5)	62.7 (4)
	S.D.	1.54	1.74	2.01

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

Part III: SUMMARY OF POROSITY DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Porosity, s/100 cc		
40 lb. Flat	AVG	8.0 (10)	9.5 (11)	9.2 (11)
	S.D.	3.30	3.23	3.31
50 lb. Flat	AVG	10.2 (12)	10.6 (15)	11.2 (16)
	S.D.	4.10	4.49	3.67
60 lb. Flat	AVG	10.9 (11)	11.2 (13)	12.2 (15)
	S.D.	4.19	4.54	4.05
50 lb. Ext.	AVG	9.5 (3)	11.4 (5)	9.4 (4)
	S.D.	6.50	6.83	5.12
60 lb. Ext.	AVG	8.8 (3)	11.5 (5)	10.0 (4)
	S.D.	5.52	5.68	4.76

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

Part IV: SUMMARY OF TEAR RESISTANCE DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		MD Tear, g		
40 lb. Flat	AVG	95.7 (10)	96.5 (11)	95.9 (11)
	S.D.	3.34	5.38	5.07
50 lb. Flat	AVG	126.8 (12)	126.9 (15)	128.1 (16)
	S.D.	4.46	4.23	5.70
60 lb. Flat	AVG	155.3 (11)	156.2 (13)	156.6 (15)
	S.D.	10.01	6.36	6.43
50 lb. Ext.	AVG	121.5 (3)	127.3 (5)	131.9 (4)
	S.D.	10.88	8.26	9.93
60 lb. Ext.	AVG	151.6 (3)	151.0 (5)	156.8 (4)
	S.D.	13.27	13.96	12.95

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Total Tear, g		
40 lb. Flat	AVG	199.7 (10)	202.0 (11)	203.1 (11)
	S.D.	3.62	5.39	8.60
50 lb. Flat	AVG	262.3 (12)	263.4 (15)	266.5 (16)
	S.D.	9.88	8.43	11.58
60 lb. Flat	AVG	321.8 (11)	327.8 (13)	327.4 (15)
	S.D.	14.58	13.89	19.09
50 lb. Ext.	AVG	265.4 (3)	278.6 (5)	289.7 (4)
	S.D.	30.86	18.58	28.83
60 lb. Ext.	AVG	331.6 (3)	333.8 (5)	343.9 (4)
	S.D.	16.15	25.28	31.32

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

Part V: SUMMARY OF TENSILE DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		CD Tensile, lb/in		
40 lb. Flat	AVG	16.9 (10)	16.8 (11)	17.0 (11)
	S.D.	1.65	1.30	1.31
50 lb. Flat	AVG	21.0 (12)	20.9 (15)	21.2 (16)
	S.D.	1.40	1.45	1.31
60 lb. Flat	AVG	25.1 (11)	24.8 (13)	25.3 (15)
	S.D.	1.71	2.25	1.65

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Total Tensile, lb/in		
40 lb. Flat	AVG	46.0 (10)	46.0 (11)	46.7 (11)
	S.D.	2.40	2.33	2.53
50 lb. Flat	AVG	56.7 (12)	56.7 (15)	57.5 (16)
	S.D.	2.15	2.48	2.30
60 lb. Flat	AVG	67.6 (11)	68.7 (13)	68.8 (15)
	S.D.	2.85	3.05	2.93

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

Part VI: SUMMARY OF STRETCH DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		MD Stretch, %		
50 lb. Extensible	AVG	6.4 (3)	6.1 (5)	6.2 (4)
	S.D.	1.57	1.06	1.10
60 lb. Extensible	AVG	6.9 (3)	6.6 (5)	6.3 (4)
	S.D.	0.96	0.90	1.56

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		CD Stretch, %		
50 lb. Extensible	AVG	5.4 (3)	5.4 (5)	5.4 (4)
	S.D.	1.10	1.08	1.15
60 lb. Extensible	AVG	4.7 (3)	5.2 (5)	5.4 (4)
	S.D.	0.61	0.86	1.07

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

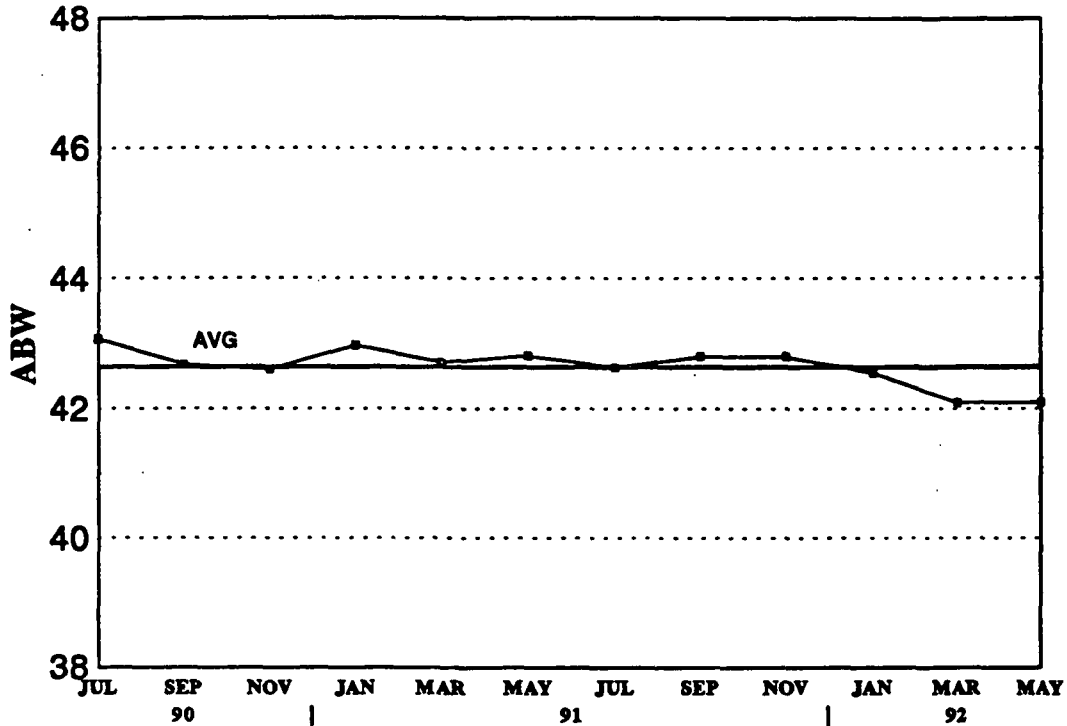
Part VII: SUMMARY OF TEA DATA

		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		CD TEA, ft.lb/sq.ft.		
50 lb. Extensible	AVG	8.0 (3)	8.1 (5)	7.8 (4)
	S.D.	2.73	2.60	2.52
60 lb. Extensible	AVG	7.8 (3)	9.4 (5)	9.5 (4)
	S.D.	0.78	2.30	2.87

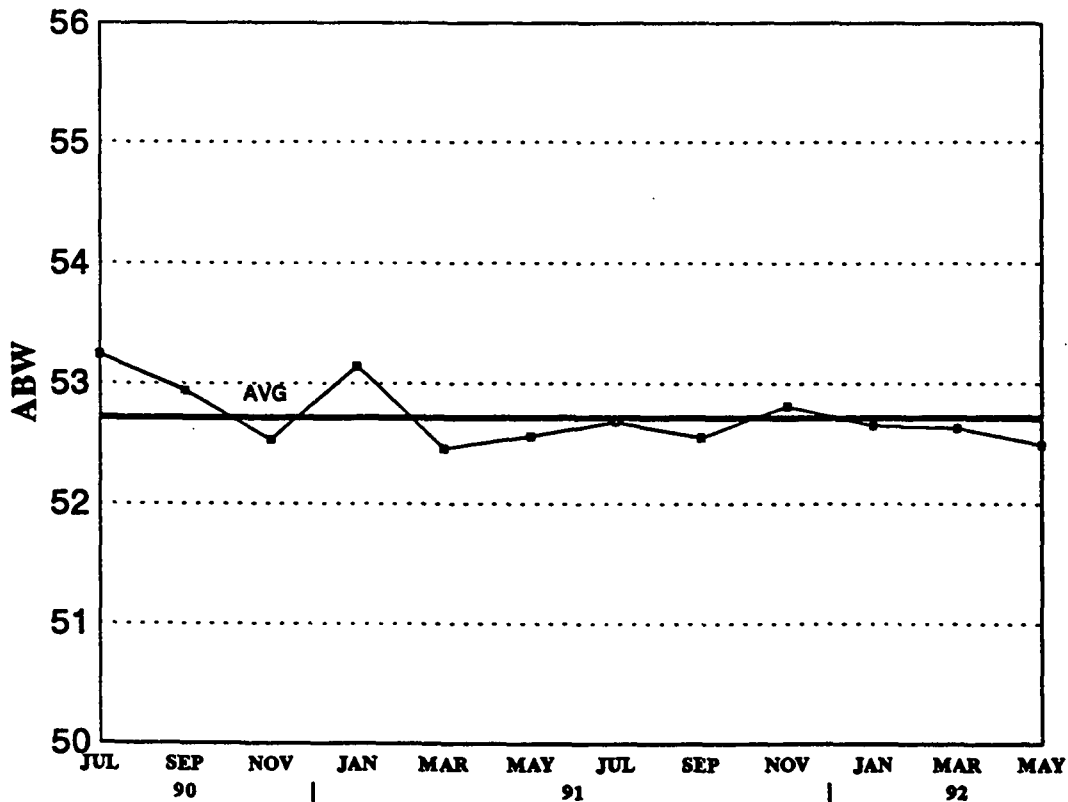
		Jan-Feb	Mar-Apr	May-Jun
Multiwall Grade Wt.		Total TEA, ft.lb/sq.ft.		
50 lb. Extensible	AVG	20.1 (3)	20.2 (5)	19.7 (4)
	S.D.	3.14	2.75	2.13
60 lb. Extensible	AVG	22.7 (3)	24.4 (5)	23.7 (4)
	S.D.	2.57	2.77	2.73

Note: S.D. is Standard Deviation of current machine averages.
 AVG is current KPPD average
 No. of machines is indicated in ().

2 YEAR TREND PLOT FOR ABW

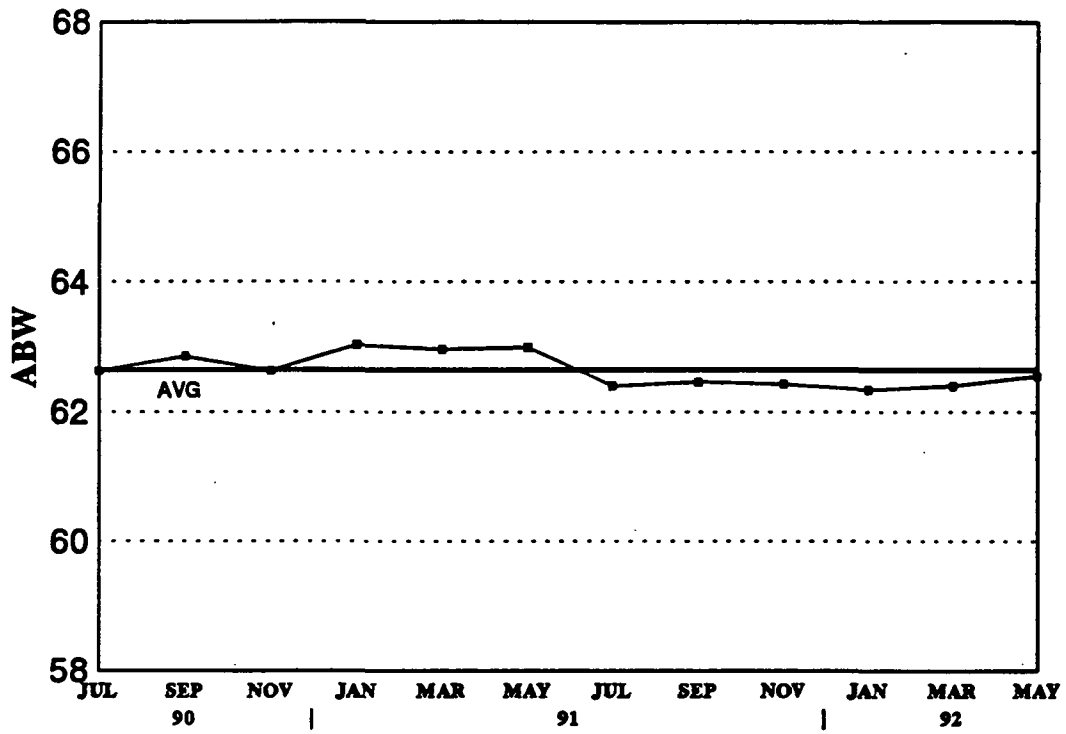


40 FLAT BI-MONTHLY AVERAGES



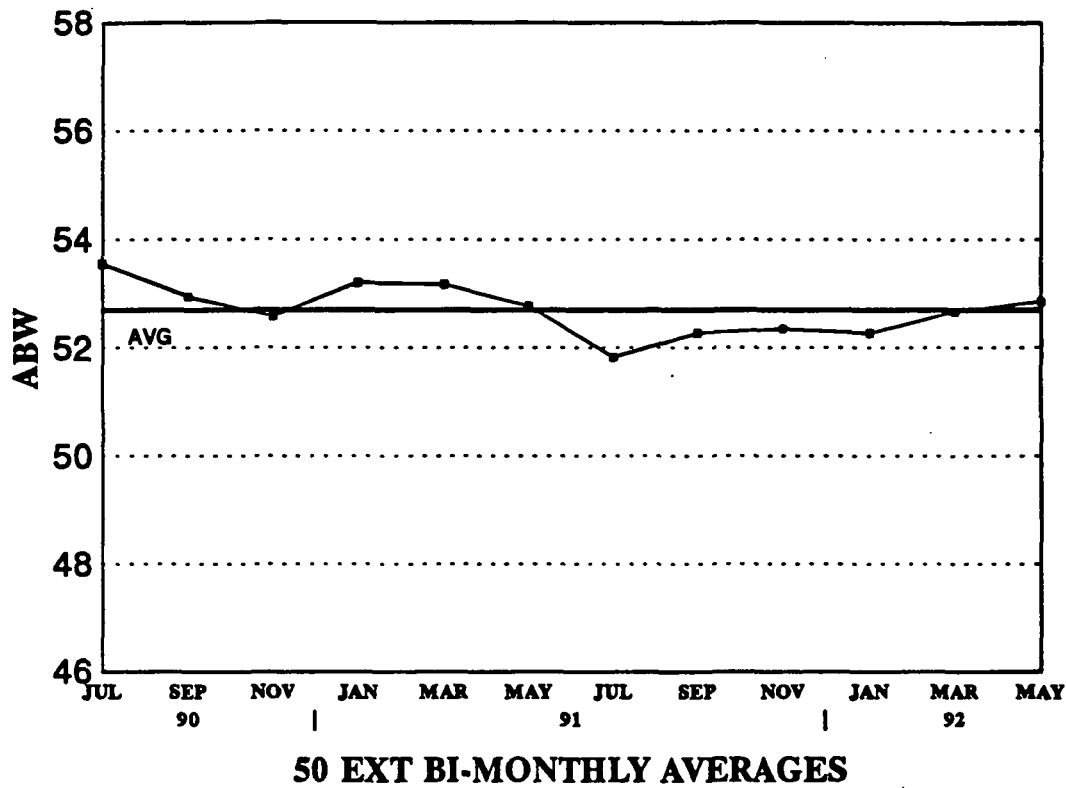
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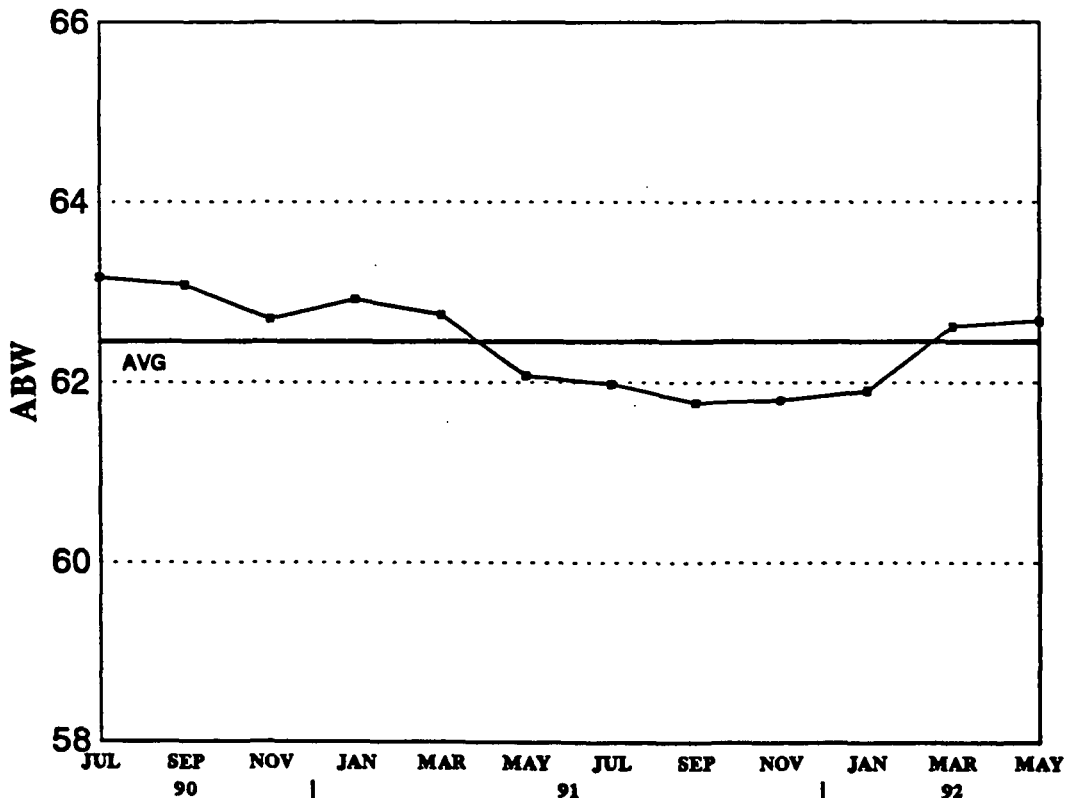


