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CONTINUOUS BASELINE STUDY

Project 1108-B

Progress Report 70

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC

May 1, 1953

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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In conjunction with the F.K.I. Continuous Baseline Study, eighty-five different sample lots of 42-lb. Fourdrinier kraft linerboard were submitted by eleven different F.K.I. mills to The Institute of Paper Chemistry for testing during the period April 1 through April 30. In addition to the 42-lb. kraft linerboard, six samples of special drum stock were also submitted for evaluation by one of the participating mills. The results on the special stock are tabulated separately in this report. A tabulation of the number of samples classified according to mill may be seen in Table I.

TABLE I
DISTRIBUTION OF 42-LB. LINERBOARD SAMPLES

Mill Code	Samples Submitted
A	6
B	16
C	8
D	8
E	2
F	5
G	8
H	2
I	19
J	4
K	0
L	0
M	<u>7</u>
	85

These sample lots were tested for basis weight, caliper, bursting strength, G. E. puncture, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 6. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average includes all the results up to but not including the current period; the current period in the case of this report is April 1 through April 30. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 43.0 lb., and the cumulative F.K.I. average basis weight is 43.1 lb. Hence, the index for basis weight determined in per cent as indicated above is 99.8. This signifies that the current average basis weight is slightly lower than the cumulative average, which in this case covered the period from July 25, 1947, through March 31, 1953.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills conform to the 42-lb. specification set forth in Rule 41. Mill D has the highest average basis weight, it being 44.2 lb. or approximately +5.2% higher than the 42-lb. specification. On the other hand, Mill E has the lowest average basis weight, it being 42.6 lb., approximately +1.4 higher than the 42-lb. specification.

The amount by which the mills vary from the 42-lb. specification is as follows:

Mill Code	Per Cent
A	+2.1
B	+3.1
C	+2.1
D	+5.2
E	+1.4
F	+1.7
G	+3.8
H	+2.4
I	+1.7
J	+2.1
K	--
L	--
M	+1.9

A comparison of the average basis weight data for the previous period with the current F.K.I. average indicates that the basis weight results have remained the same.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the mill averages vary from a low of 12.6 for Mill A to a high of 14.6 for Mill E, the average being 13.4 which is somewhat lower than the cumulative average of 13.9.

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed that the

average bursting strength values for the various mills range from a low of 99 for Mill F to a high of 113 for Mill G. The current F.K.I. average bursting strength is 108, somewhat higher than the cumulative average of 106.

The data of Table II and Figure 4 show that the average G. E. puncture result for all mills is 34 units. Mill F has the highest G. E. puncture average, 39 units, and Mill B has the lowest average, 28 units. The current F.K.I. G. E. puncture average of 34 units is slightly lower than the cumulative F.K.I. average which is 36 units.

A graphic comparison of the Elmendorf tear results for the various mills is given in Figures 5 and 6. The data of Table II show that Mill E has the highest average machine direction tear value while Mill B has the lowest. Mill D has the highest average cross-machine direction tear value, whereas Mill B has the lowest value. It may be noted that the current F.K.I. average machine and cross-machine direction tear results are lower than the cumulative averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, caliper, G. E. puncture, and Elmendorf tear are lower than the respective cumulative F.K.I. averages, whereas the current F.K.I. average for bursting strength is higher.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XV for Mills A to M, respectively. In addition to the current

and cumulative averages, the mill factor and mill index are given for each mill. The cumulative mill average is the average test result obtained on the samples submitted by the particular mill up to, but not including, the current average. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor } (\%)$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index } (\%)$$

The mill factor and the mill index serve as a ready means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. As the test data accumulate, the factors and indexes acquire added significance. The reports also contain a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry.

The results obtained on the special drum stock may be seen in Table XVI.

It may be noted in Tables III through XVI that the data have been separated on the basis of the sheet finish. The summarized results for the mills which submitted sample lots during the current period are as follows:

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
A	6 ^a		
B	16 ^a		
C	8		

(Continued on next page)

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
D	8		
E	2, 6 ^b		
F	3		2 ^c
G	8		
H	2 ^a		
I	19 ^a		
J			4 ^d
M	7		

^a One side only.

^b Drum linerboard.

^c Sheet finish not reported.

^d Semi-water finish.

The results indicate that a majority of the mills are using
a water finish on their 42-lb. linerboard.

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--APRIL 1 THROUGH APRIL 30, 1953

Code No.	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	G. E. Puncture, units	Elmendorf Tear, g./sheet	In Direction Across Direction
A	42.9	12.6	109	33	332	374
B	43.3	13.0	105	28	288	326
C	42.9	14.3	107	34	352	395
D	44.2	13.4	111	38	388	430
E	42.6	14.6	109	34	419	386
F	42.7	13.1	99	39	406	416
G	43.6	13.0	113	34	338	384
H	43.0	12.9	105	34	358	395
I	42.7	13.4	105	32	334	394
J	42.9	13.3	112	33	356	374
K	No samples submitted.					
L	No samples submitted.					
M	42.8	13.6	110	34	369	410
Current FKl Average:	43.0	13.4	108	34	358	390
Cumulative FKl Average:	43.1	13.9	106	36	372	405
FKl Index, %:	99.8	96.4	101.9	94.4	96.2	96.3