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2 YEAR TREND PLOT FOR ABW

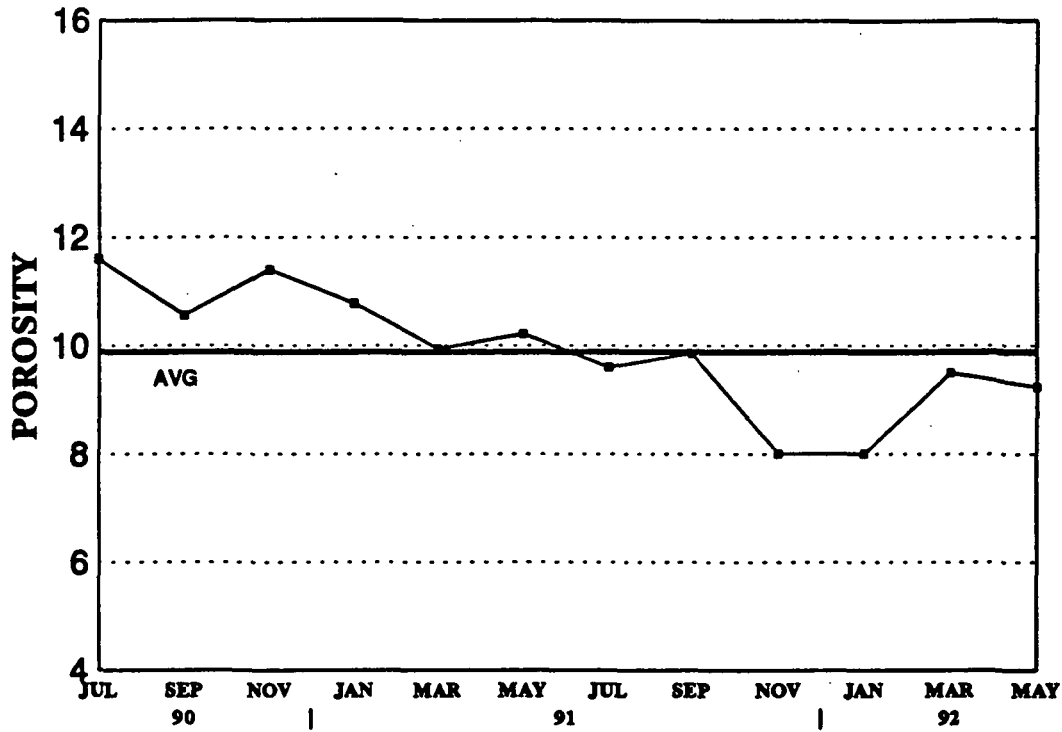


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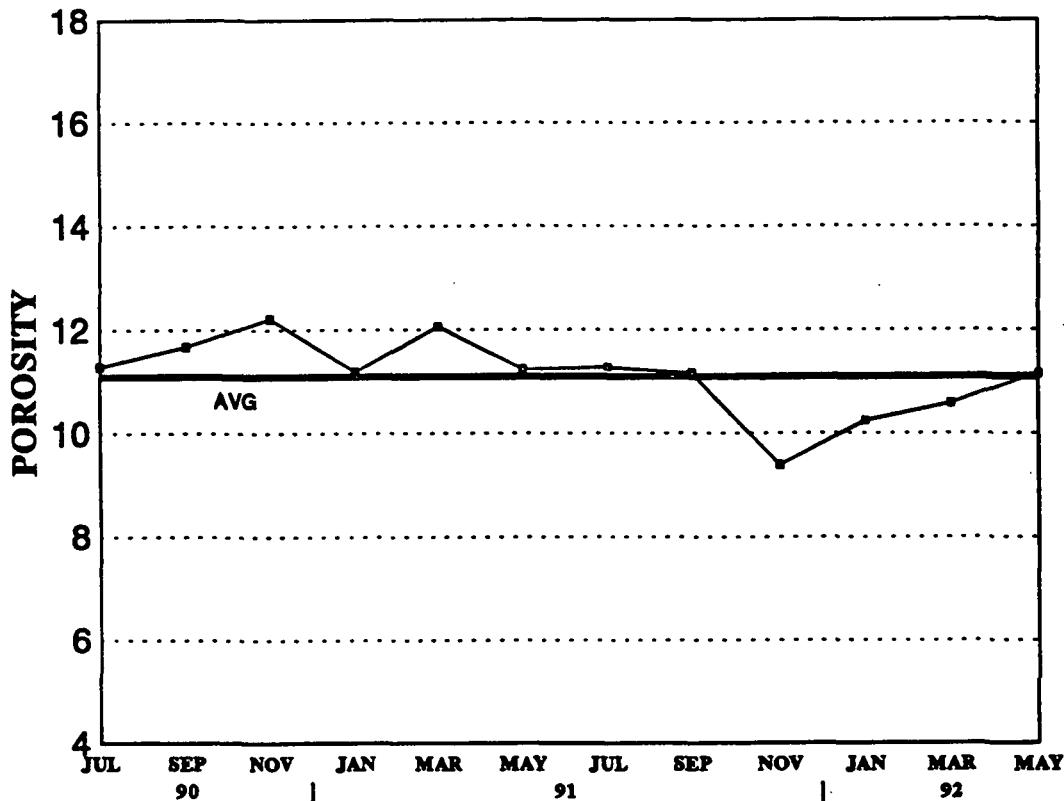


60 EXT BI-MONTHLY AVERAGES

2 YEAR TREND PLOT FOR POROSITY

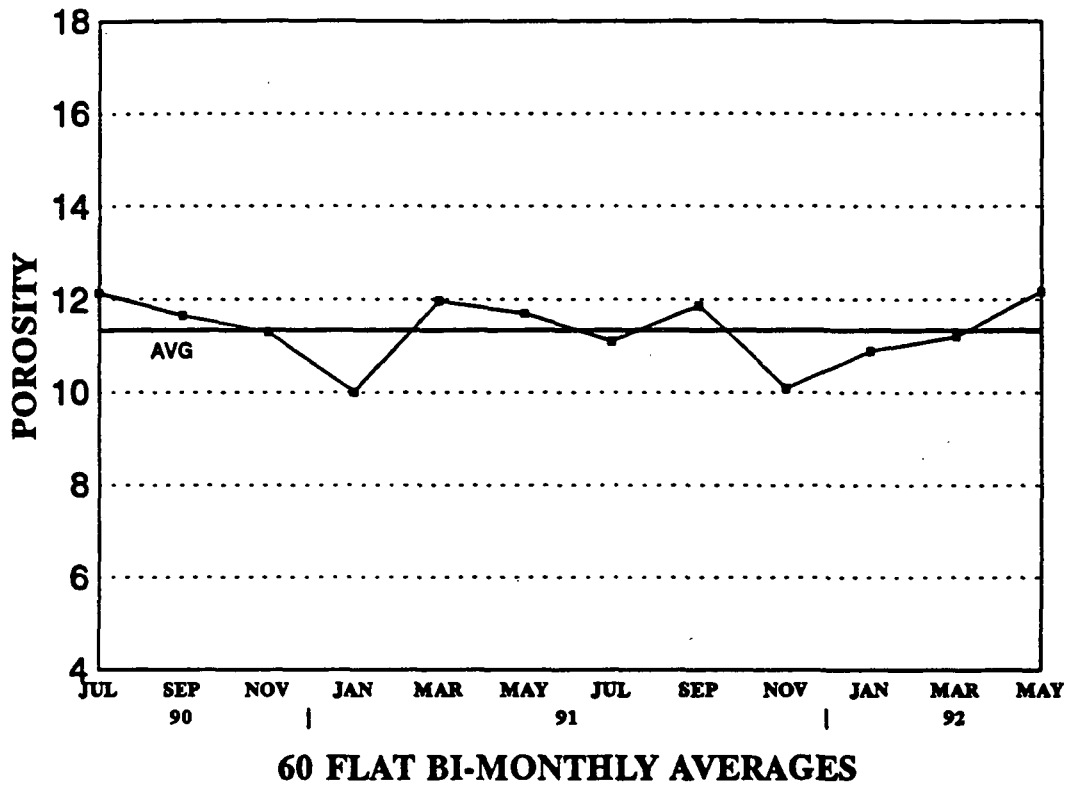


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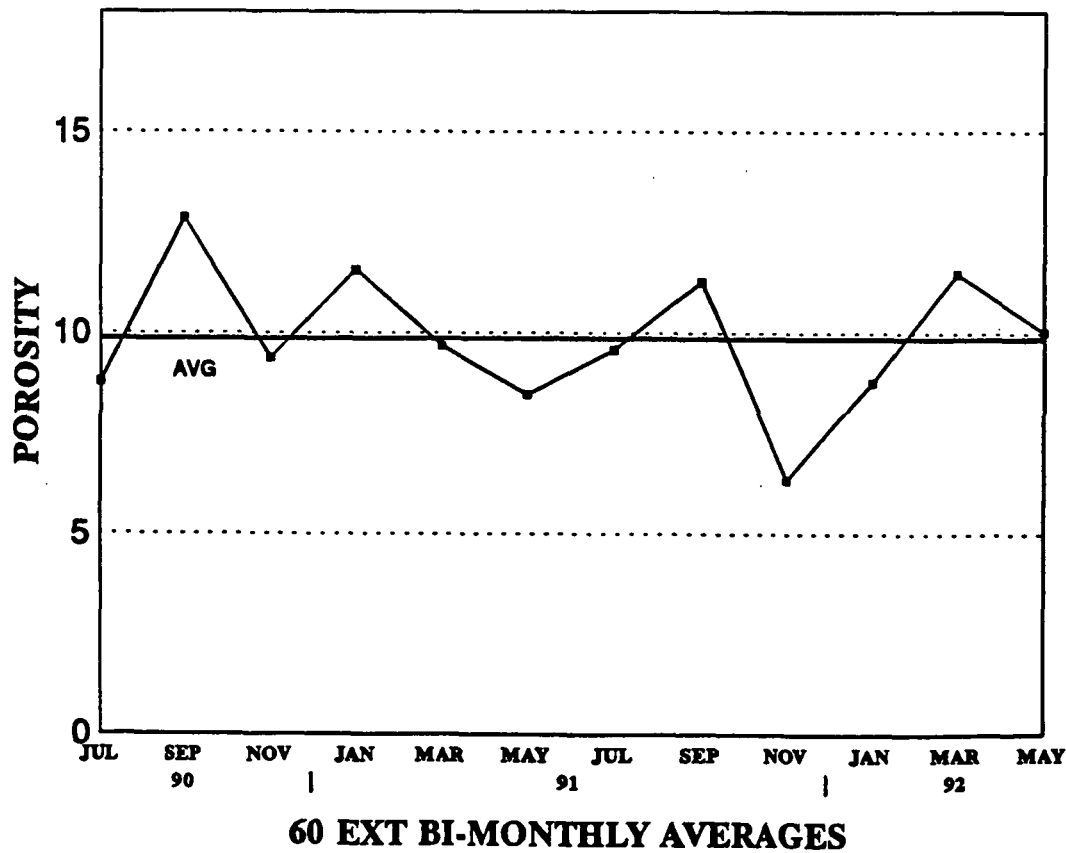
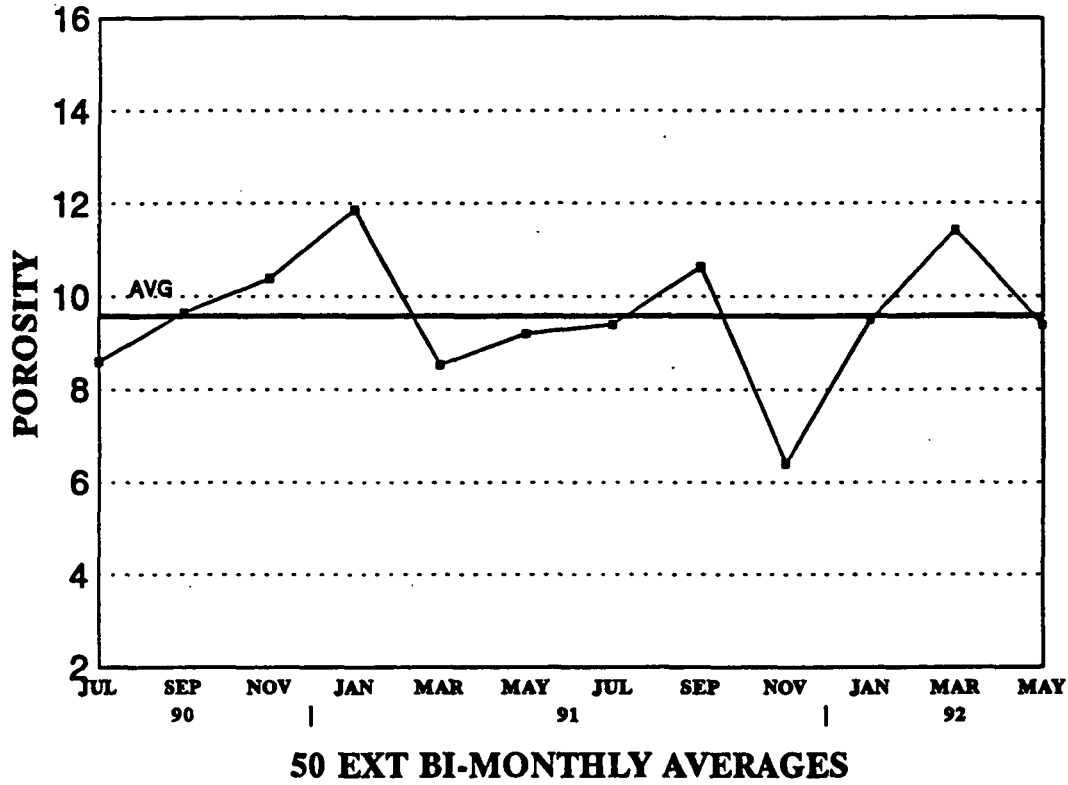


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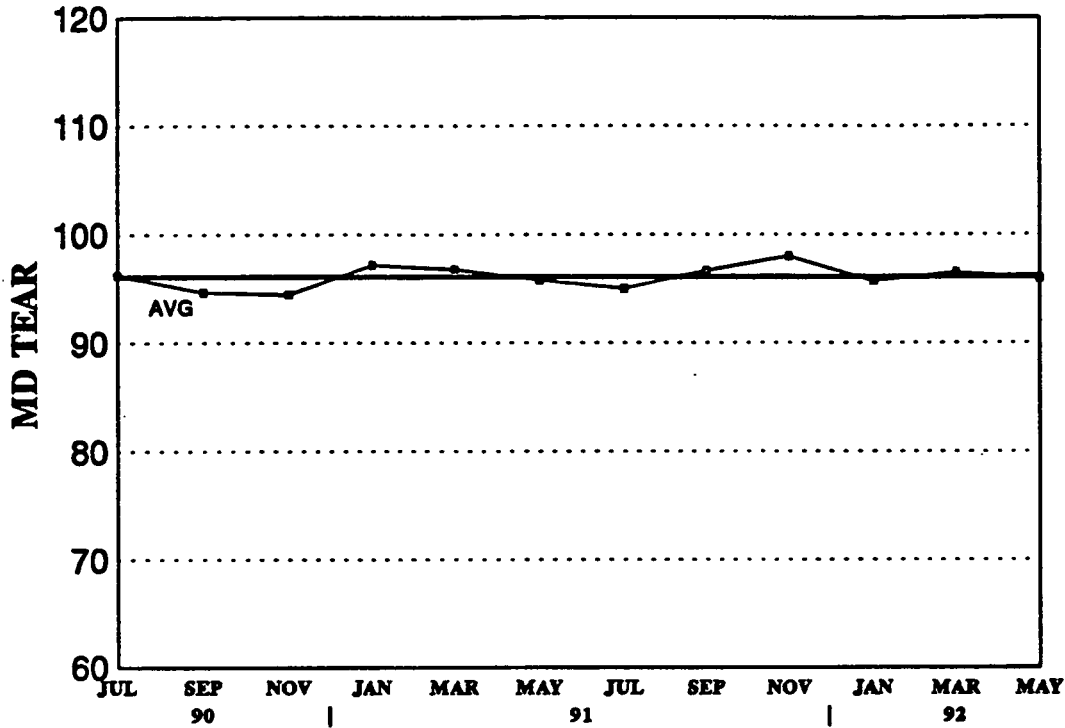
2 YEAR TREND PLOT FOR POROSITY