Figure 1

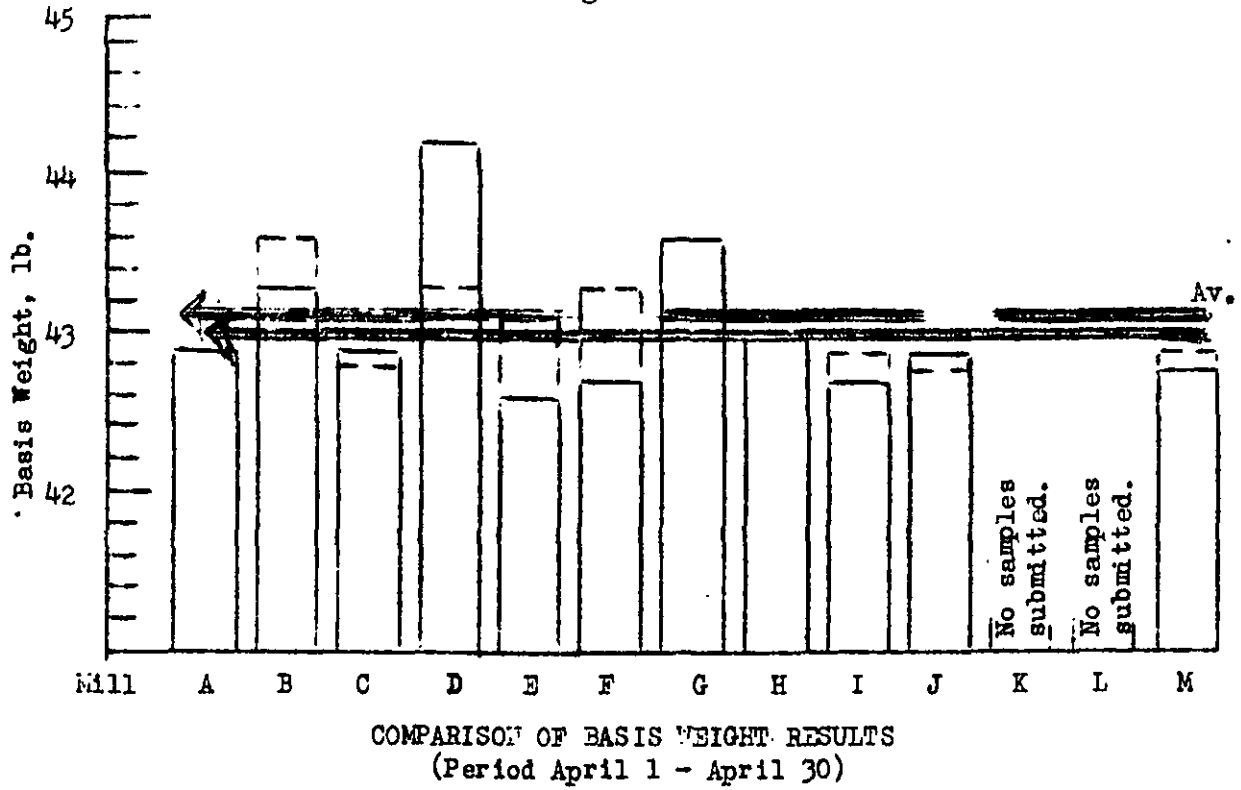
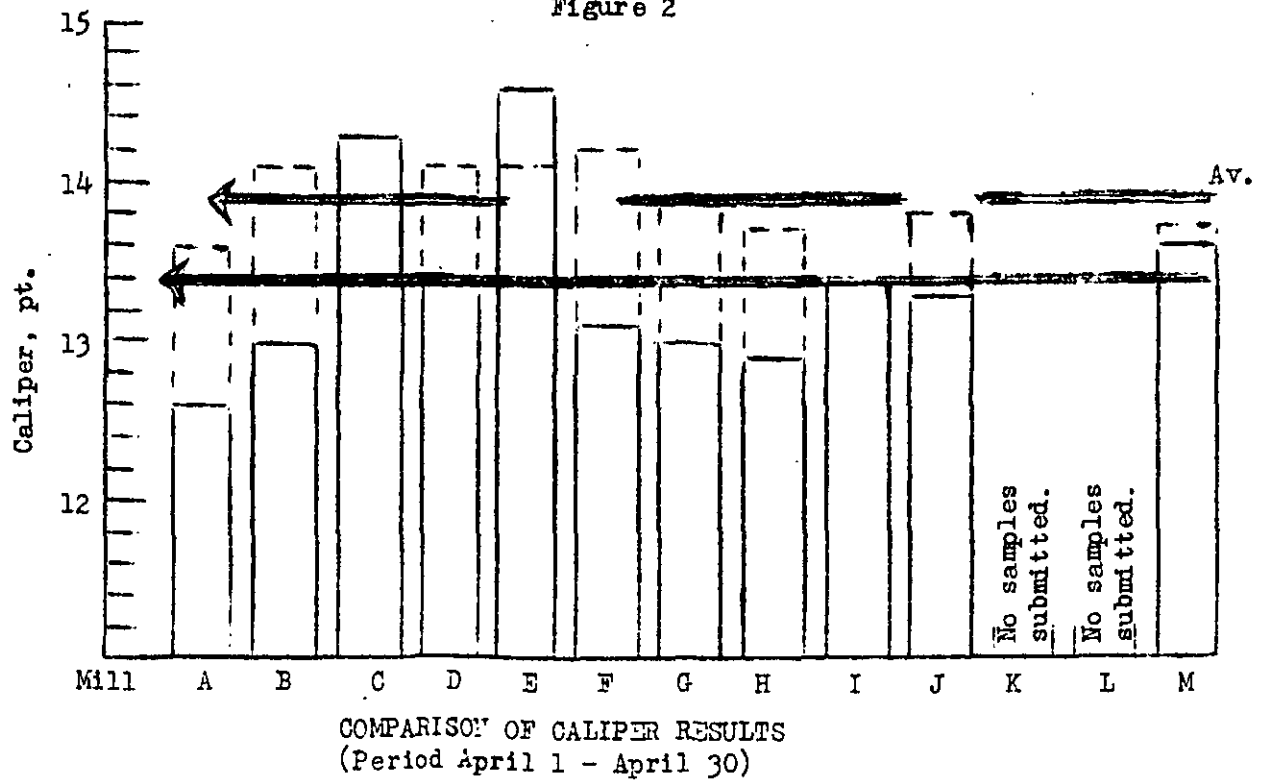
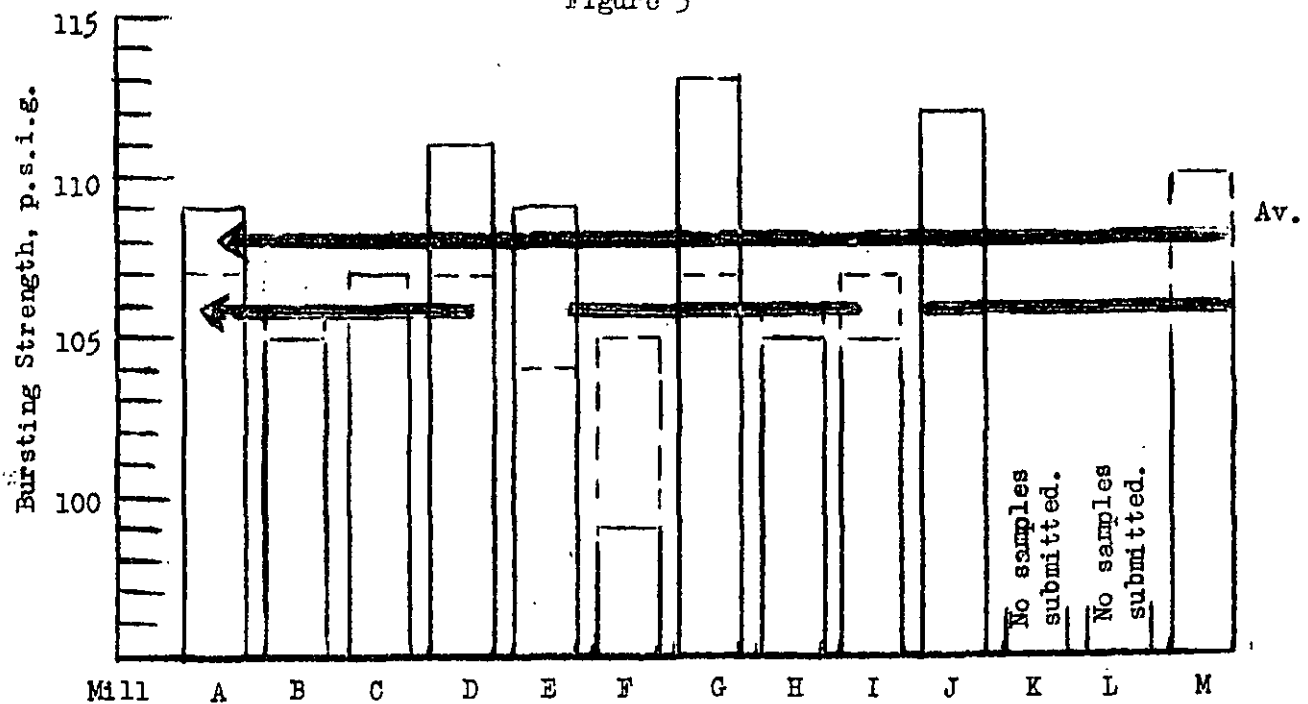


Figure 2



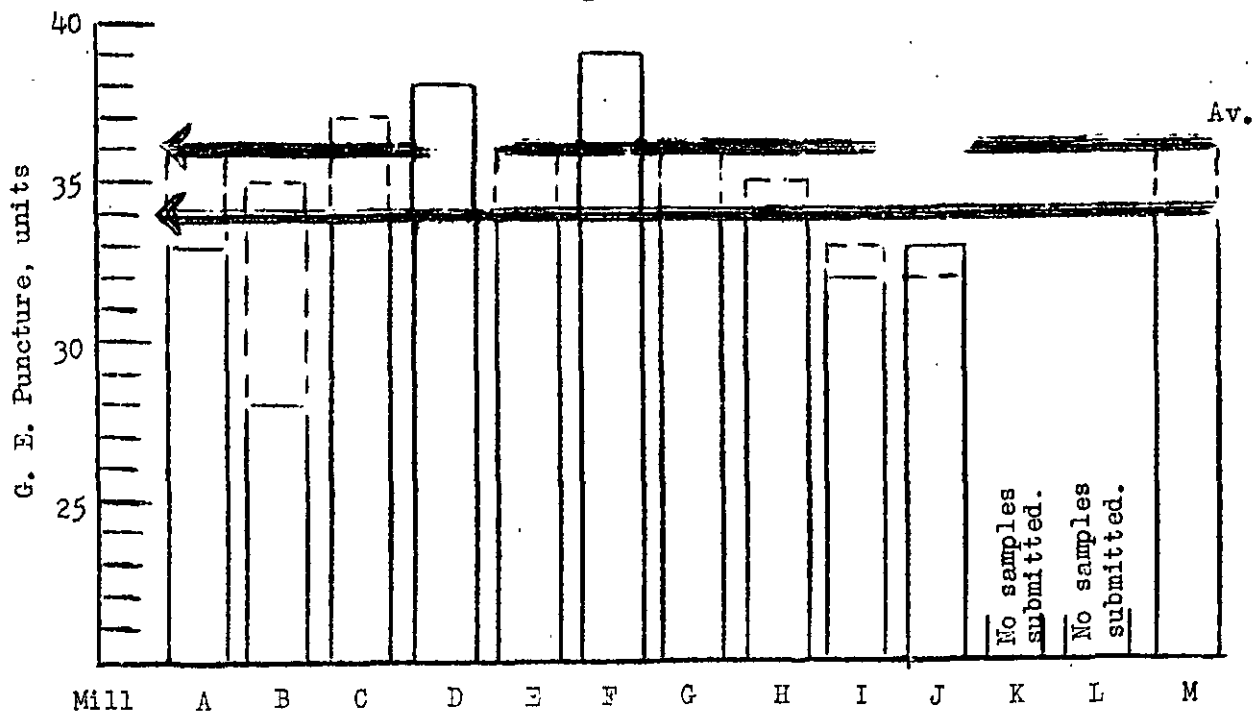
—— Current Mill Average
- - - - Cumulative Mill Average

Figure 3

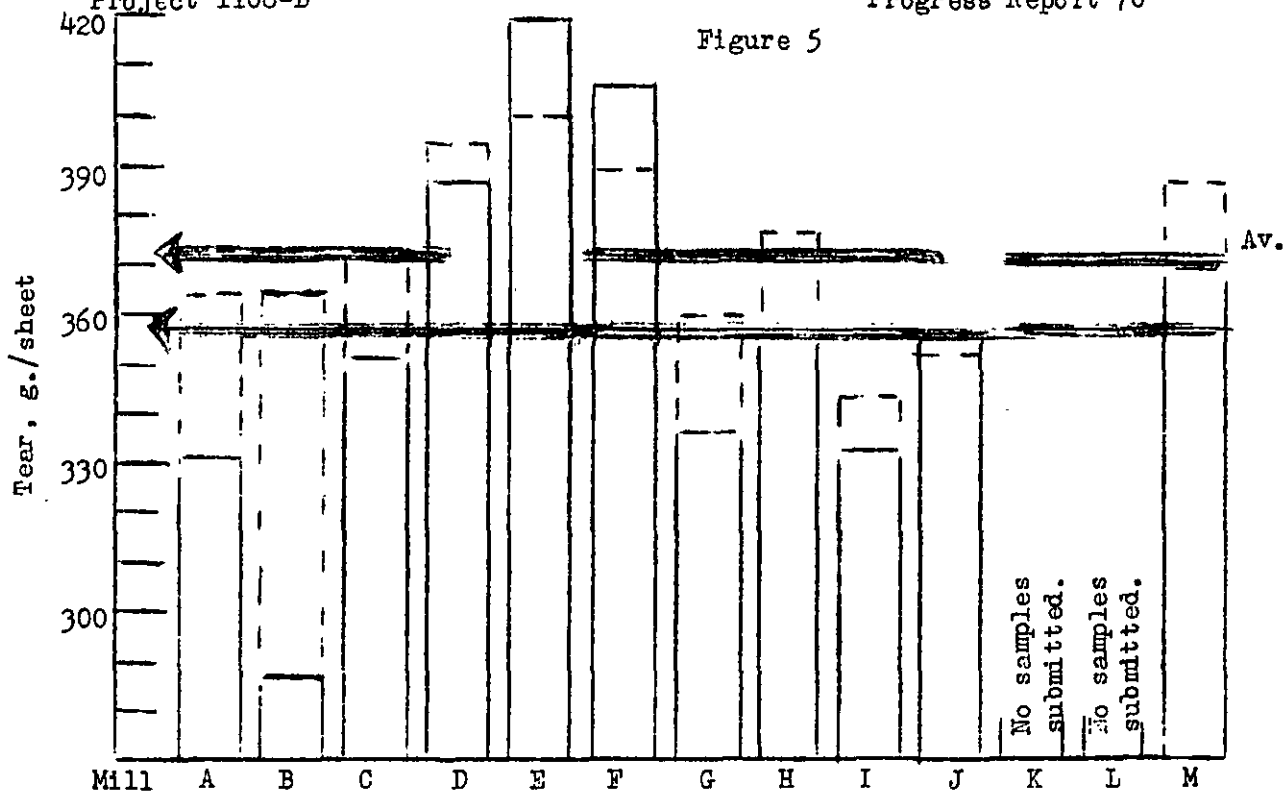


COMPARISON OF BURSTING STRENGTH RESULTS
(Period April 1 - April 30)

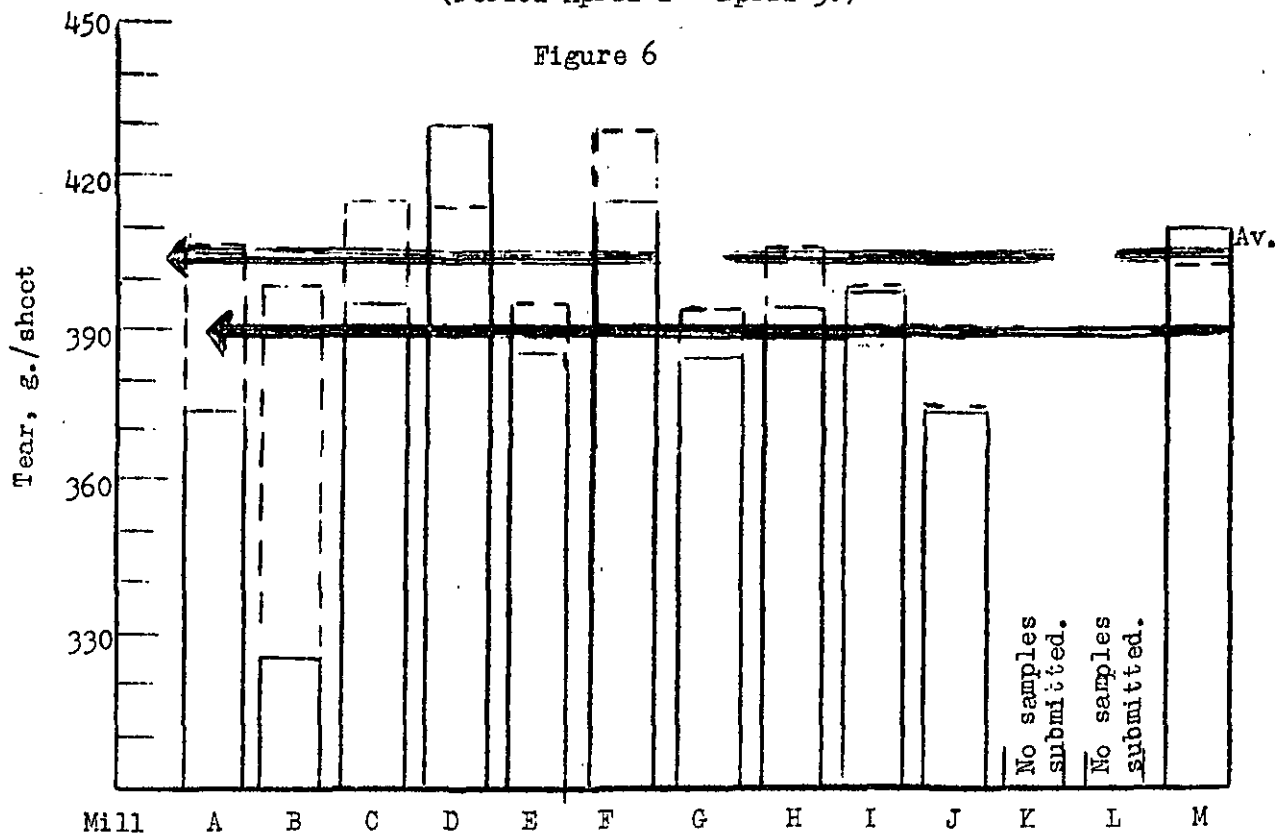
Figure 4



COMPARISON OF G. E. PUNCTURE RESULTS
(Period April 1 - April 30)