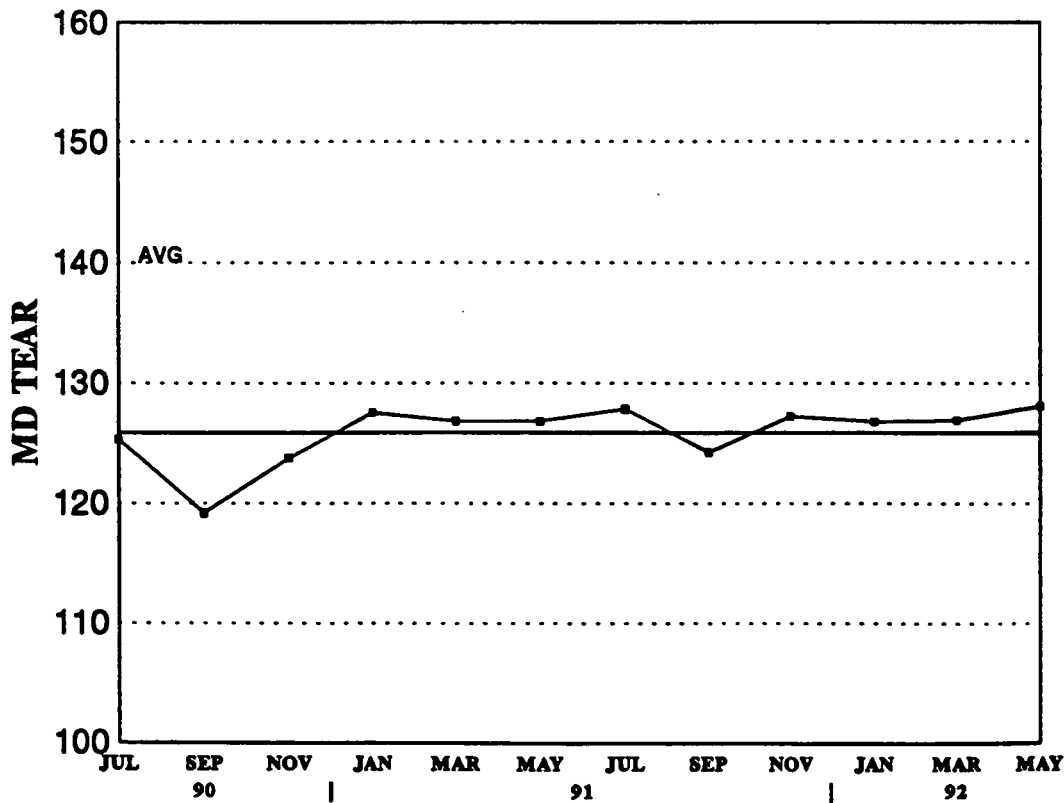
2 YEAR TREND PLOT FOR POROSITY



2 YEAR TREND PLOT FOR MD TEAR

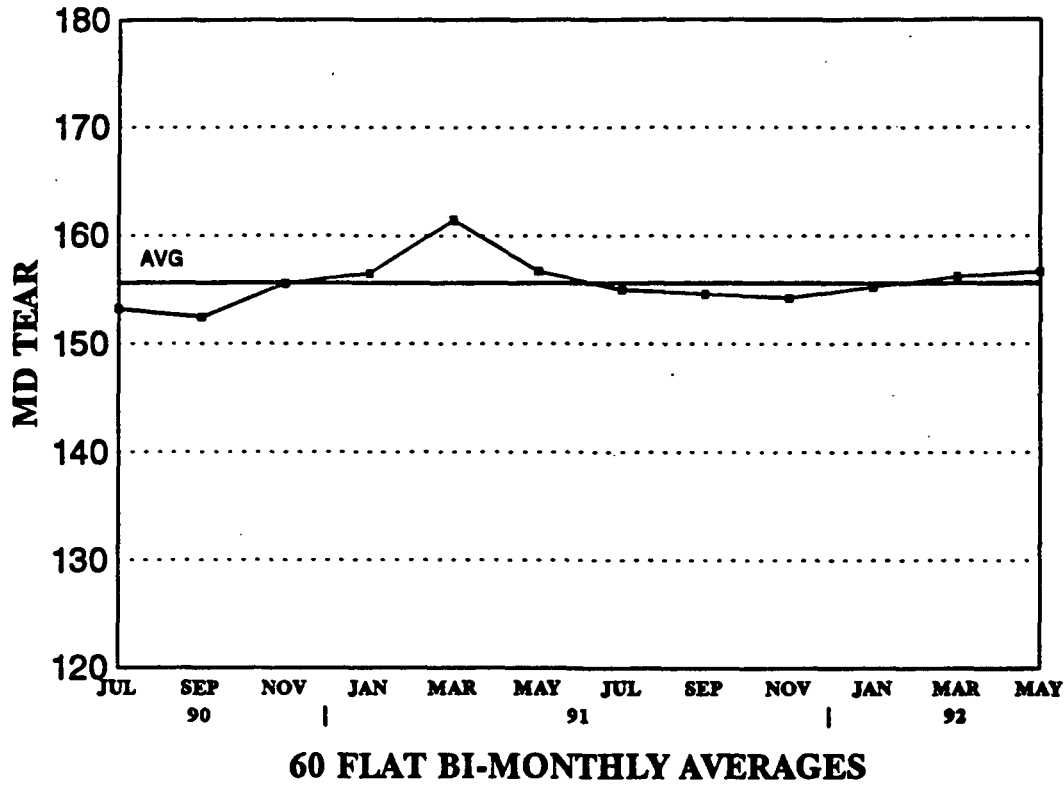


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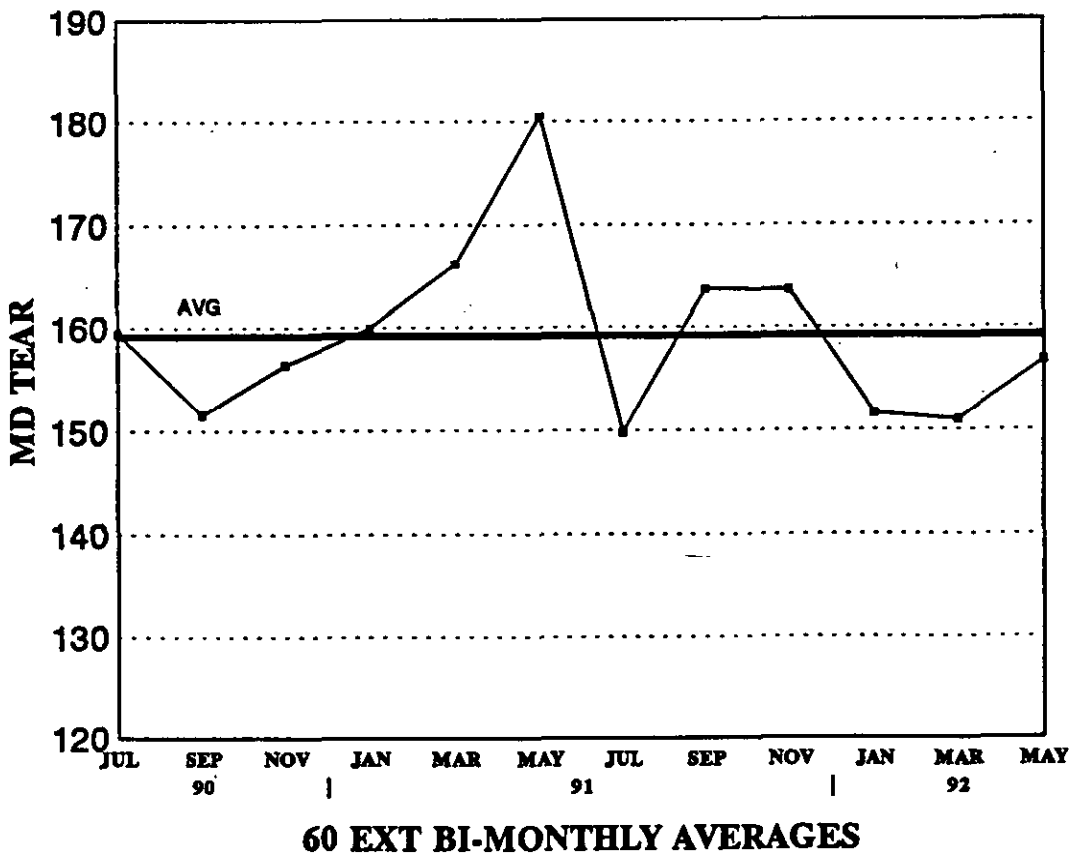
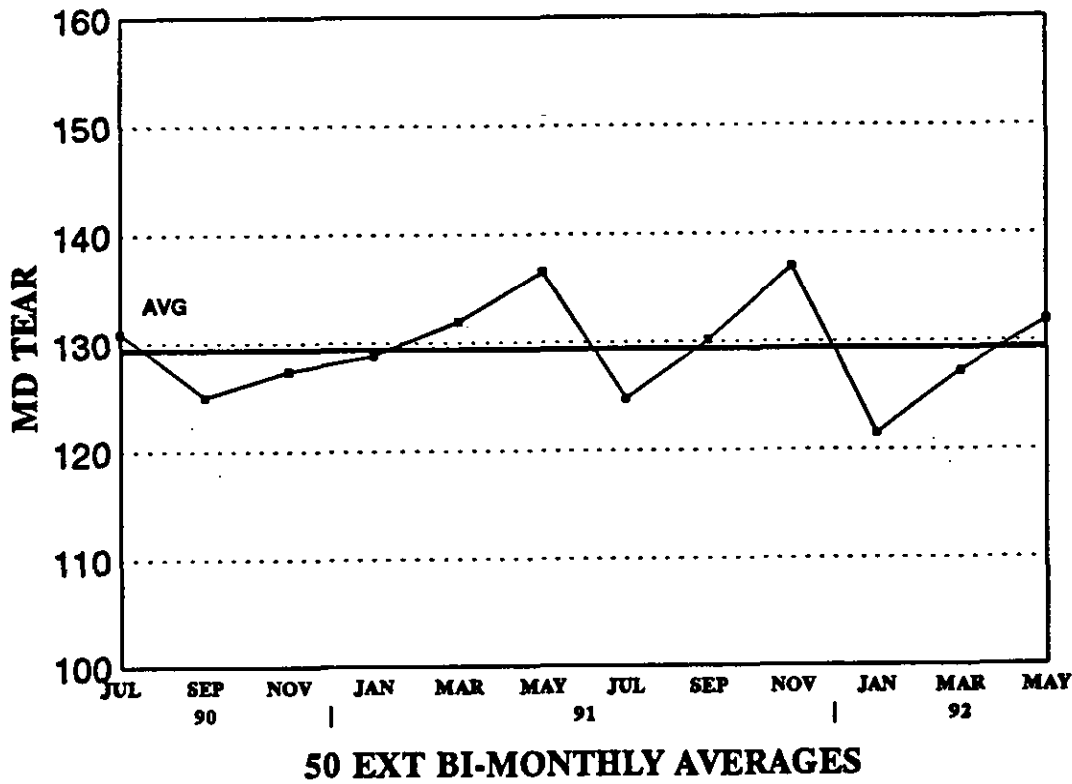


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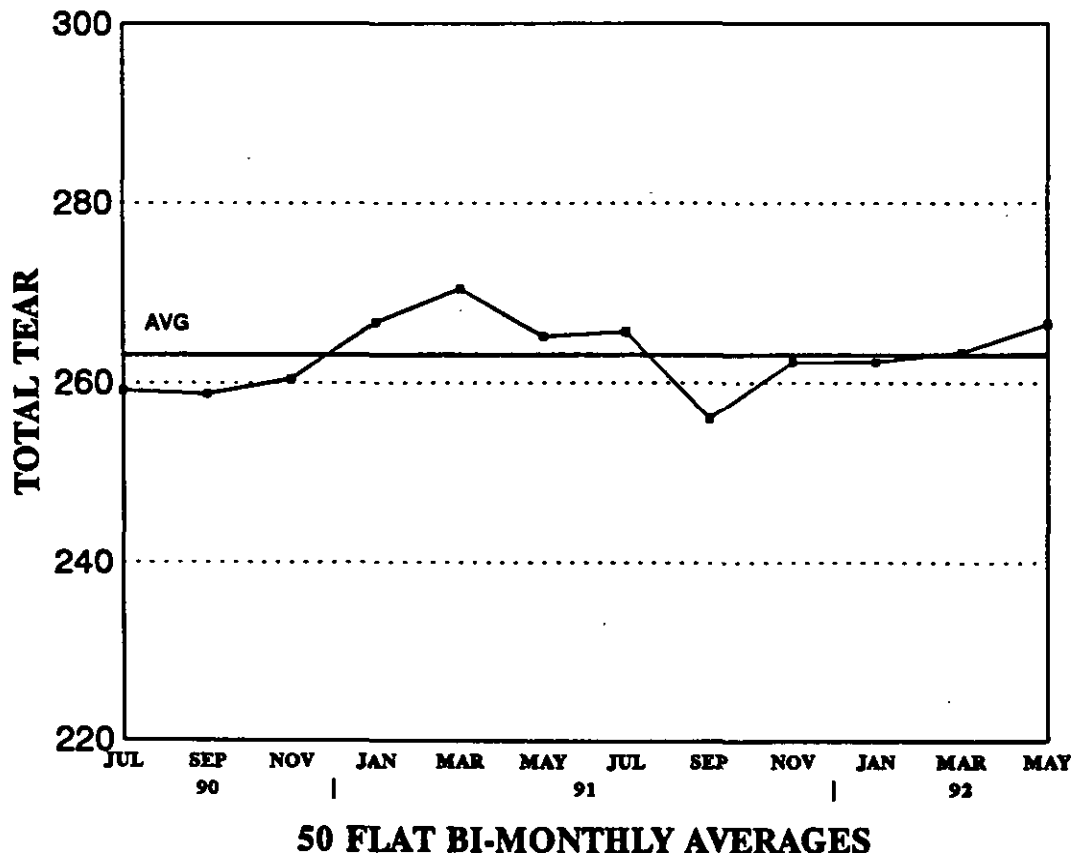
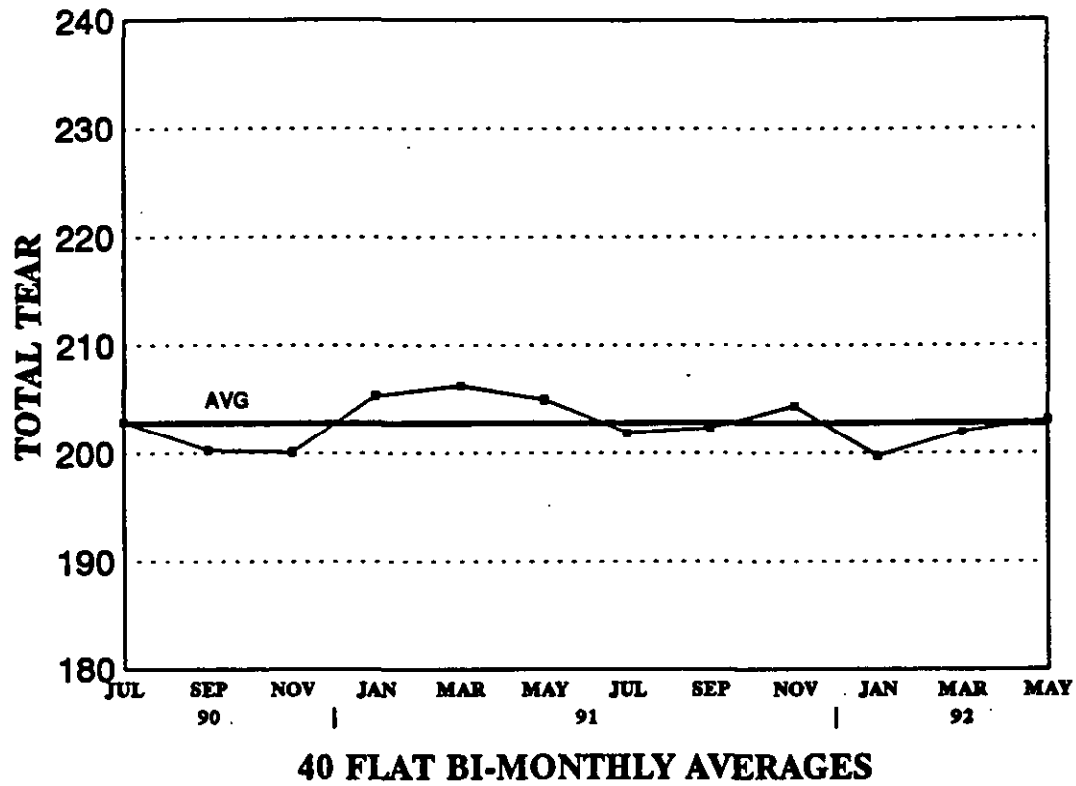
2 YEAR TREND PLOT FOR MD TEAR