COMPARISON OF TEAR RESULTS, Machine Direction
(Period April 1 - April 30)



COMPARISON OF TEAR RESULTS, Across-machine Direction
(Period April 1 - April 30)

TABLE III

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL--APRIL 1 THROUGH APRIL 30, 1953

Tear, Elmendorf	Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units		g./sheet		Across						
	Min.	Av.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Av.					
Mill A-42-lb. Linerboard																	
3	42.4	43.2	13.2	12.8	13.0	125	94	109	35	31	33	408	280	331 ^a	408	344	368 ^a
3	42.4	43.2	13.3	12.8	13.0	116	90	107	34	30	32	384	288	335 ^a	464	344	373 ^a
3	42.2	43.2	13.9	12.5	13.0	132	86	108	38	31	34	376	296	332 ^a	440	344	395 ^a
3	42.6	43.0	13.0	12.0	12.5	133	94	116	34	30	32	384	248	317 ^a	424	320	375 ^a
3	42.2	42.4	12.5	12.0	12.1	121	86	108	34	30	33	368	264	335	384	312	365 ^a
3	42.2	42.4	12.5	12.0	12.1	130	82	109	34	29	32	432	296	344 ^a	400	336	369 ^a
	42.9				12.6			109			33			332			374
	42.9				13.6			107			36			364			407
	100.0				92.6			101.9			91.7			91.2			91.9
	99.5				90.6			102.8			91.7			89.2			92.3

or more specimens which tore beyond the 3/8-inch limit.

TABLE III

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL--APRIL 1 THROUGH APRIL 30,

File No.	Mill Code	Fin- ish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units	
						Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
<u>Mill A-42-lb. Linerboard</u>													
152786	A-434	WFLS	4/ 3/53	3/22/53	2	43.8	42.4	43.2	13.0	125	94	109	35
153787	A-435	WFLS	4/ 3/53	3/22/53	2	44.0	42.4	43.2	13.0	116	90	107	34
153858	A-436	WFLS	4/10/53	3/31/53	2	43.8	42.2	43.2	13.0	132	86	108	38
153859	A-437	WFLS	4/10/53	3/31/53	2	43.6	42.6	43.0	12.5	133	94	116	34
153907	A-438	WFLS	4/15/53	4/11/53	1	43.0	42.2	42.4	12.1	121	86	108	34
153908	A-439	WFLS	4/15/53	4/11/53	1	43.0	42.2	42.4	12.1	130	82	109	34
Current Mill Average:						42.9		12.6		109		33	
Cumulative Mill Average:						42.9		13.6		107		36	
Mill Factor, %:						100.0		92.6		101.9		91.7	
Mill Index, %:						99.5		90.6		102.8		91.7	

a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

ARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

more specimens which tore beyond the 3/8-inch limit.

TABLE IV

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (cont.)

File No.	Mill Code	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points		Bursting Strength, p.s.i. gage			G. E. Puncture, units			
						Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
Mill B-42-lb. Linerboard																	
153761	B-767	WFIS	4/ 1/53	3/13/53	1	44.6	43.4	44.0	14.0	12.7	13.3	126	81	106	34	28	31
153762	B-768	WFIS	4/ 1/53	3/13/53	1	44.6	42.4	43.7	14.0	12.8	13.1	116	80	102	34	28	30
153763	B-769	WFIS	4/ 1/53	3/13/53	1	44.4	43.0	43.9	13.7	12.8	13.2	116	75	97	34	29	31
153764	B-770	WFIS	4/ 1/53	3/13/53	1	44.2	43.4	43.8	13.9	12.9	13.2	120	78	102	33	28	31
153796	B-771	WFIS	4/ 6/53	3/25/53	1	44.0	42.4	43.4	13.6	12.4	13.0	124	83	104	29	24	26
153797	B-772	WFIS	4/ 6/53	3/25/53	1	45.0	42.6	43.7	13.5	12.4	13.0	131	90	107	32	27	29
153798	B-773	WFIS	4/ 6/53	3/25/53	1	44.4	42.0	43.3	13.3	12.2	12.9	128	89	110	30	24	26
153799	B-774	WFIS	4/ 6/53	3/25/53	1	44.6	42.0	43.3	13.8	12.8	13.2	120	93	107	28	23	26
153800	B-775	WFIS	4/ 6/53	3/25/53	1	44.4	42.0	43.2	13.2	12.4	12.9	121	83	104	32	25	28
153801	B-776	WFIS	4/ 6/53	3/25/53	1	44.4	42.2	43.5	13.8	12.9	13.1	119	82	105	30	24	28
153802	B-777	WFIS	4/ 6/53	3/25/53	1	44.0	41.8	43.3	13.7	13.0	13.2	131	84	105	32	24	27
153803	B-778	WFIS	4/ 6/53	3/25/53	1	44.2	42.0	43.3	13.6	12.9	13.1	118	82	106	29	25	27
153821	B-779	WFIS	4/ 7/53	3/31/53	1	43.2	41.8	42.3	13.4	12.2	12.9	116	87	106	29	24	27
153822	B-780	WFIS	4/ 7/53	3/31/53	1	43.8	41.8	42.4	13.3	12.1	12.9	117	91	104	30	24	27
153823	B-781	WFIS	4/ 7/53	3/31/53	1	43.4	41.8	42.5	13.2	12.0	12.7	128	90	107	29	25	27
153824	B-782	WFIS	4/ 7/53	3/31/53	1	43.4	41.4	42.4	13.2	12.2	12.8	130	93	108	29	24	27
Current Mill Average:						43.3			13.0		105			28			
Cumulative Mill Average:						43.6			14.1		106			35			
Mill Factor, %:						99.3			92.2		99.1			80.0			
Mill Index, %:						100.5			93.5		99.1			77.8			

a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE V
VARIATION OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Dry Weight, lb.	Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, G./sheet								
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	In	Across					
Mill C-42-lb. Linerboard															
42.2	43.0	14.9	13.5	14.3	120	85	100	38	34	376	328	346	440	344	385 ^a
42.2	43.0	14.8	14.0	14.3	123	76	102	38	34	408	312	363	456	336	386 ^a
42.8	43.5	15.2	14.2	14.7	116	87	103	35	32	384	296	340	456	360	403
42.2	43.4	15.0	14.1	14.7	120	86	105	35	31	400	296	344	416	368	385 ^a
40.8	41.4	14.3	13.2	13.7	123	89	108	32	29	384	296	332 ^a	424	344	378 ^a
41.0	41.6	14.2	13.0	13.7	128	93	110	34	30	392	280	329 ^a	432	328	374 ^a
42.2	43.7	15.0	14.0	14.3	132	92	114	40	34	456	344	384	480	384	419 ^a
42.4	43.6	14.9	14.0	14.4	137	88	114	40	33	456	320	376	464	384	429 ^a
42.9				14.3			107					352			395
42.8				13.9			106					371			416
100.2				102.9			100.9					94.9			95.0
99.5				102.9			100.9					94.6			97.0

^a more specimens which tore beyond the 3/8-inch limit.