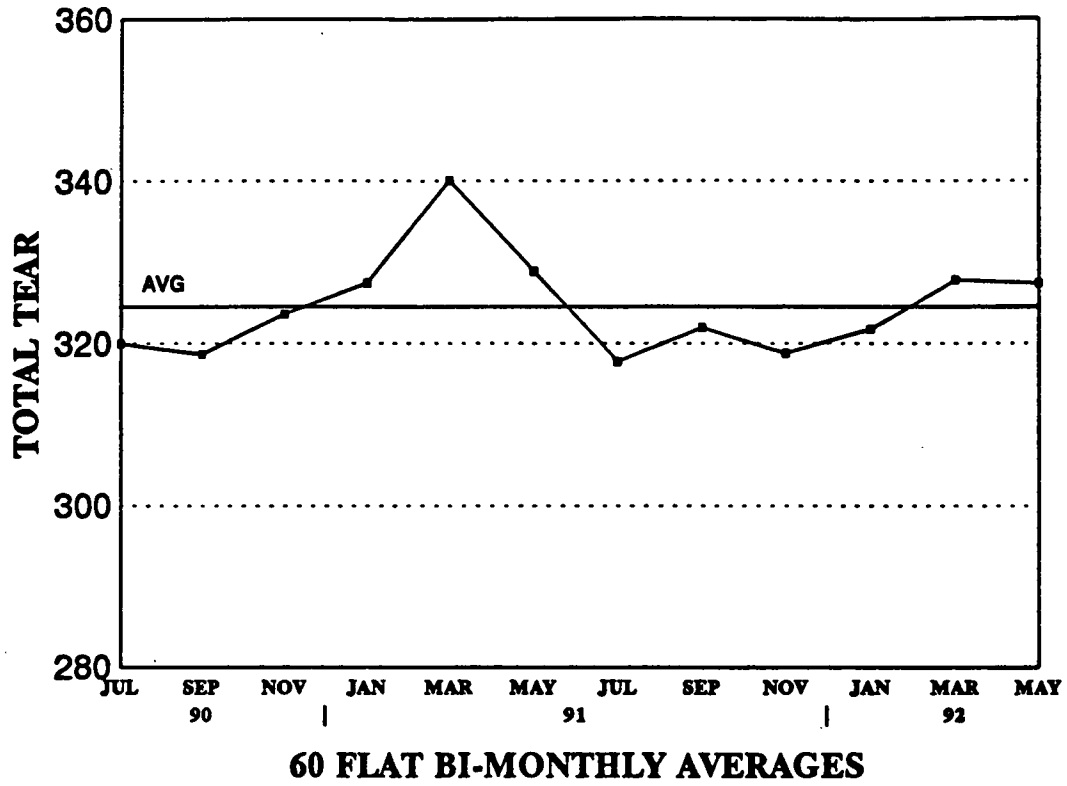
2 YEAR TREND PLOT FOR MD TEAR



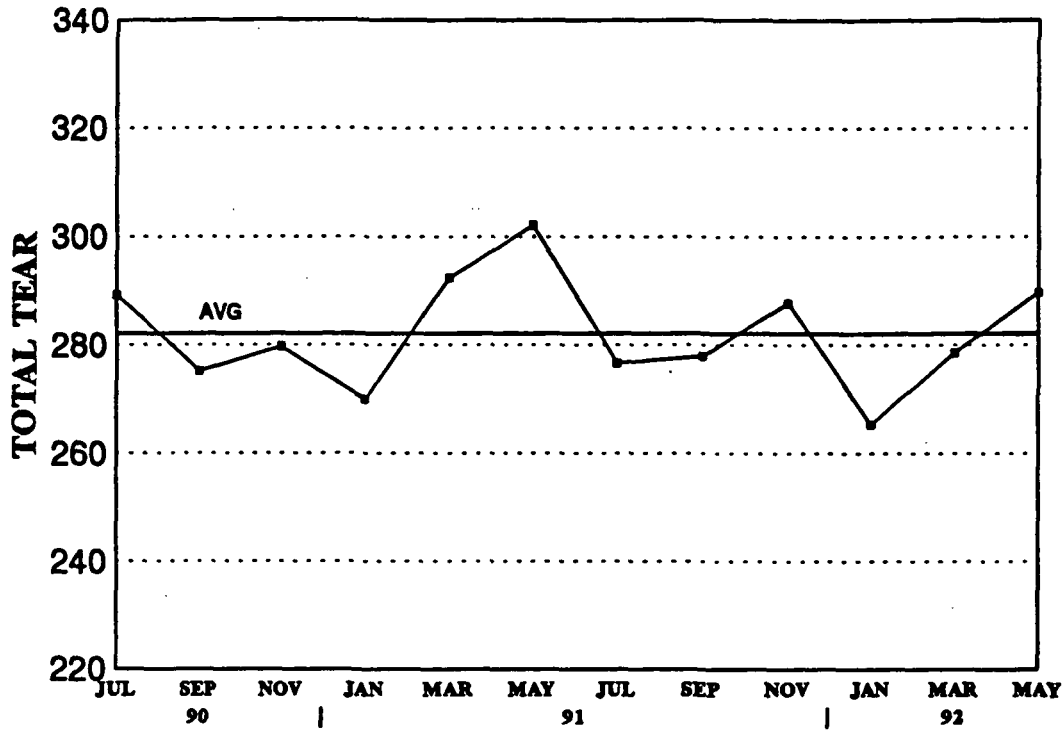
2 YEAR TREND PLOT FOR TOTAL TEAR



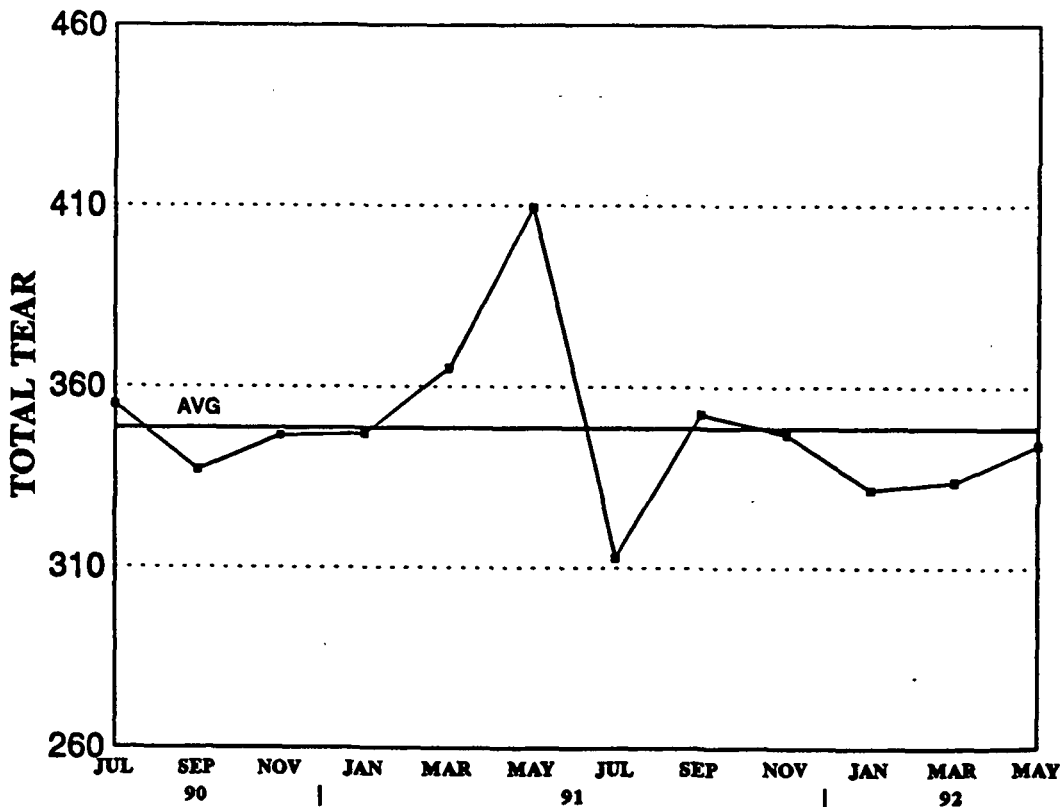
2 YEAR TREND PLOT FOR TOTAL TEAR



2 YEAR TREND PLOT FOR TOTAL TEAR

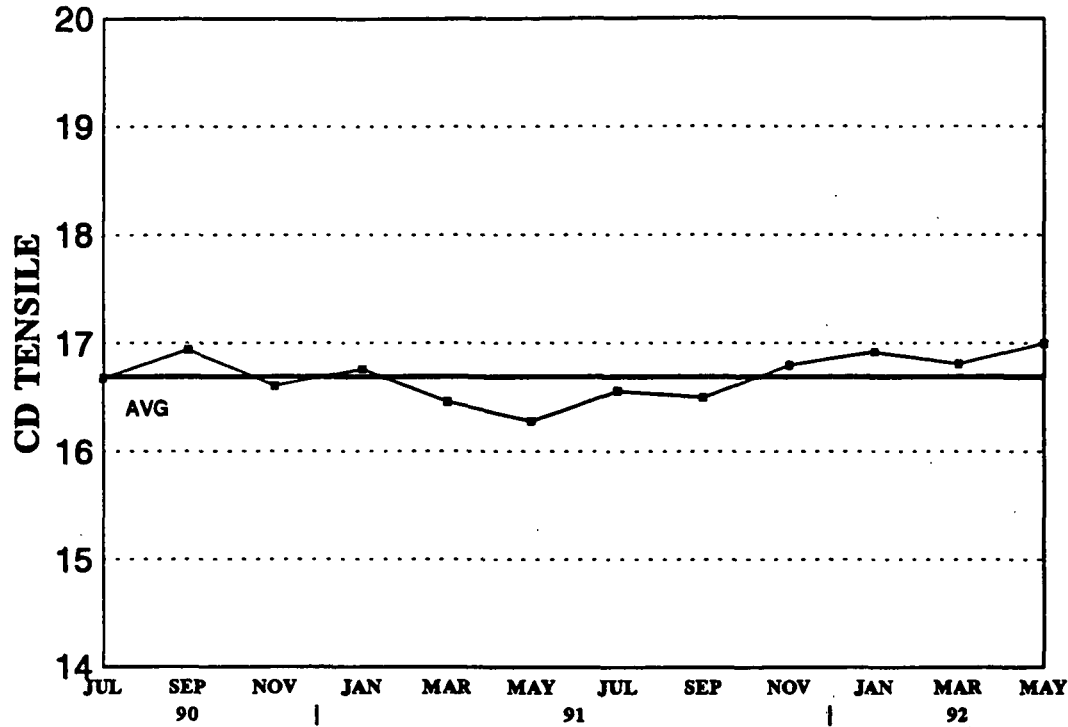


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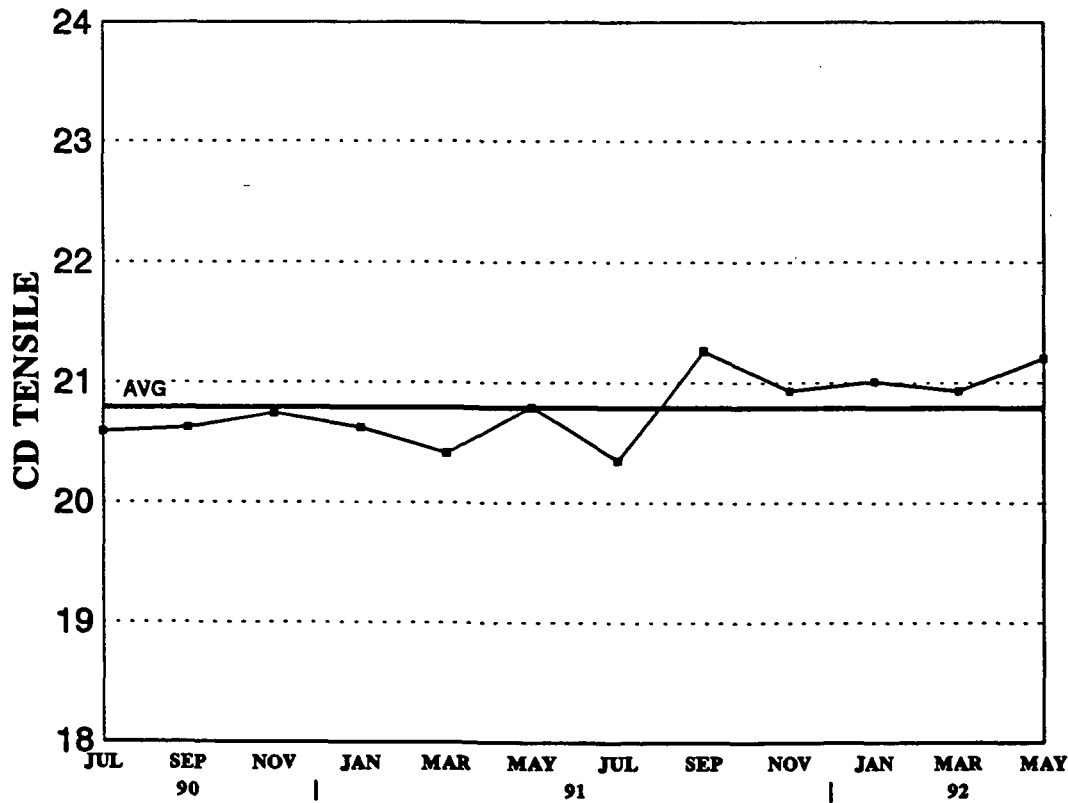


60 EXT BI-MONTHLY AVERAGES

2 YEAR TREND PLOT FOR CD TENSILE

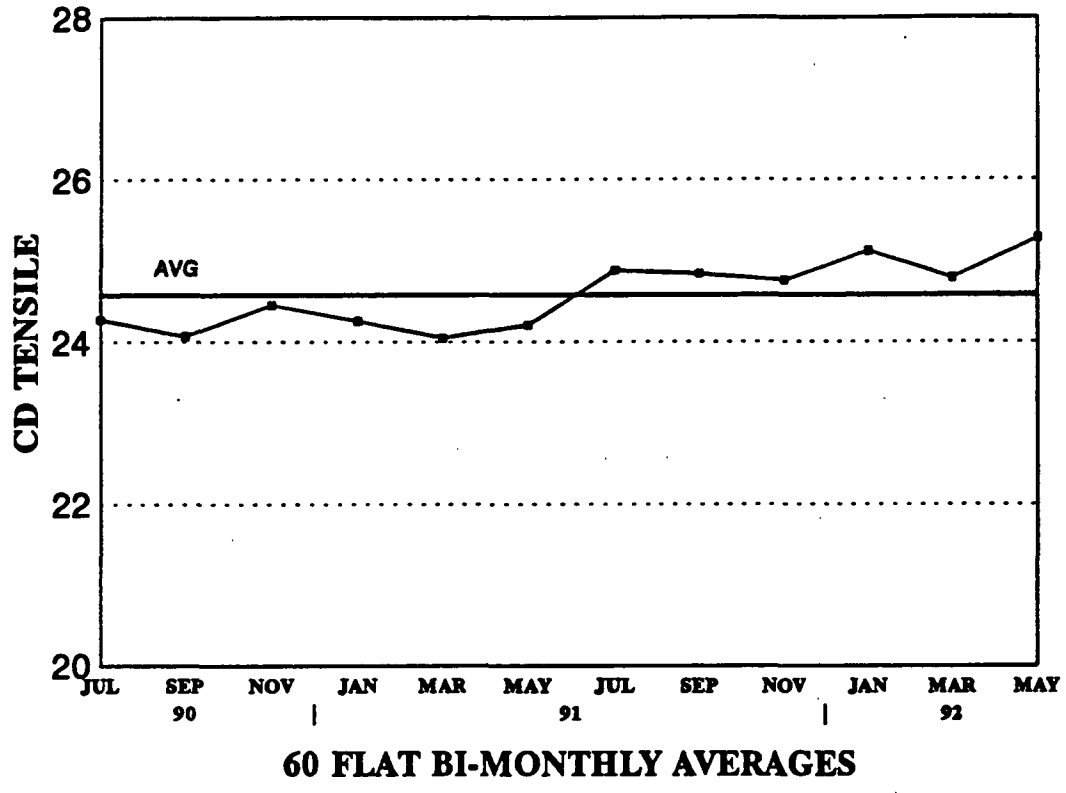


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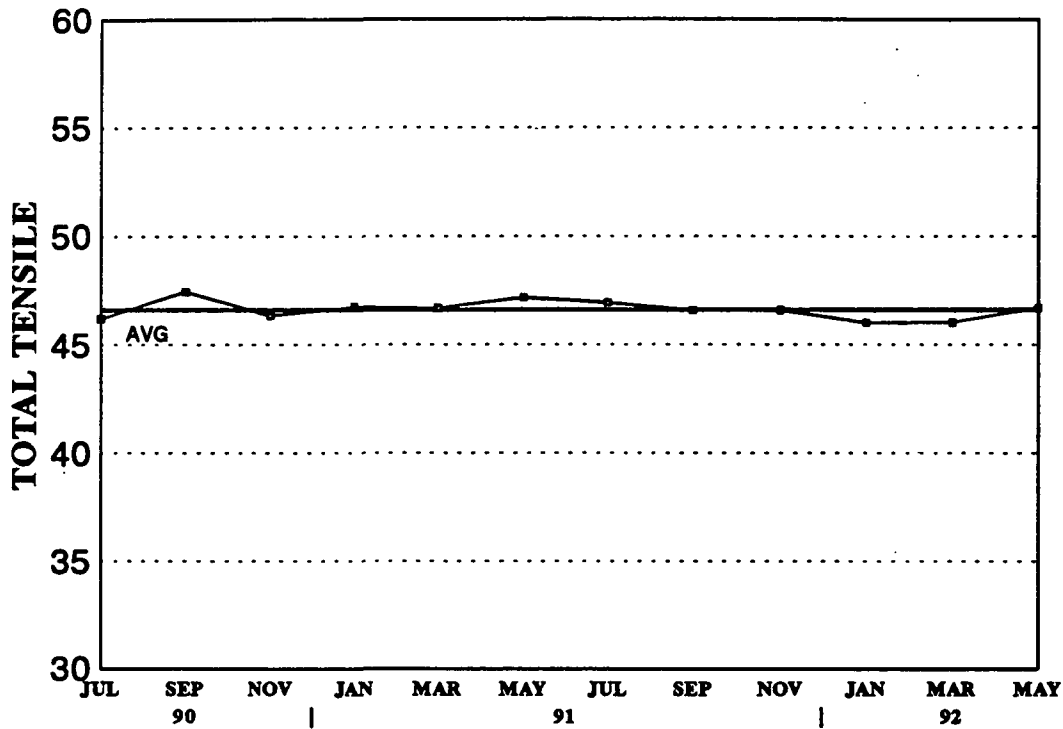


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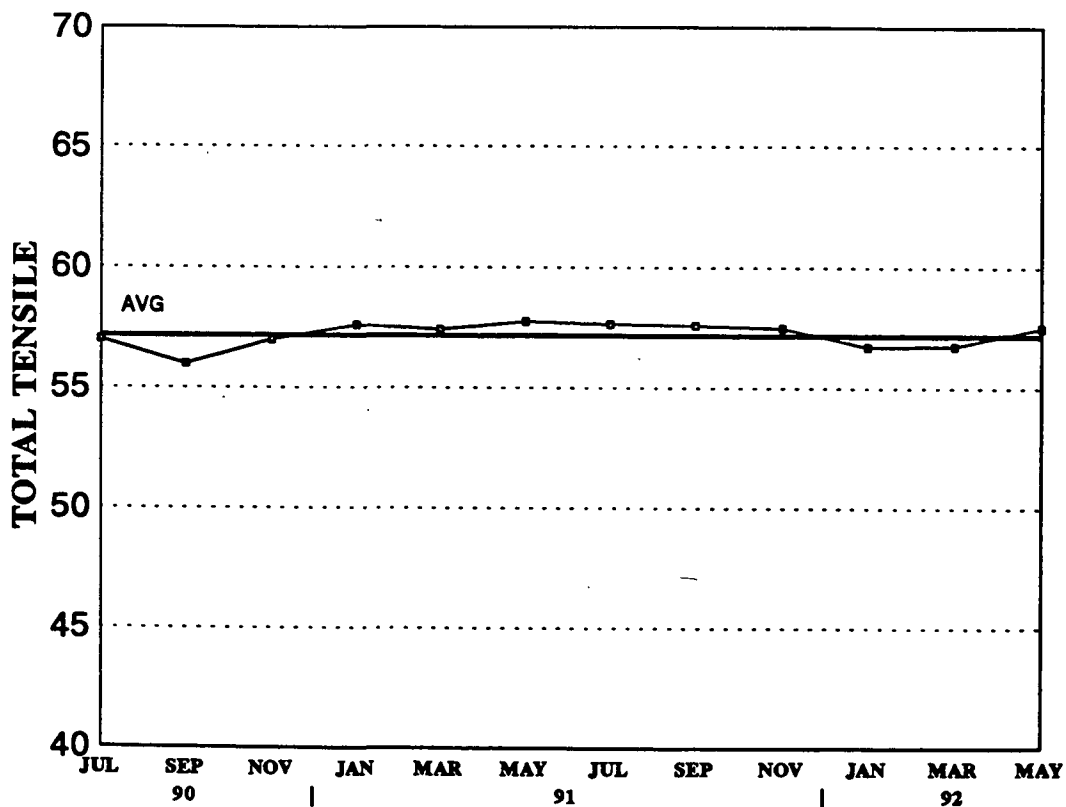
2 YEAR TREND PLOT FOR CD TENSILE