TABLE V

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Fin- ish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points	G. E. Puncture, units								
						Max.	Min.		Av.	Max.	Min.	Av.					
Mill C-42-lb. Linerboard																	
153880	C-459	W.F.	4/13/53	4/ 3/53	1	44.0	42.2	43.0	14.9	13.5	14.3	120	85	100	38	34	36
153881	C-460	W.F.	4/13/53	4/ 3/53	1	43.8	42.2	43.0	14.8	14.0	14.3	123	76	102	38	34	36
153883	C-461	W.F.	4/13/53	4/ 6/53	1	44.6	42.8	43.5	15.2	14.2	14.7	116	87	103	35	32	33
153883	C-462	W.F.	4/13/53	4/ 6/53	1	44.2	42.2	43.4	15.0	14.1	14.7	120	86	105	35	31	33
153884	C-463	W.F.	4/13/53	4/ 7/53	1	42.4	40.8	41.4	14.3	13.2	13.7	123	89	108	32	29	31
153885	C-464	W.F.	4/13/53	4/ 7/53	1	42.6	41.0	41.6	14.2	13.0	13.7	128	93	110	34	30	32
153899	C-465	W.F.	4/14/53	4/ 9/53	1	44.6	42.2	43.7	15.0	14.0	14.3	132	92	114	40	34	37
153900	C-466	W.F.	4/14/53	4/ 9/53	1	44.4	42.4	43.6	14.9	14.0	14.4	137	88	114	40	33	37
Current Mill Average:						42.9			14.3			107			34		
Cumulative Mill Average:						42.8			13.9			106			37		
Mill Factor, %:						100.2			102.9			100.9			91.9		
Mill Index, %:						99.5			102.9			100.9			94.4		

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VI

INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Weight, in.	Caliper, points Max. Min.	Bursting Strength, p.s.i. gage Max. Min.	G. E. Puncture, units Max. Min.	Elmendorf Tear, g./sheet			
				Av.	Max.	Min.	Av.
<u>Mill D--42-lb. Linerboard</u>							
3.0	44.0	14.3 12.8 13.7 126 82 108	42 36	39	408	336	373 ^a 448 368 413 ^a
4.0	44.6	13.9 12.1 13.0 131 87 113	44 38	40	480	368	416 ^a 504 360 435 ^a
4.4	45.3	13.9 12.2 13.3 139 93 119	44 39	41	448	336	388 ^a 496 384 437 ^a
1.8	42.8	14.0 13.0 13.6 131 87 107	38 32	36	424	336	378 448 384 421 ^a
2.0	43.8	14.3 12.0 13.3 127 87 107	40 37	39	432	360	383 ^a 512 392 431 ^a
2.4	44.1	14.8 13.7 14.1 128 85 100	42 34	39	448	344	400 ^a 544 368 453 ^a
2.4	44.3	14.3 12.4 13.0 140 95 116	39 33	36	432	336	374 ^a 456 384 417 ^a
4.0	44.6	14.1 12.8 13.5 144 80 119	38 34	36	432	296	391 ^a 496 392 436 ^a
44.2		13.4	111	38			388 430
43.3		14.1	107	38			395 414
102.1		95.0	103.7	100.0			98.2 103.9
102.6		96.4	104.7	105.6			104.3 106.2

TABLE VII

<u>Mill E—42-lb. Linerboard</u>																
0.4	42.0	14.9	14.0	14.5	139	90	109	38	32	35	456	352	412 ^a	472	344	391 ^a
2.2	43.2	15.4	14.0	14.7	133	86	109	36	32	34	472	376	425 ^a	448	344	382 ^a
	42.6			14.6			109			34			419			386
	43.1			14.1			104.			36			400			395.
	98.8			103.5			104.8			94.4			104.8			97.7
	98.8			105.0			102.8			94.4			112.6			95.3

more specimens which tore beyond the 3/8-inch limit.

TABLE VI

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Fin- ish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		G. E. Puncture, units				
						Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	
Mill D-42-lb. Linerboard																
153795	D-639	S.F.	4/ 6/53	4/ 2/53	4	45.4	43.0	44.0	14.3	12.8	13.7	126	82	36	39	40
153849	D-640	S.F.	4/ 9/53	4/ 5/53	4	45.4	44.0	44.6	13.9	12.1	13.0	131	87	44	38	40
153850	D-641	S.F.	4/ 9/53	4/ 6/53	4	46.4	44.4	45.3	13.9	12.2	13.3	139	93	44	39	41
153876	D-642	S.F.	4/13/53	4/ 9/53	4	43.8	41.8	42.8	14.0	13.0	13.6	131	87	38	32	36
153905	D-643	S.F.	4/15/53	4/11/53	4	44.2	42.0	43.8	14.3	12.0	13.3	127	87	40	37	39
153906	D-644	S.F.	4/15/53	4/12/53	4	45.4	42.4	44.1	14.8	13.7	14.1	128	85	42	34	39
153953	D-645	S.F.	4/22/53	4/19/53	4	45.8	42.4	44.3	14.3	12.4	13.0	140	95	39	33	36
153970	D-646	S.F.	4/25/53	4/20/53	4	45.4	44.0	44.6	14.1	12.8	13.5	144	80	38	34	36
Current Mill Average:								44.2			13.4			111		38
Cumulative Mill Average:								43.3			14.1			107		38
Mill Factor, %:								102.1			95.0			103.7		100.0
Mill Index, %:								102.6			96.4			104.7		105.6

TABLE VII

Mill E--42-lb. Linerboard													
153793	E-354	W.F.	4/ 4/53	4/ 1/53	1	43.4	40.4	14.9	14.0	14.5	139	90	38
153967	E-359	W.F.	4/24/53	4/21/53	1	44.2	42.2	15.4	14.0	14.7	133	86	36
Current Mill Average:						42.6				14.6	109		32
Cumulative Mill Average:						43.1				14.1	104		32
Mill Factor, %:						98.8				103.5	104.8		34
Mill Index, %:						98.8				105.0	102.8		34

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VIII
INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, g./sheet										
		Max.	Min.	Av.	Max.	Min.	Av.	In	Across							
Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.						
<u>Mill F--42-1b. Linerboard</u>																
41.4	43.0	13.8	12.1	12.9	128	77	100	42	36	39	472	360	395 ^a	448	352	411 ^a
39.0	40.8	13.2	12.0	12.7	114	77	100	38	30	35	432	328	375 ^a	440	344	395 ^a
42.0	43.4	14.7	13.0	13.6	119	75	95	44	38	41	480	360	413 ^a	504	368	447 ^a
42.4	43.3	14.3	13.0	13.5	118	75	99	42	38	41	520	400	445 ^a	464	384	418 ^a
41.0	42.8	13.0	12.0	12.7	118	86	101	43	36	39	456	352	401 ^a	456	352	409 ^a
42.7				13.1			99		39				406			416
43.3				14.2			105		39				389			428
98.6				92.3			94.3		100.0				104.4			97.2
99.1				94.2			93.4		108.3				109.1			102.7

are specimens which tore beyond the 3/8-inch limit.