2 YEAR TREND PLOT FOR TOTAL TENSILE

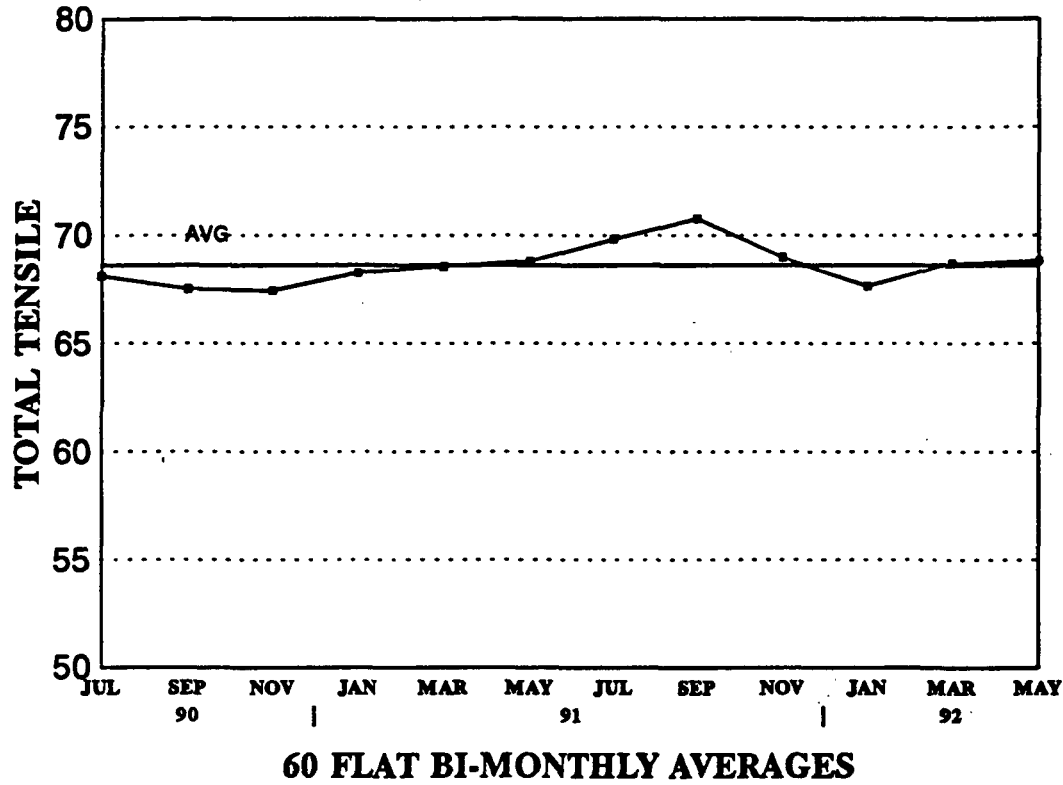


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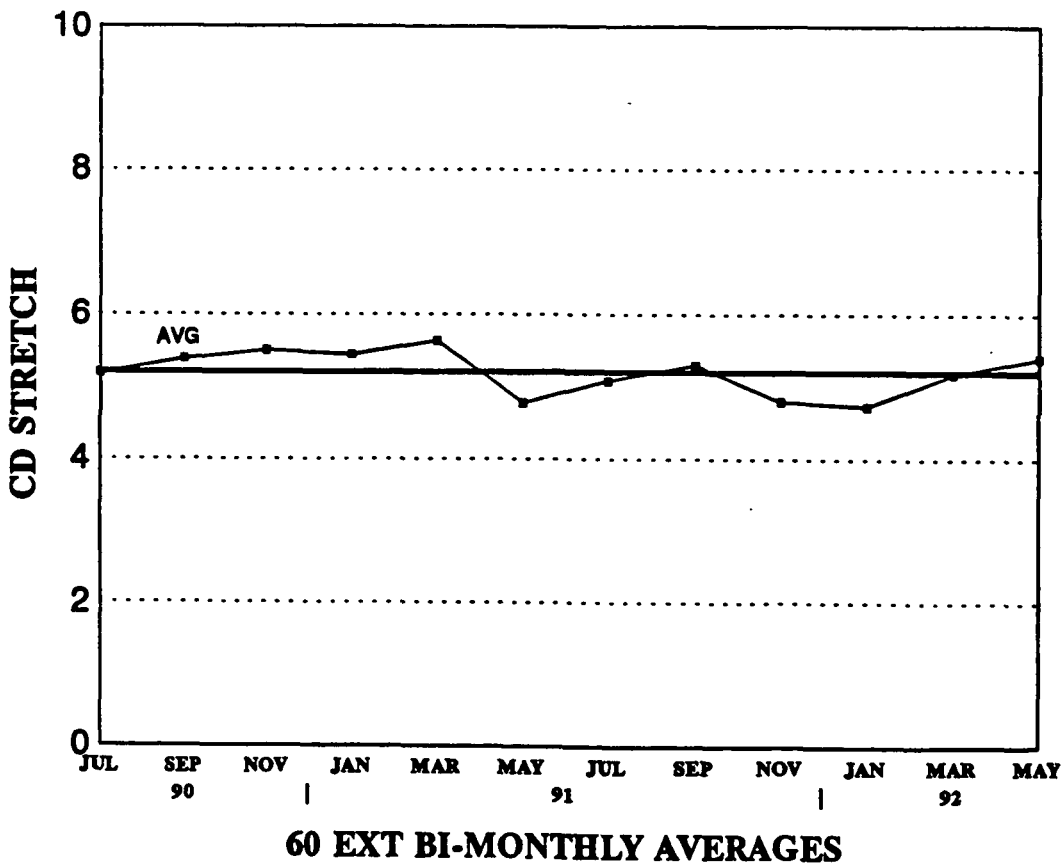
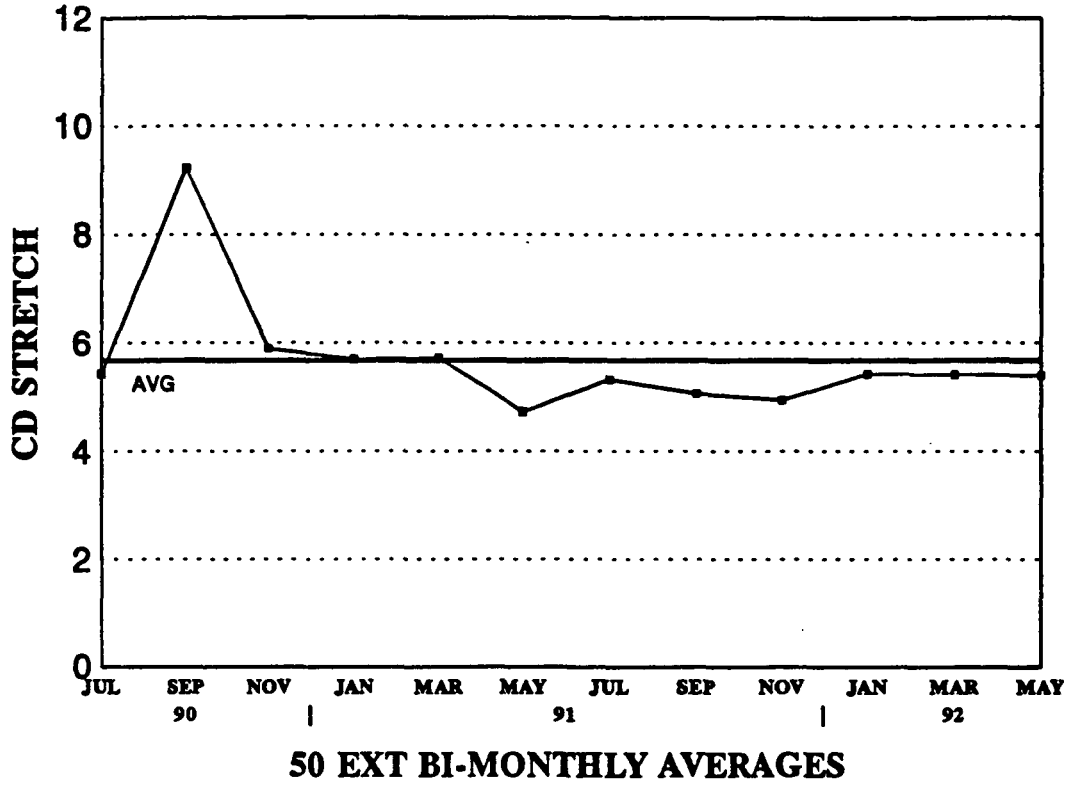


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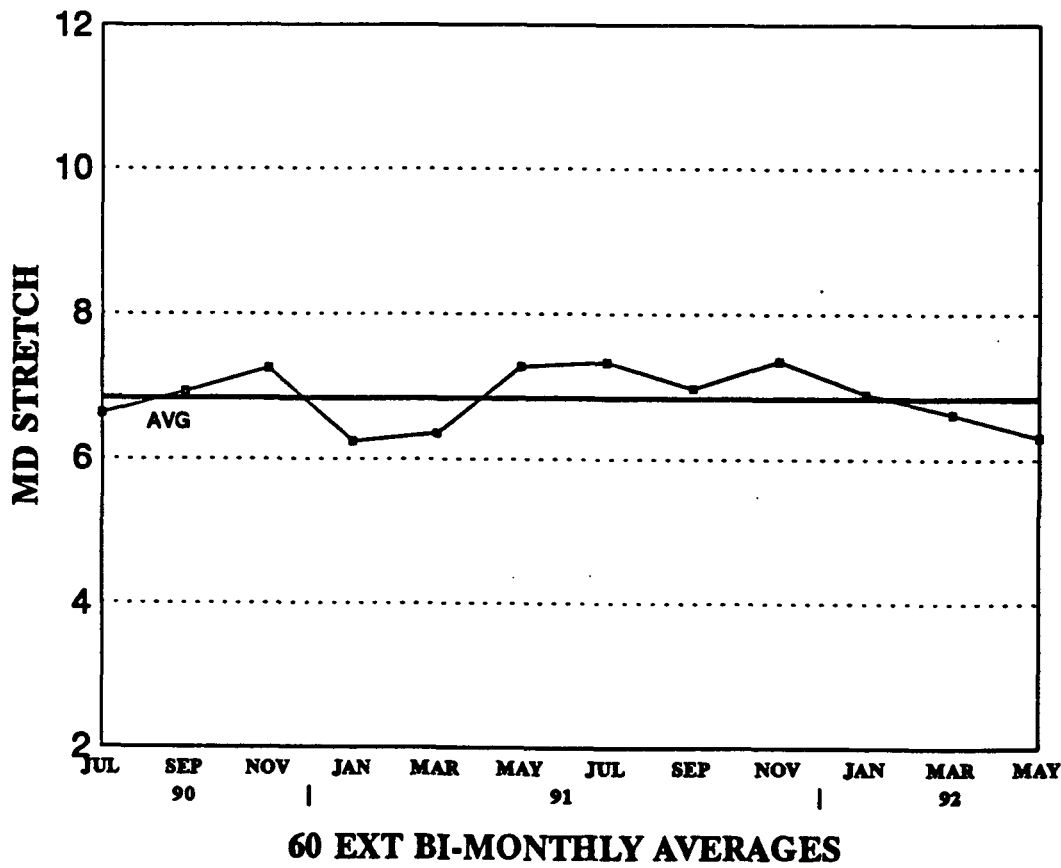
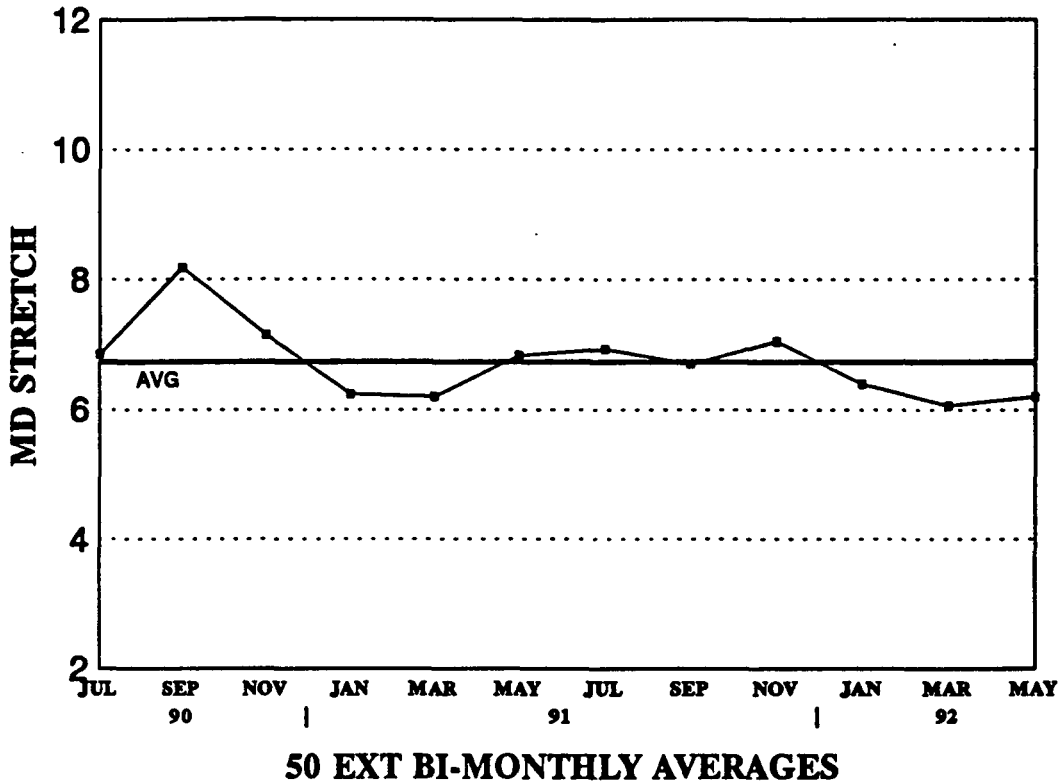
2 YEAR TREND PLOT FOR TOTAL TENSILE