TABLE VIII

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Firm	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units					
						Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.			
Mill F-42-lb. Linerboard																	
153825	F-19	W.F.	4/7/53	3/16/53	—	44.2	41.4	43.0	13.8	12.1	12.9	128	77	100	42	36	39
153826	F-20	W.F.	4/7/53	3/17/53	—	41.8	39.0	40.8	13.2	12.0	12.7	114	77	100	38	30	35
153827	F-21	—	4/7/53	3/29/53	—	44.8	42.0	43.4	14.7	13.0	13.6	119	75	95	44	38	41
153828	F-22	W.F.	4/7/53	3/20/53	—	44.2	42.4	43.3	14.3	13.0	13.5	118	75	99	42	38	41
153829	F-23	—	4/7/53	3/25/53	—	44.0	41.0	42.8	13.0	12.0	12.7	118	86	101	43	36	39
Current Mill Average:						42.7			13.1			99					39
Cumulative Mill Average:						43.3			14.2			105					39
Mill Factor, %:						98.6			92.3			94.3					100.0
Mill Index, %:						99.1			94.2			93.4					108.3

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE IX

INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Height, in.	Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, g./sheet		In Across		Av.					
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.						
<u>Mill G--42-lb. Linerboard</u>																
3.8	44.5	13.9	12.7	13.2	141	78	113	36	32	34	432	304	347 ^a	424	360	394 ^a
3.6	43.5	13.7	12.7	13.2	129	80	113	40	32	34	368	296	331 ^a	400	344	367 ^a
2.8	43.7	13.3	11.6	12.6	133	94	112	38	32	36	384	304	341 ^a	400	352	378 ^a
2.6	42.2	13.1	11.2	12.1	138	96	112	37	31	34	392	288	323 ^a	400	328	363 ^a
2.2	43.5	13.9	12.0	12.9	142	81	113	36	31	34	392	312	351 ^a	432	352	384 ^a
2.2	43.4	13.7	12.1	12.9	143	90	113	36	30	33	384	304	339 ^a	448	368	395 ^a
3.0	43.8	14.2	12.4	13.4	134	90	112	38	30	34	400	288	342 ^a	448	344	396 ^a
3.6	44.1	14.4	12.7	13.5	151	85	115	37	32	34	360	288	327 ^a	432	360	397 ^a
43.6				13.0			113			34			338			384
43.0				13.9			107			36			360			394
101.4				93.5			105.6			94.4			93.9			97.5
101.2				93.5			106.6			94.4			90.9			94.8

TABLE X

Mill H--42-lb. Linerboard

3.0	43.5	13.9	13.0	13.2	137	76	105	40	31	35	432	288	364	448	344	391 ^a
2.0	42.4	12.9	12.1	12.5	130	82	106	36	30	33	464	288	351	496	336	400 ^a
43.0				12.9			105			34			358			395
43.0				13.7			106			35			377			406
100.0				94.2			99.1			97.1			95.0			97.3
99.8				92.8			99.1			94.4			96.2			97.5

specimens which tore beyond the 3/8-inch limit.

TABLE IX

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Fin- ish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units					
						Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
Mill G-42-lb. Linerboard																	
153788	G-484	WFL	4/ 3/53	3/27/53	1	45.8	43.8	44.5	13.9	12.7	13.2	14.1	78	113	36	32	34
153789	G-485	WFL	4/ 3/53	3/27/53	1	44.0	42.6	43.5	13.7	12.7	13.2	129	80	113	40	32	34
153804	G-486	WFL	4/ 6/53	3/31/53	1	44.2	42.8	43.7	13.3	11.6	12.6	133	94	112	38	32	36
153805	G-487	WFL	4/ 6/53	3/31/53	1	43.2	41.6	42.2	13.1	11.2	12.1	138	96	112	37	31	34
153912	G-488	WFL	4/16/53	4/ 9/53	1	44.2	42.2	43.5	13.9	12.0	12.9	142	81	113	36	31	34
153913	G-489	WFL	4/16/53	4/ 9/53	1	44.0	42.2	43.4	13.7	12.1	12.9	143	90	113	36	30	33
153922	G-490	WFL	4/17/53	4/14/53	1	45.0	43.0	43.8	14.2	12.4	13.4	134	90	112	38	30	34
153923	G-491	WFL	4/17/53	4/14/53	1	44.6	43.6	44.1	14.4	12.7	13.5	151	85	115	37	32	34
Current Mill Average:								43.6			13.0			113			34
Cumulative Mill Average:								43.0			13.9			107			36
Mill Factor, %:								101.4			93.5			105.6			94.4
Mill Index, %:								101.2			93.5			106.6			94.4

TABLE X

Mill H-42-lb. Linerboard

153870	H-391	WFLS	4/11/53	3/30/53	2	44.0	43.0	13.9	13.0	13.2	137	76	105	40	31	35
153871	H-392	WFLS	4/11/53	4/ 1/53	2	42.8	42.0	12.9	12.1	12.5	130	82	106	36	30	33
Current Mill Average:						43.0		12.9					105			34
Cumulative Mill Average:						43.0		13.7					106			35
Mill Factor, %:						100.0		94.2					99.1			97.1
Mill Index, %:						99.8		92.8					99.1			94.4

* This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XI

OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Fourdrinier Kraft Board Institute, Inc.
Project 1108-BPage 17
Progress Report 70

Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, g./sheet		Across Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.
		Max.	Min.	Max.	Min.	Max.	Min.										
Mill I-42-lb. Linerboard																	
2.0	42.9	14.0	13.0	126	80	106	36	30	33	392	288	337	536	336	413 ^a		
2.2	43.0	14.0	13.1	117	82	106	34	30	33	352	264	311	432	360	397 ^a		
2.2	43.2	14.0	13.0	125	91	105	34	31	33	400	296	342	456	352	402 ^a		
2.2	42.7	13.8	13.2	119	95	108	34	29	32	392	304	343 ^a	440	360	396 ^a		
2.0	42.5	13.8	12.9	121	84	104	34	30	32	376	280	333	432	376	393 ^a		
2.2	43.0	13.8	13.0	122	92	109	36	30	33	376	312	334 ^a	440	344	381 ^a		
2.0	42.8	14.9	13.7	132	82	103	34	30	32	392	312	350 ^a	456	336	383 ^a		
2.6	42.4	13.9	12.8	124	89	106	34	30	31	368	312	329 ^a	424	336	375 ^a		
2.0	42.7	13.9	13.0	125	90	103	35	29	31	376	296	332	480	360	407 ^a		
2.0	42.6	13.9	13.0	121	93	107	35	30	32	368	296	334 ^a	480	344	389 ^a		
2.0	42.3	13.5	13.0	127	81	106	35	30	32	360	264	311	424	336	384 ^a		
2.0	42.2	13.9	13.0	119	94	106	34	30	32	424	288	345	448	368	403 ^a		
2.8	42.3	13.9	13.0	123	83	102	35	30	32	408	296	337 ^a	464	360	403 ^a		
2.2	42.8	14.0	13.0	118	87	103	34	29	32	384	280	344	432	336	378 ^a		
2.6	42.5	14.0	12.9	122	90	105	33	29	31	400	280	329	448	344	389 ^a		
2.2	42.9	14.0	13.0	118	87	103	34	30	32	384	296	340 ^a	464	344	387 ^a		
2.0	42.8	13.8	13.0	122	76	101	34	30	32	352	248	321 ^a	448	352	400 ^a		
2.2	42.8	13.8	13.0	122	90	105	34	30	32	400	280	339 ^a	448	320	399 ^a		
2.0	42.6	13.7	13.0	117	90	104	35	30	32	392	304	339 ^a	448	344	406 ^a		
42.7						105			32			334			397		
42.9						107			33			345			399		
99.5				100.0		98.1			97.0			96.8			98.7		
99.1				96.4		99.1			88.9			89.8			97.3		

re specimens which tore beyond the 3/8-inch limit.

TABLE XI

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continuation)

File No.	Mill Code	Fin- ish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units					
						Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
Mill I-42-lb. Linerboard																	
153768	I-284	WFLS	4/ 1/53	3/17/53	1	43.8	42.0	42.9	14.0	13.0	13.4	126	80	106	36	30	33
153769	I-285	WFLS	4/ 1/53	3/24/53	1	43.6	42.2	43.0	14.0	13.1	13.6	117	82	106	34	30	33
153770	I-286	WFLS	4/ 1/53	3/24/53	1	44.2	42.2	43.2	14.0	13.0	13.6	125	91	105	34	31	33
153771	I-287	WFLS	4/ 1/53	3/25/53	1	43.6	42.2	42.7	13.8	13.2	13.5	119	95	108	34	29	32
153772	I-288	WFLS	4/ 1/53	3/25/53	1	43.0	42.0	42.5	13.8	12.9	13.4	121	84	104	34	30	32
153792	I-289	WFLS	4/ 4/53	3/31/53	1	43.6	42.2	43.0	13.8	13.0	13.4	122	92	109	36	30	33
153806	I-290	WFLS	4/ 6/53	4/ 1/53	1	43.6	42.0	42.8	14.9	13.7	14.2	132	82	103	34	30	32
153830	I-291	WFLS	4/ 7/53	4/ 2/53	1	43.6	41.6	42.4	13.9	12.8	13.3	124	89	106	34	30	31
153872	I-292	WFLS	4/11/53	4/ 6/53	1	44.8	42.0	42.7	13.9	13.0	13.3	125	90	103	35	29	31
153873	I-293	WFLS	4/11/53	4/ 6/53	1	43.8	42.0	42.6	13.9	13.0	13.4	121	93	107	35	30	32
153874	I-294	WFLS	4/11/53	4/ 6/53	1	43.0	42.0	42.3	13.5	13.0	13.2	127	81	106	35	30	32
153875	I-295	WFLS	4/11/53	4/ 7/53	1	43.0	42.0	42.2	13.9	13.0	13.4	119	94	106	34	30	32
153930	I-296	WFLS	4/18/53	4/ 8/53	1	43.6	41.8	42.3	13.9	13.0	13.4	123	83	102	35	30	32
153931	I-297	WFLS	4/18/53	4/ 9/53	1	43.8	42.2	42.8	14.0	13.0	13.6	118	87	103	34	29	32
153932	I-298	WFLS	4/18/53	4/11/53	1	43.2	41.6	42.5	14.0	12.9	13.4	122	90	105	33	29	31
153933	I-299	WFLS	4/18/53	4/11/53	1	43.6	42.2	42.9	14.0	13.0	13.5	118	87	103	34	30	32
153934	I-300	WFLS	4/18/53	4/12/53	1	43.4	42.0	42.8	13.8	13.0	13.4	122	76	101	34	30	32
153948	I-301	WFLS	4/21/53	4/14/53	1	43.6	42.2	42.8	13.8	13.0	13.4	122	90	105	34	30	32
153949	I- 302	WFLS	4/21/53	4/17/53	1	43.8	42.0	42.6	13.7	13.0	13.4	117	90	104	35	30	32
Current Mill Average:						42.7		13.4		105		32					
Cumulative Mill Average:						42.9		13.4		107		33					
Mill Factor, %:						99.5		100.0		98.1		97.0					
Mill Index, %:						99.1		96.4		99.1		88.9					

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XII

VIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Weight, lb.	Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, g./sheet									
	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.				
<u>Mill J--42-lb. Linerboard</u>																
2.0	42.6	13.9	13.0	13.4	129	82	109	37	31	34	456	312	373 ^a	400	328	367 ^a
2.0	42.6	14.0	13.0	13.3	126	95	112	37	30	33	472	320	367 ^a	440	352	388 ^a
2.2	43.5	13.8	12.2	13.1	131	94	116	34	28	30	368	320	345 ^a	408	328	372 ^a
2.2	43.1	13.8	13.0	13.2	132	84	113	35	31	32	424	272	341 ^a	408	328	370 ^a
	42.9			13.3			112			33			356			374
	42.8			13.8			106			32			353			375
	100.2			96.4			105.7			103.1			100.8			99.7
	99.5			95.7			105.7			91.7			95.7			92.3

TABLE XIII

Mill K--42-lb. Linerboard

No samples submitted.

TABLE XIV

Mill L--42-lb. Linerboard

No samples submitted.

Fourdrinier Kraft Board Institute, Inc.
Project 1108-BPage 18
Progress Report 70

TABLE XII

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units					
						Max.	Min.	Av.	Max.	Min.	Av.		Max.	Min.	Av.		
<u>Mill J--42-lb. Linerboard</u>																	
153807	J-417	B.F.	4/ 6/53	3/29/53	—	43.4	42.0	42.6	13.9	13.0	13.4	129	82	109	37	31	3
153808	J-418	B.F.	4/ 6/53	3/29/53	—	43.2	42.0	42.6	14.0	13.0	13.3	126	95	112	37	30	3
153968	J-419	B.F.	4/25/53	4/11/53	1	44.0	42.2	43.5	13.8	12.2	13.1	131	94	116	34	28	3
153969	J-420	B.F.	4/25/53	4/11/53	1	44.0	42.2	43.1	13.8	13.0	13.2	132	84	113	35	31	3
Current Mill Average:								42.9			13.3			112			3
Cumulative Mill Average:								42.8			13.8			106			3
Mill Factor, %:								100.2			96.4			105.7			10
Mill Index, %:								99.5			95.7			105.7			9

TABLE XIII

Mill K--42-lb. Linerboard

No samples submitted.

TABLE XIV

Mill L--42-lb. Linerboard

No samples submitted.

TABLE XV

AL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Caliper, points			Bursting Strength, p.s.i. gage			G. E. Puncture, units		Elmendorf Tear, g./sheet							
Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
Mill M--42-lb. Linerboard															
12.4	14.2	13.0	13.6	156	81	114	40	31	35	416	336	369 ^a	456	360	402 ^a
12.3	13.9	12.0	13.1	130	91	111	39	29	33	400	280	350	472	352	415 ^a
14.0	14.8	13.4	13.9	131	93	111	41	32	36	448	320	384	472	384	420 ^a
13.2	14.2	13.4	13.9	124	86	106	36	32	34	400	320	360 ^a	448	368	415 ^a
12.6	14.2	13.0	13.6	120	86	110	37	31	33	424	328	361 ^a	448	368	395 ^a
12.6	14.7	13.0	13.8	124	80	105	36	32	34	400	344	374	440	360	404 ^a
12.4	14.1	13.0	13.6	131	96	112	38	31	34	464	336	383 ^a	480	384	422 ^a
12.8			13.6			110			34			369			410
12.9			13.7			106			36			388			403
19.8			99.3			103.8			94.4			95.1			101.7
19.3			97.8			103.8			94.4			99.2			101.2

TABLE XVI

Mill E--44/46-lb. Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard		Drum Linerboard	
Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.
17.6	15.7	14.5	15.1	127	88	109	42	38	40	520	400	463 ^a	496	400	432 ^a		
17.6	15.1	14.2	14.7	133	86	109	44	36	39	472	376	435 ^a	440	352	407 ^a		
18.7	15.9	14.2	15.0	132	96	112	42	38	40	504	400	445 ^a	480	376	427 ^a		
19.2	16.7	15.2	15.8	124	90	107	43	38	41	496	400	457 ^a	472	368	413 ^a		
18.1	16.0	14.3	15.5	124	96	109	41	33	38	512	408	447 ^a	520	432	455 ^a		
16.0	16.0	14.8	15.4	118	77	99	43	37	40	496	360	439 ^a	464	360	411 ^a		
17.9			15.3			107			40			447			424		
17.2			14.4			101			40			440			418		
11.5			106.2			105.9			100.0			101.6			101.4		

ens which tore beyond the 3/8-inch limit.

^c This sample was identified as 48-lb. Drum Linerboard.