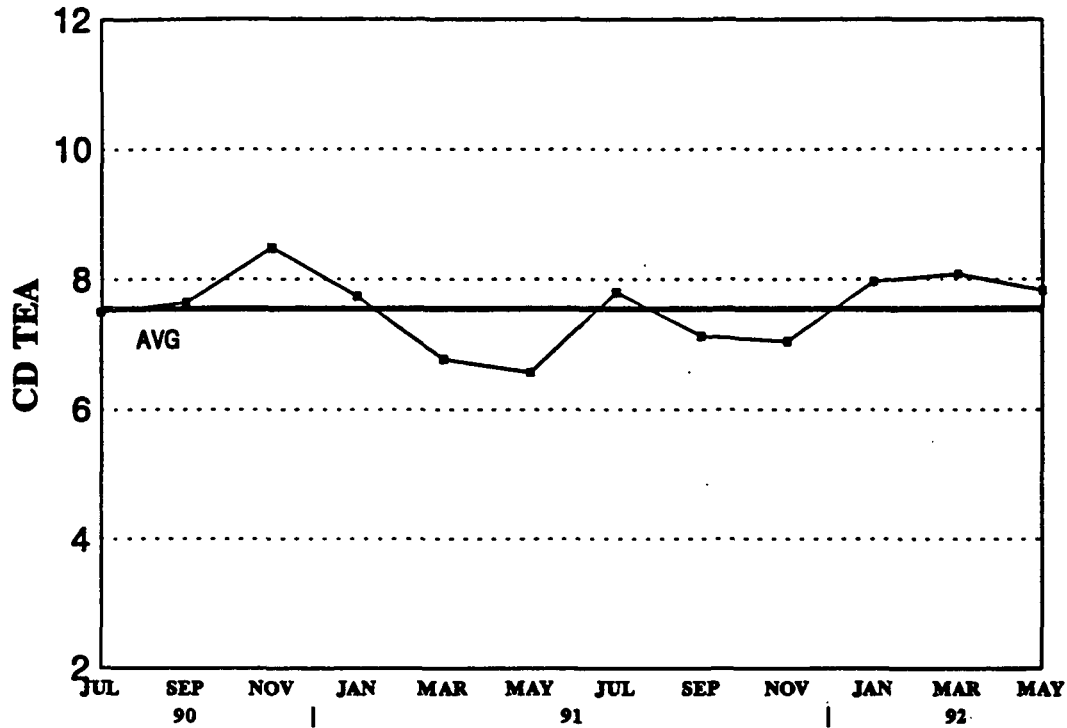
2 YEAR TREND PLOT FOR CD STRETCH



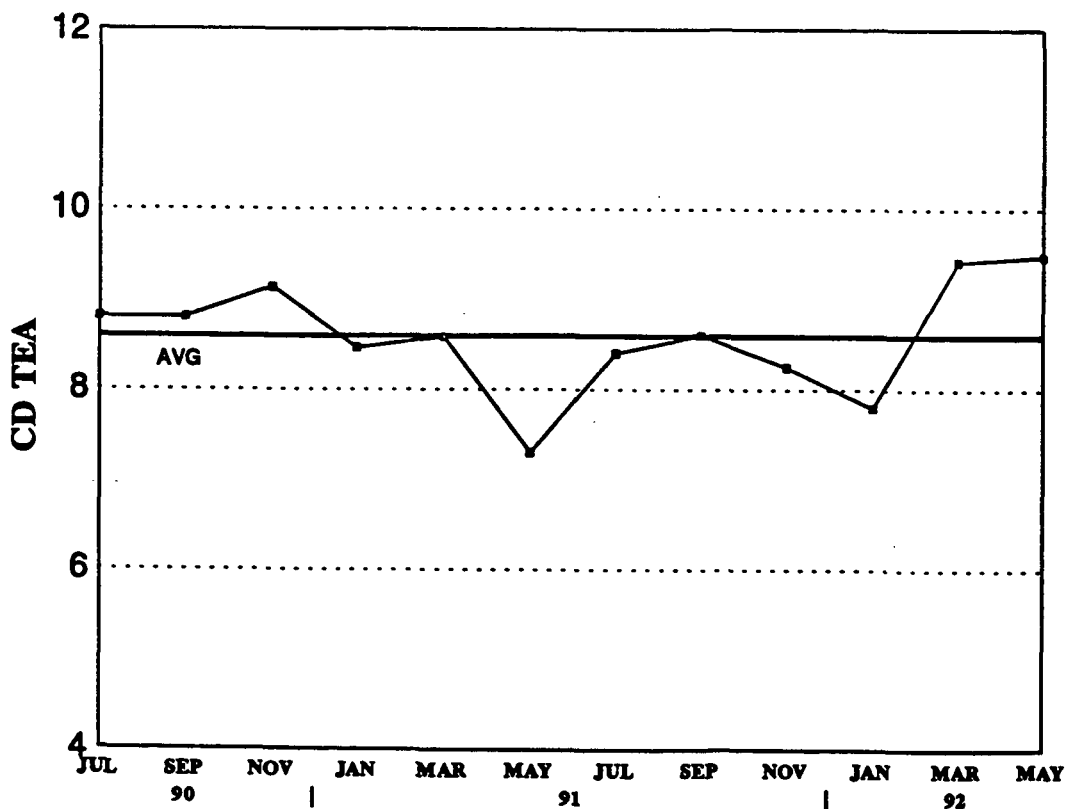
2 YEAR TREND PLOT FOR MD STRETCH



2 YEAR TREND PLOT FOR CD TEA

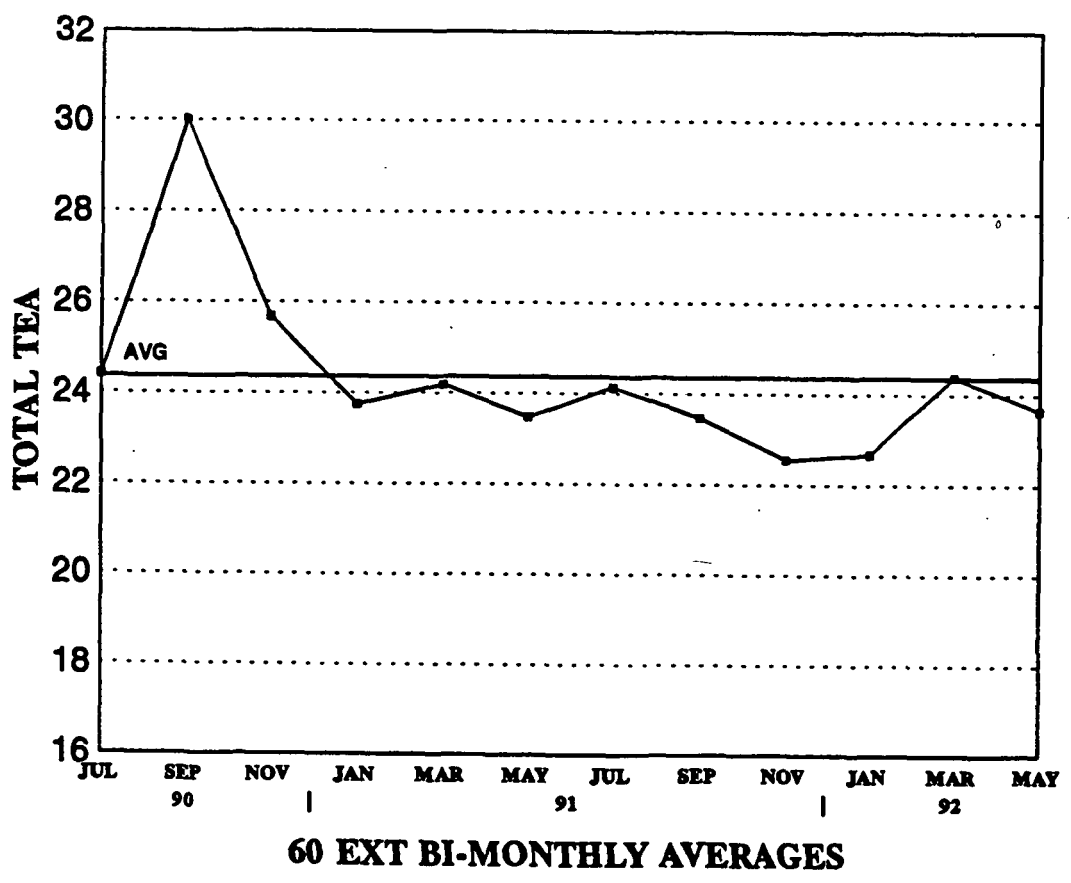
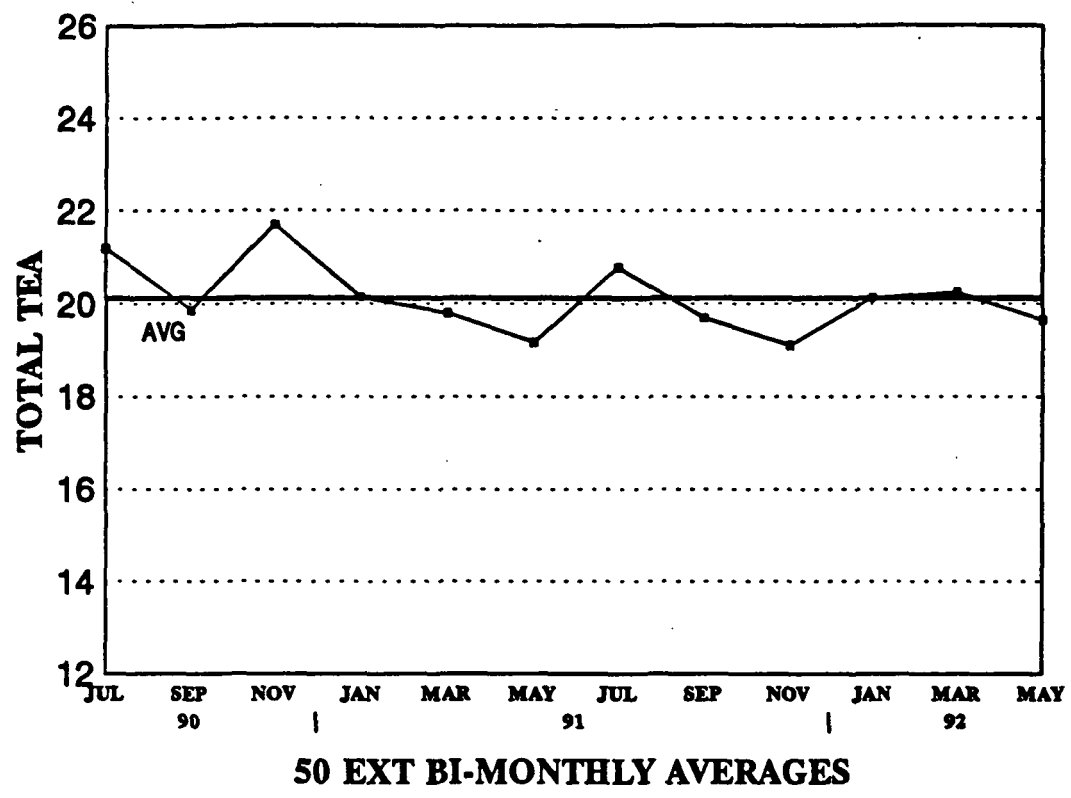


50 EXT BI-MONTHLY AVERAGES



60 EXT BI-MONTHLY AVERAGES

2 YEAR TREND PLOT FOR TOTAL TEA



PRESENTATION OF DATA

For the five major grade weights of multiwall bag paper referred to earlier, mill test averages for reel moisture content, adjusted basis weight, porosity, MD tear, and total tear for all grades; CD tensile and total tensile for flat grades; and MD stretch, CD stretch, CD TEA, and total TEA for extensible grades are compiled in the following tables:

<u>Table Number</u>	<u>Description</u>
I-II-III	Mill Data on 40 lb Flat Multiwall Bag
IV-V-VI	Mill Data on 50 lb Flat Multiwall Bag
VII-VIII-IX	Mill Data on 60 lb Flat Multiwall Bag
X-XI-XII	Mill Data on 50 lb Extensible Multiwall Bag
XIII-XIV-XV	Mill Data on 60 lb Extensible Multiwall Bag

Data submitted by the participating mills relative to conditioning and testing environments are summarized in Table XVI. Data submitted relative to tear and tensile variables are summarized in Table XVII.

The procedures used in calculating adjusted basis weight, cumulative machine averages, machine indexes, and K.P.P.D. indexes are described in the appendix.

Table I

Averages of Mill Quality Data for Jan–Feb 1992
40 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	5.8	5.7	105.6	43.0	44.1	102.4	5.1	6.6	55.3
102	5.7	5.8	103.8	42.7	43.0	101.6	7.4	9.0	80.3
105		6.1			42.9			12.8	
106		5.4			41.4			7.1	
107	4.0	4.2	72.8	42.9	44.0	102.1	4.5	5.1	48.8
108	6.3	6.4	114.7	39.9	40.0	95.0	13.5	17.1	146.5
109		6.6			40.3			13.0	
110	5.0	5.0	91.0	41.4	41.4	98.6	11.5	11.5	124.8
111	4.8	4.7	87.4	42.0	42.4	100.0	8.5	7.3	92.2
112	4.8	4.8	87.4	43.0	43.0	102.4	3.0	3.0	32.6
113	4.9	4.7	89.2	43.6	43.1	103.8	11.0	12.1	119.4
116	5.8	5.9	105.6	41.7	36.5	99.3	7.6	6.1	82.5
117	6.1	6.1	111.1	45.3	44.0	107.8	8.0	9.1	86.8

KPPD 5.3 5.5 96.9 42.6 42.0 101.3 8.0 9.2 86.9

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
40 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	90.1	90.9	92.6	196.2	200.2	96.0
102	94.3	100.0	96.9	194.6	204.3	95.2
105		93.1			210.7	
106		97.0			208.0	
107	92.2	95.0	94.8	198.8	199.4	97.3
108	94.0	91.6	96.6	197.5	194.1	96.6
109		104.0			218.0	
110	97.5	97.5	100.2	198.5	198.5	97.1
111	99.6	101.6	102.4	204.6	208.3	100.1
112	100.7	101.0	103.5	205.6	206.4	100.6
113	98.1	101.1	100.8	203.1	209.6	99.4
116	96.4	97.1	99.1	200.2	204.4	98.0
117	94.3	94.8	96.9	198.2	194.9	97.0

KPPD 95.7 97.3 98.4 199.7 204.4 97.7

Notes A and B are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
40 lb Flat Multiwall Grade

Code	CD Tensile lb/in			Total Tensile lb/in		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	15.2	15.1	92.3	47.4	49.5	102.0
102	15.3	16.1	92.9	44.8	45.4	96.4
105		16.1			49.5	
106		16.1			48.7	
107	16.6	16.7	100.8	46.5	47.8	100.0
108	17.9	16.8	108.7	47.4	45.6	102.0
109		15.9			46.7	
110	19.1	18.6	116.0	48.5	48.0	104.3
111	15.4	14.8	93.5	43.1	43.7	92.7
112	15.6	15.2	94.7	42.4	42.4	91.2
113	17.4	17.6	105.7	44.5	46.2	95.7
116	16.8	16.4	102.0	45.6	43.7	98.1
117	19.9	18.7	120.8	50.0	47.2	107.5

KPPD 16.9 16.5 102.7 46.0 46.5 99.0

Notes A and B are given in the appendix.

Table II

Averages of Mill Quality Data for Mar-Apr 1992
40 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	5.7	5.7	102.7	43.2	44.0	103.3	6.2	6.5	66.1
102	6.0	5.8	108.1	43.0	42.9	102.8	5.4	8.6	57.5
105	5.9	6.0	106.3	42.8	42.8	102.3	13.7	13.5	146.0
106	5.4	5.4	97.3	42.0	41.5	100.4	7.5	7.0	79.9
107		4.2			43.9			5.4	
108	6.5	6.4	117.1	39.7	39.9	94.9	13.0	15.4	138.5
109		6.6			40.3			13.0	
110	5.1	5.1	91.9	41.4	41.4	99.0	14.5	13.0	154.5
111	5.2	4.8	93.7	41.5	42.3	99.2	7.0	7.3	74.6
112		4.8			43.0			3.0	
113	5.1	4.8	91.9	44.0	43.1	105.2	9.5	11.5	101.2
116	5.7	5.9	102.7	41.8	36.6	99.9	8.3	6.4	88.4
117	6.1	6.1	109.9	43.5	44.1	104.0	7.5	8.8	79.9
118	6.1	6.1	109.9	39.9	39.9	95.4	12.0	12.0	127.9

KPPD 5.7 5.5 102.9 42.1 41.8 100.6 9.5 9.4 101.3

Notes A and B are given in the appendix.

Table II (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
40 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	89.3	90.5	91.5	198.9	199.2	97.2
102	96.7	97.9	99.1	197.2	200.0	96.4
105	90.1	88.7	92.4	199.3	200.2	97.4
106	92.8	95.5	95.1	198.8	202.9	97.2
107		95.4			199.9	
108	107.0	94.3	109.7	212.0	197.2	103.6
109		104.0			218.0	
110	98.0	97.8	100.5	202.0	200.3	98.7
111	102.8	101.8	105.4	208.3	208.2	101.8
112		113.9			225.3	
113	99.6	101.3	102.1	206.9	209.2	101.1
116	97.4	97.3	99.8	201.6	204.6	98.5
117	95.9	95.4	98.3	193.5	195.4	94.6
118	92.0	92.0	94.3	204.0	204.0	99.7

KPPD 96.5 97.6 98.9 202.0 204.6 98.8

Notes A and B are given in the appendix.

Table II (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
40 lb Flat Multiwall Grade

Code	CD Tensile lb/in			Total Tensile lb/in		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	15.0	15.1	90.3	48.3	49.5	104.6
102	16.7	16.0	100.5	45.7	45.6	98.9
105	16.6	17.2	99.9	47.1	49.1	102.0
106	17.3	16.8	104.1	50.1	49.0	108.5
107		17.0			47.9	
108	16.3	16.9	98.1	45.3	45.5	98.1
109		15.9			46.7	
110	18.1	18.6	108.9	47.7	48.1	103.3
111	15.8	15.0	95.1	42.9	43.6	92.9
112		15.9			42.4	
113	17.4	17.6	104.7	44.1	45.9	95.5
116	16.8	16.4	101.1	46.6	44.0	100.9
117	19.6	18.9	118.0	46.2	47.1	100.0
118	15.3	15.3	92.1	42.3	42.3	91.6

KPPD 16.8 16.6 101.2 46.0 46.2 99.6

Notes A and B are given in the appendix.

Table III

Averages of Mill Quality Data for May–Jun 1992
40 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	6.1	5.8	109.3	43.3	43.8	103.7	6.2	6.5	66.5
102	5.7	5.8	102.2	43.0	42.9	102.9	5.9	7.5	63.3
105	6.0	6.0	107.6	42.6	42.7	102.0	13.1	13.4	140.5
106	5.5	5.4	98.6	41.5	41.5	99.4	6.4	6.7	68.7
107	5.3	4.4	95.0	42.5	43.5	101.7	6.0	5.8	64.4
108	6.9	6.5	123.7	40.0	39.9	95.8	12.0	14.8	128.7
109		6.6			40.3			13.0	
110	5.1	5.1	91.4	40.9	41.2	97.9	15.0	13.7	160.9
111	4.9	4.8	87.8	41.4	42.2	99.1	9.0	7.5	96.6
112		4.8			43.0			3.0	
113	5.0	4.8	89.6	43.1	43.1	103.2	12.2	11.4	130.9
116	5.8	5.9	104.0	41.7	36.7	99.8	6.8	6.6	73.0
117	5.7	6.1	102.2	43.0	44.1	102.9	9.0	8.6	96.6
118		6.1			39.9			12.0	

KPPD 5.6 5.6 101.0 42.1 41.8 100.8 9.2 9.3 99.1

Notes A and B are given in the appendix.

Table III (Cont)

Averages of Mill Quality Data for May–Jun 1992
40 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	87.7	90.0	90.7	191.3	197.8	94.0
102	99.9	97.1	103.3	202.5	198.3	99.6
105	92.2	91.2	95.3	205.1	202.2	100.8
106	97.5	95.9	100.8	215.7	205.2	106.0
107	95.4	95.4	98.6	209.4	201.9	102.9
108	90.0	93.9	93.1	191.5	196.6	94.1
109		104.0			218.0	
110	95.5	97.0	98.8	199.0	199.8	97.8
111	106.0	102.4	109.6	216.2	209.3	106.3
112		100.7			205.6	
113	100.3	101.4	103.7	206.0	208.9	101.3
116	95.3	97.4	98.5	202.6	204.7	99.6
117	95.4	95.5	98.6	195.0	195.5	95.9
118		92.0			204.0	

KPPD 95.9 96.7 99.2 203.1 203.4 99.9

Notes A and B are given in the appendix.

Table III (Cont)

Averages of Mill Quality Data for May--Jun 1992
40 lb Flat Multiwall Grade

Code	CD Tensile lb/in			Total Tensile lb/in		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100	16.3	15.3	98.4	50.7	49.9	109.9
102	18.8	16.6	113.5	48.3	45.9	104.7
105	16.4	16.5	99.1	49.9	49.1	108.2
106	15.1	16.5	91.2	48.1	48.8	104.3
107	16.5	17.2	99.7	45.1	48.0	97.8
108	17.3	17.0	104.5	45.8	45.5	99.3
109		15.9			46.7	
110	17.5	18.2	105.7	47.5	47.9	103.0
111	15.0	15.0	90.6	41.8	43.3	90.6
112		15.6			42.4	
113	18.3	17.7	110.5	44.7	45.8	96.9
116	16.9	15.8	102.1	45.8	43.1	99.3
117	18.8	19.2	113.5	46.0	46.9	99.8
118		15.3			42.3	

KPPD 17.0 16.6 102.6 46.7 46.1 101.3

Notes A and B are given in the appendix.

Table IV

Averages of Mill Quality Data for Jan--Feb 1992
50 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		5.9			56.7			7.9	
101		5.6			52.7			6.4	
102	6.3	6.1	113.3	52.0	53.1	98.5	8.0	9.6	71.7
103	5.8	5.9	104.3	53.8	54.3	101.9	18.0	21.6	161.3
104		6.0			52.3			13.5	
105		6.1			52.6			12.6	
106		5.7			51.4			6.7	
107	4.0	4.1	71.9	53.0	54.9	100.4	6.0	6.6	53.8
108	6.1	6.2	109.7	50.3	50.3	95.3	11.0	15.9	98.6
109		6.7			50.7			19.3	
110	5.0	4.7	89.9	52.0	51.9	98.5	16.0	17.5	143.4
111	5.0	5.0	89.9	52.5	53.0	99.5	8.0	8.1	71.7
112	4.8	4.4	86.3	53.4	53.2	101.2	5.5	7.2	49.3
113	4.9	4.7	88.1	53.0	53.4	100.4	10.6	11.7	95.0
114	4.3	4.8	77.3	53.8	53.0	101.9	8.5	7.8	76.2
115	6.3	6.2	113.3	51.8	51.7	98.2	15.4	12.6	138.0
116	5.9	5.9	106.1	51.6	51.2	97.8	8.4	7.5	75.3
117	6.3	6.1	113.3	54.6	53.5	103.5	7.5	8.4	67.2

KPPD 5.4 5.6 97.0 52.7 52.8 99.8 10.2 11.2 91.8

Notes A and B are given in the appendix.

Table IV (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		141.1			291.3	
101		129.8			268.8	
102	125.8	129.1	98.8	257.9	266.0	97.3
103	125.0	128.7	98.1	255.4	265.4	96.4
104		126.3			265.0	
105		115.7			257.7	
106		136.5			290.5	
107	131.4	126.7	103.2	279.8	261.8	105.6
108	121.5	121.3	95.4	249.5	249.6	94.2
109		117.2			246.6	
110	123.0	121.0	96.6	255.0	250.0	96.2
111	133.6	134.0	104.9	272.4	272.2	102.8
112	130.9	130.3	102.8	267.7	265.4	101.0
113	130.2	133.6	102.2	270.7	277.3	102.2
114	131.3	140.0	103.1	271.3	285.0	102.4
115	120.3	116.0	94.4	249.6	243.5	94.2
116	125.0	126.7	98.1	262.4	265.9	99.0
117	123.5	118.8	97.0	256.0	247.2	96.6

KPPD 126.8 127.4 99.5 262.3 265.0 99.0

Notes A and B are given in the appendix.

Table IV (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Flat Multiwall Grade

Code	CD Tensile			Total Tensile		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		20.9			62.5	
101		20.7			57.4	
102	20.5	20.1	98.9	55.9	57.9	97.2
103	20.3	19.6	98.0	55.6	57.5	96.7
104		20.5			58.2	
105		20.7			62.4	
106		19.9			57.8	
107	20.0	20.7	96.5	55.9	56.5	97.2
108	22.4	22.4	108.1	57.4	57.8	99.8
109		21.5			57.5	
110	21.4	21.5	103.3	61.6	60.3	107.1
111	19.1	18.8	92.2	55.0	54.9	95.6
112	19.5	19.2	94.1	55.7	53.0	96.9
113	22.7	22.0	109.5	55.1	57.1	95.8
114	20.5	20.8	98.9	54.9	55.5	95.5
115	21.2	20.0	102.3	56.1	53.8	97.6
116	20.6	20.9	99.4	56.8	56.2	98.8
117	23.9	22.8	115.3	60.4	58.8	105.0

KPPD 21.0 20.7 101.4 56.7 57.5 98.6

Notes A and B are given in the appendix.

Table V

Averages of Mill Quality Data for Mar—Apr 1992
50 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		5.8			53.9			7.9	
101		5.6			52.6			6.7	
102	6.2	6.1	110.7	53.1	53.0	101.0	7.1	9.5	63.6
103	5.9	5.9	105.4	54.4	54.3	103.5	20.6	22.3	184.6
104	6.1	6.0	108.9	52.6	52.3	100.1	14.5	13.3	129.9
105	6.1	6.1	108.9	52.2	52.5	99.3	13.8	13.0	123.6
106	5.8	5.8	103.6	51.7	51.2	98.4	6.8	6.8	60.9
107	5.6	4.3	100.0	52.1	54.1	99.1	7.5	6.8	67.2
108	6.5	6.3	116.1	50.1	50.3	95.3	12.0	15.4	107.5
109		6.6			50.6			18.8	
110	4.9	5.0	87.5	51.5	51.8	98.0	17.0	16.5	152.3
111	4.9	5.0	87.5	53.2	53.1	101.2	6.0	7.8	53.8
112	4.8	4.4	85.7	53.6	53.2	102.0	6.0	7.0	53.8
113	5.1	4.8	91.1	53.6	53.2	102.0	10.8	11.2	96.8
114	4.5	4.7	80.4	54.1	52.9	102.9	9.4	8.1	84.2
115	6.5	6.4	116.1	52.4	52.1	99.7	13.0	14.2	116.5
116	5.6	5.9	100.0	51.5	51.3	98.0	7.9	7.5	70.8
117	6.3	6.1	112.5	53.4	53.6	101.6	6.0	8.1	53.8

KPPD 5.7 5.6 101.0 52.6 52.6 100.1 10.6 11.2 94.6

Notes A and B are given in the appendix.

Table V (Cont)

Averages of Mill Quality Data for Mar--Apr 1992
50 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		117.3			248.7	
101		130.3			270.0	
102	125.9	128.1	99.8	258.3	263.3	98.4
103	121.5	126.4	96.3	249.6	261.5	95.0
104	125.6	126.3	99.6	266.1	264.8	101.3
105	120.8	116.4	95.7	267.7	259.1	101.9
106	130.4	134.8	103.4	277.7	287.8	105.7
107	123.5	124.6	97.9	266.1	259.2	101.3
108	124.5	121.7	98.7	249.5	249.6	95.0
109		116.1			244.5	
110	126.5	124.8	100.3	257.5	256.3	98.0
111	134.6	134.1	106.7	270.3	271.9	102.9
112	132.0	130.6	104.6	267.1	265.6	101.7
113	130.5	132.8	103.4	268.8	274.6	102.4
114	132.2	138.2	104.8	272.0	282.2	103.6
115	121.9	121.1	96.6	254.9	252.3	97.1
116	127.0	126.3	100.7	268.7	265.4	102.3
117	126.7	121.1	100.4	256.5	250.4	97.7

KPPD 126.9 126.2 100.6 263.4 262.6 100.3

Notes A and B are given in the appendix.

Table V (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
50 lb Flat Multiwall Grade

Code	CD Tensile			Total Tensile		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		20.7			62.5	
101		20.7			57.1	
102	20.4	20.2	97.9	56.2	57.7	97.6
103	20.3	19.7	97.4	57.0	57.4	99.0
104	20.9	20.7	100.3	57.9	58.1	100.5
105	20.3	20.5	97.4	58.3	61.3	101.2
106	19.4	19.7	93.1	59.3	58.4	103.0
107	21.0	20.7	100.8	59.3	58.4	103.0
108	21.9	22.3	105.1	55.9	57.5	97.0
109		21.4			57.7	
110	22.3	21.9	107.0	60.7	60.8	105.4
111	18.7	18.8	89.8	50.6	54.2	87.8
112	19.4	19.2	93.1	54.4	53.3	94.4
113	22.4	22.2	107.5	54.8	56.8	95.1
114	20.3	20.9	97.4	54.7	55.5	95.0
115	21.6	21.4	103.7	57.2	54.9	99.3
116	20.5	20.8	98.4	57.8	56.4	100.3
117	24.5	23.2	117.6	56.8	58.8	98.6

KPPD 20.9 20.8 100.4 56.7 57.6 98.5

Notes A and B are given in the appendix.

Table VI

Averages of Mill Quality Data for May--Jun 1992
50 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		5.8			53.9			7.9	
101		5.7			52.5			6.8	
102	6.1	6.1	108.4	53.0	53.0	100.8	7.7	9.2	71.4
103	5.8	5.9	103.1	54.3	54.3	103.3	20.4	22.1	189.2
104	6.1	6.0	108.4	52.3	52.4	99.5	13.5	13.7	125.2
105	6.0	6.1	106.6	52.4	52.5	99.7	13.4	12.9	124.3
106	5.8	5.8	103.1	51.5	51.3	98.0	9.0	7.6	83.5
107	5.2	4.5	92.4	52.7	53.8	100.3	8.0	7.3	74.2
108	6.4	6.3	113.7	50.4	50.3	95.9	11.5	13.0	106.6
109	7.0	6.7	124.4	50.5	50.6	96.1	11.0	13.5	102.0
110	5.0	5.0	88.8	52.3	51.9	99.5	15.5	16.2	143.7
111	4.8	4.9	85.3	51.5	52.8	98.0	8.0	7.4	74.2
112	4.6	4.5	81.7	53.3	53.2	101.4	6.5	6.2	60.3
113	5.0	4.9	88.8	53.2	53.1	101.2	12.2	11.5	113.1
114	4.5	4.6	80.0	54.3	53.0	103.3	9.8	8.7	90.9
115	6.6	6.5	117.3	53.3	52.5	101.4	14.6	14.3	135.4
116	5.6	5.8	99.5	52.0	51.4	98.9	7.8	7.5	72.3
117	6.2	6.2	110.2	52.8	53.5	100.5	9.5	8.3	88.1

KPPD 5.7 5.6 100.7 52.5 52.6 99.9 11.2 10.8 103.4

Notes A and B are given in the appendix.

Table VI (Cont)

Averages of Mill Quality Data for May--Jun 1992
50 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		117.3			248.7	
101		129.2			266.5	
102	127.4	128.0	100.9	260.3	262.8	99.1
103	123.2	126.0	97.6	254.5	260.5	96.9
104	129.3	126.0	102.4	271.4	264.1	103.4
105	122.4	117.4	97.0	272.4	261.2	103.8
106	130.9	133.5	103.7	288.3	287.3	109.8
107	122.4	124.2	97.0	261.3	259.6	99.5
108	121.5	120.9	96.2	250.5	247.6	95.4
109	123.0	117.5	97.4	256.0	246.3	97.5
110	129.5	126.3	102.6	264.0	258.8	100.6
111	138.9	136.2	110.0	280.9	275.6	107.0
112	132.0	131.1	104.6	267.1	266.6	101.7
113	130.7	131.2	103.5	270.8	269.2	103.1
114	139.9	136.3	110.8	286.9	278.3	109.3
115	122.4	121.5	97.0	257.1	253.9	97.9
116	129.5	126.8	102.6	269.1	265.5	102.5
117	126.1	122.9	99.9	253.9	253.4	96.7

KPPD 128.1 126.2 101.4 266.5 262.6 101.5

Notes A and B are given in the appendix.

Table VI (Cont)

Averages of Mill Quality Data for May--Jun 1992
50 lb Flat Multiwall Grade

Code	CD Tensile			Total Tensile		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
100		20.7			62.5	
101		20.7			57.0	
102	21.1	20.3	101.1	57.4	57.5	99.7
103	20.6	19.8	98.7	58.4	57.6	101.5
104	21.6	21.0	103.5	60.1	58.5	104.4
105	20.6	20.6	98.7	61.3	61.3	106.5
106	19.4	19.7	93.0	59.5	58.6	103.4
107	21.9	21.0	105.0	59.5	58.8	103.4
108	21.4	22.3	102.6	56.9	56.9	98.9
109	21.4	21.5	102.6	56.4	57.8	98.0
110	21.8	21.8	104.5	59.6	60.7	103.6
111	19.3	19.0	92.5	53.2	54.0	92.4
112	19.1	19.2	91.5	55.3	53.5	96.1
113	21.9	22.4	105.0	54.8	56.6	95.2
114	20.3	20.8	97.3	54.3	55.3	94.3
115	21.4	21.4	102.6	56.7	55.8	98.5
116	22.3	20.1	106.9	58.9	55.0	102.3
117	24.4	23.3	116.9	57.3	58.6	99.6

KPPD 21.2 20.9 101.4 57.5 57.6 99.9

Notes A and B are given in the appendix.

Table VII

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102	6.6	6.2	115.2	61.0	62.6	97.7	9.9	9.8	88.1
103	5.9	5.9	103.0	63.6	64.0	101.9	20.2	20.3	179.8
104		6.0			62.6			14.2	
105		6.1			62.5			11.4	
106		5.8			62.1			7.4	
107	3.4	4.0	59.4	63.7	64.8	102.0	6.5	7.7	57.9
108	6.5	6.6	113.5	59.5	59.4	95.3	11.0	11.8	97.9
109	6.6	6.6	115.2	60.4	60.2	96.7	12.5	16.6	111.3
110	4.8	4.7	83.8	62.5	62.8	100.1	15.5	14.8	138.0
112	4.8	4.6	83.8	63.1	63.9	101.1	5.0	8.0	44.5
114	4.6	4.9	80.3	64.2	63.4	102.8	9.5	7.7	84.6
115	6.7	6.6	117.0	61.2	61.4	98.0	11.6	10.6	103.2
116	5.8	5.9	101.2	62.0	61.1	99.3	9.6	8.6	85.4
117	6.4	6.3	111.7	64.5	63.3	103.3	8.5	8.4	75.7

KPPD 5.6 5.7 98.5 62.3 62.4 99.8 10.9 11.2 96.9

Notes A and B are given in the appendix.

Table VII (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102	151.8	162.1	97.6	309.0	338.0	95.2
103	150.5	153.9	96.7	309.8	322.1	95.5
104		163.5			338.9	
105		147.2			328.1	
106		163.6			332.5	
107	162.7	155.4	104.6	343.4	323.9	105.8
108	174.0	159.5	111.8	341.0	319.8	105.1
109	149.5	144.8	96.1	305.0	303.4	94.0
110	148.0	148.0	95.1	310.5	310.8	95.7
112	154.8	158.2	99.5	319.1	318.7	98.4
114	167.5	181.6	107.7	344.3	371.1	106.1
115	137.3	138.3	88.3	317.5	305.6	97.9
116	156.7	158.7	100.7	324.0	330.5	99.9
117	155.3	143.3	99.8	315.9	298.6	97.4

KPPD 155.3 155.6 99.8 321.8 324.4 99.2

Notes A and B are given in the appendix.

Table VII (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Flat Multiwall Grade

Code	CD Tensile			Total Tensile		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102	25.1	23.5	102.4	66.0	68.1	96.1
103	23.8	22.9	97.1	65.7	68.2	95.6
104		25.3			69.1	
105		24.1			73.6	
106		23.6			68.9	
107	24.2	24.1	98.7	68.0	68.4	99.0
108	24.5	25.5	99.9	66.5	68.3	96.8
109	27.0	25.3	110.1	68.0	69.6	99.0
110	24.3	24.6	99.1	74.2	72.8	108.0
112	24.9	23.8	101.5	67.9	67.4	98.8
114	24.4	25.3	99.5	65.6	66.4	95.5
115	24.4	23.5	99.5	64.7	63.7	94.2
116	24.1	24.7	98.3	66.0	66.5	96.1
117	29.6	27.1	120.7	71.5	70.9	104.1

KPPD 25.1 24.5 102.4 67.6 68.7 98.5

Notes A and B are given in the appendix.

Table VIII

Averages of Mill Quality Data for Mar–Apr 1992
60 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		6.3			62.4			10.8	
103	6.0	5.9	105.1	64.2	64.1	103.0	21.0	21.1	178.8
104	6.1	6.0	106.9	62.1	62.5	99.6	13.6	14.0	115.8
105	6.1	6.1	106.9	61.1	62.2	98.0	11.8	11.5	100.5
106	5.8	5.8	101.6	62.1	61.9	99.6	6.7	7.3	57.0
107	5.6	4.3	98.1	61.5	64.1	98.7	6.5	7.8	55.3
108	6.3	6.5	110.4	59.5	59.4	95.4	12.0	11.8	102.2
109		6.6			60.2			16.0	
110	4.9	4.9	85.9	62.4	62.5	100.1	16.0	15.8	136.2
111	4.8	4.8	84.1	62.1	62.1	99.6	16.0	16.0	136.2
112	4.5	4.7	78.9	64.0	63.9	102.7	6.0	7.8	51.1
114	4.7	4.9	82.4	64.4	63.3	103.3	9.0	7.8	76.6
115	6.7	6.7	117.4	62.5	61.9	100.3	11.6	11.6	98.8
116	5.5	5.8	96.4	61.9	61.2	99.3	7.9	8.5	67.3
117	6.4	6.3	112.1	63.4	63.4	101.7	7.5	8.4	63.8

KPPD 5.6 5.7 98.9 62.4 62.3 100.1 11.2 11.7 95.3

Notes A and B are given in the appendix.

Table VIII (Cont)

Averages of Mill Quality Data for Mar–Apr 1992
60 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		158.6			331.4	
103	146.3	151.0	93.7	307.0	317.7	94.2
104	156.4	162.0	100.2	328.1	336.7	100.7
105	146.3	147.4	93.7	327.5	327.7	100.5
106	167.5	166.4	107.3	357.2	340.3	109.7
107	153.7	153.7	98.4	335.5	322.5	103.0
108	156.5	158.5	100.2	319.0	319.5	97.9
109		144.3			301.8	
110	154.0	151.0	98.6	322.5	316.5	99.0
111	161.1	161.1	103.2	332.8	332.8	102.2
112	155.8	157.9	99.8	315.9	318.7	97.0
114	167.3	180.3	107.1	345.7	368.8	106.1
115	154.8	146.1	99.1	323.3	320.4	99.2
116	155.9	157.2	99.8	335.9	328.8	103.1
117	155.3	146.6	99.5	311.1	302.7	95.5

KPPD 156.2 156.1 100.1 327.8 325.8 100.6

Notes A and B are given in the appendix.

Table VIII (Cont)

Averages of Mill Quality Data for Mar–Apr 1992
60 lb Flat Multiwall Grade

Code	CD Tensile lb/in			Total Tensile lb/in		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		23.6			68.1	
103	23.1	22.8	93.3	67.9	68.2	98.2
104	24.8	25.2	100.1	67.1	69.0	97.0
105	23.5	24.0	94.9	69.7	73.0	100.8
106	22.1	23.0	89.2	66.2	68.9	95.7
107	24.1	24.1	97.3	70.5	68.8	101.9
108	24.5	25.1	98.9	67.0	67.8	96.9
109		25.5			69.9	
110	25.6	25.0	103.4	73.4	73.1	106.1
111	27.0	27.0	109.0	74.9	74.9	108.3
112	23.6	23.9	95.3	65.0	67.1	94.0
114	24.6	25.2	99.3	65.5	66.3	94.7
115	25.3	24.9	102.2	66.0	64.5	95.4
116	23.1	24.3	93.3	70.3	66.9	101.6
117	31.0	27.9	125.2	69.7	70.9	100.8

KPPD 24.8 24.8 100.1 68.7 69.2 99.3

Notes A and B are given in the appendix.

Table IX

Averages of Mill Quality Data for May–Jun 1992
60 lb Flat Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		6.3			62.1			9.9	
103	5.9	6.0	104.1	64.0	64.1	102.4	19.6	20.9	161.9
104	6.0	6.0	105.8	61.5	62.2	98.4	13.1	14.1	108.2
105	6.1	6.1	107.6	62.8	62.3	100.5	11.2	11.6	92.5
106	5.7	5.7	100.6	62.4	62.1	99.9	7.9	7.7	65.3
107	5.2	4.4	91.7	62.5	63.7	100.0	8.5	8.1	70.2
108	6.5	6.5	114.7	59.5	59.4	95.2	12.0	11.9	99.1
109	5.9	6.5	104.1	60.9	60.4	97.5	13.0	14.0	107.4
110	4.9	4.9	86.4	62.1	62.3	99.4	12.5	14.7	103.3
111	4.8	4.8	84.7	62.1	62.1	99.4	16.0	16.0	132.2
112	4.9	4.7	86.4	64.0	63.9	102.4	6.0	6.5	49.6
113	5.0	5.0	88.2	64.8	64.8	103.7	20.5	20.5	169.3
114	4.9	4.9	86.4	64.2	63.2	102.8	10.4	8.4	85.9
115	7.1	6.8	125.2	62.7	62.1	100.4	12.7	12.0	104.9
116	5.8	5.8	102.3	61.8	61.5	98.9	8.7	8.6	71.9
117	6.3	6.3	111.1	62.9	63.4	100.7	10.5	8.8	86.7

KPPD 5.7 5.7 100.0 62.5 62.5 100.1 12.2 12.1 100.6

Notes A and B are given in the appendix.

Table IX (Cont)

Averages of Mill Quality Data for May–Jun 1992
60 lb Flat Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		156.8			323.8	
103	150.4	149.6	96.5	319.7	315.5	98.4
104	155.8	160.6	100.0	330.7	333.0	101.8
105	163.2	149.6	104.7	368.9	333.1	113.6
106	164.3	164.7	105.4	345.6	338.0	106.4
107	157.4	154.1	101.0	338.1	325.0	104.1
108	149.0	156.1	95.6	311.0	317.4	95.7
109	146.0	143.1	93.7	296.0	297.5	91.1
110	154.5	152.2	99.1	316.5	316.5	97.4
111	161.1	161.1	103.4	332.8	332.8	102.5
112	159.0	157.9	102.0	312.7	316.5	96.3
113	157.7	157.7	101.2	333.7	333.7	102.7
114	170.7	175.9	109.5	352.7	360.0	108.6
115	155.3	149.1	99.7	326.5	322.4	100.5
116	153.7	155.8	98.6	322.2	325.2	99.2
117	151.6	149.2	97.3	304.2	306.5	93.7

KPPD 156.6 155.8 100.5 327.4 324.8 100.8

Notes A and B are given in the appendix.

Table IX (Cont)

Averages of Mill Quality Data for May–Jun 1992
60 lb Flat Multiwall Grade

Code	CD Tensile lb/in			Total Tensile lb/in		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
102		24.0			68.1	
103	23.4	22.9	93.9	69.8	68.6	101.2
104	25.5	25.7	102.3	71.6	69.4	103.8
105	22.8	23.8	91.5	73.6	73.1	106.7
106	23.7	22.8	95.1	67.6	68.7	98.0
107	25.1	24.3	100.7	69.0	69.1	100.0
108	25.5	25.2	102.3	66.5	67.5	96.4
109	26.5	25.6	106.3	68.0	70.2	98.6
110	25.6	25.2	102.7	70.2	72.7	101.8
111	27.0	27.0	108.4	74.9	74.9	108.6
112	25.2	24.1	101.1	67.6	67.1	98.0
113	25.4	25.4	101.9	65.6	65.6	95.1
114	24.5	25.2	98.3	65.4	66.0	94.8
115	25.1	24.9	100.7	65.1	64.5	94.4
116	24.2	24.4	97.1	67.0	67.2	97.1
117	29.7	28.2	119.2	70.2	70.9	101.8

KPPD 25.3 24.9 101.4 68.8 69.0 99.8

Notes A and B are given in the appendix.

Table X

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		5.3			53.3			13.0	
110	4.3	3.9	95.6	52.0	52.2	99.0	16.0	17.5	138.9
114	3.6	3.6	80.0	53.7	54.4	102.2	9.5	9.1	82.5
116		5.5			51.8			14.4	
118	4.1	4.2	91.1	51.1	51.0	97.3	3.0	3.6	26.0

KPPD 4.0 4.5 88.9 52.3 52.5 99.5 9.5 11.5 82.5

Notes A and B are given in the appendix.

Table X (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		127.6			288.1	
110	109.0	115.0	85.8	234.0	246.0	84.6
114	128.6	148.9	101.2	295.7	320.1	107.0
116		122.4			264.6	
118	127.0	121.4	100.0	266.5	263.4	96.4

KPPD 121.5 127.1 95.7 265.4 276.4 96.0

Notes A and B are given in the appendix.

Table X (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		6.3			5.0	
110	5.0	6.1	77.4	6.7	7.0	106.0
114	6.1	5.5	94.4	4.8	5.2	75.9
116		6.6			9.1	
118	8.1	7.8	125.4	4.8	5.3	75.9

KPPD 6.4 6.5 99.1 5.4 6.3 86.0

Notes A and B are given in the appendix.

Table X (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
50 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		7.5			20.6	
110	11.1	10.1	140.9	23.7	22.5	115.8
114	6.7	6.9	85.0	17.8	17.8	87.0
116		8.5			21.5	
118	6.1	6.4	77.4	18.9	19.9	92.4

KPPD 8.0 7.9 101.1 20.1 20.5 98.4

Notes A and B are given in the appendix.

Table XI

Averages of Mill Quality Data for Mar-Apr 1992
50 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	5.7	5.3	125.0	53.4	52.7	102.0	16.0	13.0	146.3
110	4.1	4.2	89.9	51.4	51.8	98.2	19.5	16.5	178.2
114	3.7	3.6	81.1	55.3	54.2	105.7	12.5	9.3	114.3
116	5.3	5.6	116.2	52.0	52.0	99.4	6.1	12.8	55.8
118	4.1	4.1	89.9	51.2	51.0	97.8	3.0	3.1	27.4

KPPD 4.6 4.6 100.4 52.7 52.3 100.6 11.4 10.9 104.4

Notes A and B are given in the appendix.

Table XI (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
50 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	119.8	129.5	94.9	278.3	291.7	100.8
110	118.0	112.3	93.5	247.0	239.0	89.5
114	135.7	144.9	107.5	294.4	314.1	106.7
116	127.8	120.6	101.2	285.2	267.1	103.3
118	135.0	124.0	106.9	288.0	268.3	104.3

KPPD 127.3 126.3 100.8 278.6 276.0 100.9

Notes A and B are given in the appendix.

Table XI (Cont)

Averages of Mill Quality Data for Mar–Apr 1992
50 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	5.8	6.3	92.7	5.0	5.1	89.9
110	5.1	4.9	81.5	7.3	7.1	131.3
114	6.2	5.9	99.0	4.6	5.1	82.7
116	5.4	6.1	86.3	5.3	5.3	95.3
118	7.8	8.1	124.6	4.9	5.2	88.1

KPPD 6.1 6.3 96.8 5.4 5.6 97.5

Notes A and B are given in the appendix.

Table XI (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
50 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	7.7	7.6	94.8	20.3	20.5	98.5
110	12.6	11.9	155.2	24.7	24.2	119.9
114	6.5	6.8	80.0	17.3	17.7	84.0
116	7.4	7.9	91.1	19.0	20.6	92.2
118	6.2	6.4	76.4	19.9	20.0	96.6

KPPD 8.1 8.1 99.5 20.2 20.6 98.3

Notes A and B are given in the appendix.

Table XII

Averages of Mill Quality Data for May–Jun 1992
50 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	5.6	5.3	122.8	52.8	52.8	100.8	13.0	13.8	110.9
110	4.2	4.2	92.1	52.0	51.6	99.3	14.0	18.3	119.5
114	3.5	3.6	76.8	55.6	54.3	106.2	7.5	10.4	64.0
116		5.6			52.0			13.0	
118	3.9	4.1	85.5	51.0	51.1	97.4	3.0	3.1	25.6

KPPD 4.3 4.6 94.3 52.9 52.4 100.9 9.4 11.7 80.0

Notes A and B are given in the appendix.

Table XII (Cont)

Averages of Mill Quality Data for May–Jun 1992
50 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	123.0	127.7	97.2	283.0	289.9	102.6
110	128.5	115.0	101.6	273.5	242.7	99.2
114	146.1	142.4	115.5	332.1	307.1	120.4
116		121.6			268.6	
118	130.0	125.7	102.8	270.0	270.5	97.9

KPPD 131.9 126.5 104.3 289.7 275.8 105.0

Notes A and B are given in the appendix.

Table XII (Cont)

Averages of Mill Quality Data for May–Jun 1992
50 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	6.5	6.1	103.2	4.9	5.1	88.8
110	5.1	5.1	81.0	7.1	7.0	128.6
114	5.6	6.2	88.9	5.0	5.1	90.6
116		6.1			5.2	
118	7.6	8.0	120.6	4.6	5.2	83.3

KPPD 6.2 6.3 98.4 5.4 5.5 97.8

Notes A and B are given in the appendix.

Table XII (Cont)

Averages of Mill Quality Data for May–Jun 1992
50 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	7.1	7.5	88.1	21.2	20.3	104.2
110	11.5	11.7	142.7	21.6	23.3	106.2
114	6.9	6.9	85.6	17.1	17.7	84.1
116		7.9			20.6	
118	5.8	6.3	72.0	18.7	19.8	91.9

KPPD 7.8 8.1 97.1 19.7 20.3 96.6

Notes A and B are given in the appendix.

Table XIII

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		5.9			62.6			15.2	
110	4.2	3.9	92.1	61.5	62.3	98.8	14.0	16.0	123.2
114	3.6	3.9	78.9	63.6	63.9	102.2	9.3	8.7	81.9
116		4.9			61.9			13.5	
118	4.2	4.2	92.1	60.6	60.5	97.4	3.0	3.4	26.4

KPPD 4.0 4.6 87.7 61.9 62.2 99.5 8.8 11.4 77.2

Notes A and B are given in the appendix.

Table XIII (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		151.5			321.1	
110	140.5	142.8	89.0	317.5	314.3	92.3
114	166.3	194.3	105.4	349.2	408.8	101.6
116		157.5			350.5	
118	148.0	143.1	93.8	328.0	324.6	95.4

KPPD 151.6 157.8 96.0 331.6 343.9 96.4

Notes A and B are given in the appendix.

Table XIII (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		6.5			5.0	
110	6.5	6.9	94.8	5.4	6.0	101.9
114	6.2	5.8	90.4	4.2	5.0	79.2
116		7.1			5.3	
118	8.0	8.0	116.6	4.6	5.2	86.8

KPPD 6.9 6.9 100.6 4.7 5.3 89.3

Notes A and B are given in the appendix.

Table XIII (Cont)

Averages of Mill Quality Data for Jan–Feb 1992
60 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105		8.2			24.8	
110	8.7	9.2	100.9	25.5	24.9	105.6
114	7.3	7.8	84.7	20.5	21.4	84.9
116		10.3			26.3	
118	7.4	7.6	85.8	22.0	23.3	91.1

KPPD 7.8 8.6 90.5 22.7 24.1 93.9

Notes A and B are given in the appendix.

Table XIV

Averages of Mill Quality Data for Mar-Apr 1992
60 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	5.7	5.9	123.4	63.2	62.5	102.0	14.2	16.2	129.3
110	4.1	4.2	88.7	61.6	61.5	99.4	17.0	14.0	154.8
114	4.2	3.8	90.9	65.2	63.6	105.2	14.7	8.7	133.9
116	5.2	5.0	112.6	62.5	61.8	100.8	8.5	12.8	77.4
118	4.1	4.2	88.7	60.6	60.5	97.8	3.0	3.2	27.3

KPPD 4.7 4.6 100.9 62.6 62.0 101.0 11.5 11.0 104.6

Notes A and B are given in the appendix.

Table XIV (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
60 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	142.0	150.4	91.1	332.3	312.5	97.4
110	139.5	140.5	89.5	293.0	317.5	85.9
114	172.8	190.4	110.8	360.3	401.3	105.6
116	143.6	154.0	92.1	347.3	348.1	101.8
118	157.0	144.2	100.7	336.0	327.0	98.5

KPPD 151.0 155.9 96.8 333.8 341.3 97.8

Notes A and B are given in the appendix.

Table XIV (Cont)

Averages of Mill Quality Data for Mar–Apr 1992
60 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	6.3	6.5	91.3	4.8	5.0	90.2
110	5.7	6.5	82.6	6.5	6.1	122.2
114	6.7	6.1	97.1	4.2	5.0	78.9
116	6.3	7.3	91.3	5.4	5.3	101.5
118	8.1	8.1	117.4	5.0	5.2	94.0

KPPD 6.6 6.9 95.9 5.2 5.3 97.4

Notes A and B are given in the appendix.

Table XIV (Cont)

Averages of Mill Quality Data for Mar-Apr 1992
60 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	8.4	8.4	93.1	25.0	25.2	102.0
110	13.4	11.1	148.6	28.0	26.8	114.2
114	7.8	7.8	86.5	20.5	21.3	83.6
116	9.4	10.1	104.2	25.2	26.0	102.8
118	8.1	7.7	89.8	23.2	23.3	94.6

KPPD 9.4 9.0 104.4 24.4 24.5 99.4

Notes A and B are given in the appendix.

Table XV

Averages of Mill Quality Data for May–Jun 1992
60 lb Ext. Multiwall Grade

Code	Moisture Content Percent			Adj. Basis Wt. *A lb/3000 sq.ft.			Gurley Porosity s/100 cc		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	5.7	5.8	121.3	63.0	62.7	101.4	12.2	15.4	113.8
110	4.5	4.3	95.7	61.8	61.6	99.5	13.5	14.8	125.9
114	3.9	3.9	83.0	65.3	63.9	105.1	11.4	10.0	106.3
116		5.3			61.9			10.3	
118	4.1	4.2	87.2	60.6	60.5	97.6	3.0	3.1	28.0

KPPD 4.6 4.7 96.8 62.7 62.1 100.9 10.0 10.7 93.5

Notes A and B are given in the appendix.

Table XV (Cont)

Averages of Mill Quality Data for May–Jun 1992
60 lb Ext. Multiwall Grade

Code	MD Tear g/sheet			Total Tear g/sheet		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	149.5	147.5	97.3	358.3	316.7	105.7
110	151.0	143.7	98.3	319.0	309.8	94.1
114	176.2	187.6	114.7	381.2	397.2	112.4
116		142.6			344.8	
118	150.5	147.0	97.9	317.0	326.6	93.5

KPPD 156.8 153.7 102.0 343.9 339.0 101.4

Notes A and B are given in the appendix.

Table XV (Cont)

Averages of Mill Quality Data for May–Jun 1992
60 lb Ext. Multiwall Grade

Code	MD Stretch Percent			CD Stretch Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	6.8	6.5	100.9	4.7	4.9	88.7
110	4.4	5.5	65.3	7.0	6.3	132.1
114	5.9	6.4	87.5	4.9	4.9	92.5
116		7.1			5.3	
118	8.1	8.2	120.2	5.0	5.1	94.3

KPPD 6.3 6.7 93.5 5.4 5.3 101.9

Notes A and B are given in the appendix.

Table XV (Cont)

Averages of Mill Quality Data for May–Jun 1992
60 lb Ext. Multiwall Grade

Code	CD TEA Percent			Total TEA Percent		
	Cur. Av.	Cum Av.	Ind. *B	Cur. Av.	Cum Av.	Ind. *B
105	8.1	8.2	88.6	26.1	25.2	107.1
110	13.7	11.9	149.9	25.9	26.5	106.3
114	8.7	8.0	95.2	21.0	21.3	86.2
116		9.9			25.9	
118	7.4	7.7	81.0	21.6	22.9	88.7

KPPD 9.5 9.1 103.7 23.7 24.4 97.1

Notes A and B are given in the appendix.

TABLE XVI
Data on Conditioning and Testing Environments
JAN-FEB, MAR-APR, MAY-JUN 1992

Mill Code	Conditioning, Before Testing			
	<u>Preconditioning</u>	<u>Temp, °C</u>	<u>RH, %</u>	<u>Time, min</u>
100	NO	22.8	50	5
101	NO	22.8	50	5
102	NO	22.8	50	5
103	NO	22.8	50	5
104	NO	21.1	50	20
105	NO	22.2	50	20
106	NO	21.1	50	20
107	NO	22.8	50	15
108	NO	22.8	50	10
109	NO	22.8	50	10
110	NO	22.2	50	30
111	NO	22.8	50	15
112	NO	22.8	50	15
113	NO	22.8	50	10
114	NO	22.8	50	10
115	NO	22.8	50	0
116	NO	22.2	50	24 HRS
117	NO	22.8	50	10
118	NO	22.8	50	10

TABLE XVII
Tear and Tensile Testing Variables
JAN-FEB, MAR-APR, MAY-JUN 1992

Flat Grades Only

Mill	Tear Tester Tensile Method				Tensile Test Variables			
	Code	Old	New	T404	T494	Length, in	Width, in	Speed, in/min
100		x			x	6	1	50 mm/min
101		x			x	6	1	50 mm/min
102		x			x	6	1	50 mm/min
103		x			x	6	1	50 mm/min
104		x			x	5	1	5
105		x			x	5	1	5
106		x			x	5	1	5
107		x			x	7	1	4
108	x				x	7.1	1	1"MD,2.7"CD
109	x				x	7.1	1	1"MD,2.7"CD
110	x				x	4.8	1	2
111		x			x	8	1	2
112		x			x	8	1	2
113		x			x	180 mm	1	2
114		x			x	180 mm	1	2
115		x		x		7.1	1	0.43
116		x			x	4.8	1	1
117		x			x	7.1	1	2
118	x				x	7.1	1	1"MD,2.7"CD

TABLE XVII (Cont.)
Tear and Tensile Testing Variables
JAN-FEB, MAR-APR, MAY-JUN 1992

Extensible Grades Only

Mill Code	Tear Tester Tensile Method				Tensile Test Variables		
	Old	New	T404	T494	Length, in	Width, in	Speed, in/min
105		x		x	5	1	5
110	x			x	4.8	1	2
114		x		x	180 mm	1	2
116		x		x	4.8	1	1
118	x			x	7.1	1	1"MD,2.7"CD

APPENDIX

NOTES A AND B USED IN TABULATIONS OF MILL DATA

Note A, used in the tables of mill data, defines the procedure for calculating adjusted basis weight. The adjusted basis weight is that corresponding to a moisture content of 7.25%, calculated as follows:

$$ABW = RBW [(100 - RMC) / (100 - 7.25)]$$

where: ABW = adjusted basis weight, RBW = reported basis weight, and RMC = reported moisture content.

Note B, used in the tables of mill data, defines the procedures for calculating either machine index or K.P.P.D. index. These indexes are the ratio of either the machine or KPPD current average to the KPPD cumulative average, calculated as follows:

$$MI = 100 (CMA/CUM KPPDA)$$

$$KPPDI = 100 (CKPPDA/CUM KPPDA)$$

where: MI = Machine Index, KPPDI = KPPD index,

CMA = current machine average for a specific physical property of a specific multiwall bag paper grade obtained during the current month on a specific machine,

CKPPDA = current average of all machine averages for a specific physical property of a specific multiwall bag paper grade obtained during the current month,

CUM KPPDA = the average CKPPDA for the previous twelve months, including the current month.

and: CUM MA = the average CMA for the previous twelve months, including the current month.

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