TABLE XV

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

File No.	Mill Code	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		G. E. Puncture, units					
						Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
Mill M-42-lb. Linerboard																	
153766	M-153	W.	4/ 1/53	3/17/53	2	43.8	40.4	42.4	14.2	13.0	13.6	156	81	114	40	31	35
153767	M-154	W.	4/ 1/53	3/18/53	2	43.8	40.0	42.3	13.9	12.0	13.1	130	91	111	39	29	33
153896	M-155	W.	4/14/53	3/25/53	2	46.2	41.6	44.0	14.8	13.4	13.9	131	93	111	41	32	36
153897	M-156	W.	4/14/53	3/30/53	2	45.0	42.2	43.2	14.2	13.4	13.9	124	86	106	36	32	34
153898	M-157	W.	4/14/53	4/ 2/53	2	43.4	41.8	42.6	14.2	13.0	13.6	120	86	110	37	31	33
153946	M-158	W.	4/21/53	4/13/53	2	43.8	42.0	42.6	14.7	13.0	13.8	124	80	105	36	32	34
153947	M-159	W.	4/21/53	4/16/53	2	44.2	40.2	42.4	14.1	13.0	13.6	131	96	112	38	31	34
Current Mill Average:								42.8			13.6			110			34
Cumulative Mill Average:								42.9			13.7			106			36
Mill Factor, %:								99.8			99.3			103.8			94.4
Mill Index, %:								99.3			97.8			103.8			94.4

TABLE XVI

Mill E-44/46-lb. Drum Linerboard													
153765	E-353 ^b	W.F.	4/ 1/53	3/25/53	1	48.2	46.0	47.6	15.7	14.5	15.1	127	88
153794	E-355 ^b	W.F.	4/ 6/53	4/ 3/53	1	48.2	46.4	47.6	15.1	14.2	14.7	133	86
153878	E-356 ^b	W.F.	4/13/53	4/10/53	1	49.8	48.0	48.7	15.9	14.2	15.0	132	96
153879	E-356 ^c	W.F.	4/13/53	4/ 9/53	1	50.4	48.2	49.2	16.7	15.2	15.8	124	90
153911	E-357 ^b	W.F.	4/16/53	4/14/53	1	49.8	46.0	48.1	16.0	14.3	15.5	124	96
153924	E-358	W.F.	4/17/53	4/15/53	1	46.4	45.4	46.0	16.0	14.8	15.4	118	77
Current Mill Average:						47.9		47.9			15.3		107
Cumulative Mill Average:						47.2		47.2			14.4		101
Mill Factor, %:						101.5		101.5			106.2		105.9
													100.0

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.^b This sample was identified as 47-lb. Drum Linerboard. ^c This sample was identified as 48-lb. Drum 1

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. As may be noted in Table XVII, the atmospheric conditions used prior to and during the testing period varied considerably.

TABLE XVII

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., ° F.	Time, hr.	R.H., %	Temp., ° F.	Time, hr.
A		None		51-64	78-83	--
B	30-76	70-75	0.5	50	70	24-168
C	50	73	24-72	50	73	2-8
D	30-34	77-78	8	50-51	71-73	16
E		None		38-49	78-84	--
F		None		40-60	70-76	48
G		None		50	73	24-48
H		None		50	73	24
I		None		25-61	78-90	--
J		None		50	72	0.5
K		No samples submitted.				
nL		No samples submitted.				
M		None		32-69	78-84	--
E*		None		32-65	74-86	--

* Drum linerboard.

A summary of the mill comparisons for the current period as compared with the previous period may be seen in Tables XVIII and XIX, respectively. The comparison for the various mills is given in Tables XX to XXXII, for the 42-lb. liner samples. A comparison of the special drum stock is given in Table XXXIII. In all the comparisons given in Table XVIII to XXXIII, the Institute's test values have been used as the reference line.

A comparison of the test data in Tables XVIII and XIX indicates that in the majority of cases there is good agreement between the mill and Institute data. Table XVIII shows the average difference encountered in the comparison of Institute and mill results for the sample lots submitted by each mill for the current period, as well as the maximum difference encountered in comparing the Institute and mill test results for a given sample lot. In Table XIX, the average differences shown for each test in Table XVIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

It may be noted in Table XIX that the maximum variation between the average basis weight results of the Institute and those of a given mill on corresponding samples is two per cent for the current period. This figure compares favorably with the maximum variation of three per cent for the preceding two periods. Further, it may be noted that the average basis weight results for Mills C, D, and H are higher than those for the Institute, whereas the results for Mills A,

B, E, G, I, J, and M are lower, and the result for Mill F is the same. In general, the agreement in basis weight results is very good for the current period.

The maximum variation in caliper for the current period is twelve per cent. Compared with the values for the Institute, the average results for Mills A, C, D, E, F, G, H, I, J, and M are lower while the average result for Mill B is the same. The accord between Institute and mill caliper values is good with the exception of Mills C and E.

It may be noted in Table XIX that the bursting strength results exhibit a maximum variation of eight per cent for the current period. The average results for Mills A, B, C, F, H, I, and M are higher than those for the Institute, whereas the results for Mills D, E, G, and J are lower. The agreement in bursting strength results is good except for Mill E.

The G. E. puncture results exhibit a maximum variation of fourteen per cent for the current period. Compared with the values for the Institute, the result for Mill J is higher, whereas the results for Mills B, C, E, G, and I are lower and the results for Mills A, F, H, and M are the same. The agreement between the Institute and mill results is good with the exception of the variation for Mills B, I, and J.

It may be seen in Table XIX that the average machine direction tear results for Mills I and J are higher than those for the Institute whereas the results for the other mills are lower. The maximum variation for the current period is fifteen per cent. The differences

encountered for Mills E and M appear to be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills C, F, I, and J are higher than those for the Institute whereas the average results for the other mills are lower with the exception of the result for Mill D which is the same. The maximum variation for the current period is twelve per cent. Only the differences for Mills E, J, and M appear to be excessive.

TABLE XVIII

SUMMARY OF TEST RESULT COMPARISONS
(Average Mill and Institute Results)

No. Samples Compared	Mills*										
	A	B	C	D	E	F	G	H	I	J	K
	6	16	8	8	2	5	8	2	19	4	7
<u>Basis Weight</u>											
Institute	42.9	43.3	42.9	44.2	42.6	42.7	43.6	43.0	42.7	42.9	42.8
Mill	42.6	42.4	43.2	45.1	42.2	42.7	43.5	43.6	42.6	42.5	42.3
Av. Diff.**	-0.3	-0.9	+0.3	+0.9	-0.4	0.0	-0.1	+0.6	-0.1	-0.4	-0.5
Max. Diff.***	-0.9	-1.3	+0.4	+1.9	-0.8	±0.7	-0.4	+1.0	-0.8	-0.7	-1.0
<u>Caliper</u>											
Institute	12.6	13.0	14.3	13.4	14.6	13.1	13.0	12.9	13.4	13.3	13.6
Mill	12.2	13.0	13.3	13.1	12.9	12.6	12.9	12.6	13.1	13.1	12.9
Av. Diff.**	-0.4	0.0	-1.0	-0.3	-1.7	-0.5	-0.1	-0.3	-0.3	-0.2	-0.7
Max. Diff.***	-0.6	±0.2	-1.3	-0.4	-1.9	-0.8	+0.5	-0.3	-0.5	-0.2	-1.4
<u>Bursting Strength</u>											
Institute	109	105	107	111	109	99	113	105	105	112	110
Mill	110	106	109	109	100	104	110	106	108	109	113
Av. Diff.**	+1	+1	+2	-2	-9	+5	-3	+1	+3	-3	+3
Max. Diff.***	-6	+5	+4	-11	-11	+8	-6	+1	+7	-8	+9
<u>G. E. Puncture</u>											
Institute	33	28	34	38	34	39	34	34	32	33	34
Mill	33	24	33	--	33	39	32	34	29	36	34
Av. Diff.**	0	-4	-1	--	-1	0	-2	0	-3	+3	0
Max. Diff.***	+1	-5	-5	--	-1	-7	-4	±1	-7	+5	±5
<u>Tearing Strength, in</u>											
Institute	332	288	352	388	419	406	338	358	334	356	369
Mill	307	267	344	372	356	401	316	343	343	362	326
Av. Diff.**	-25	-21	-8	-16	-63	-5	-22	-15	+9	+6	-43
Max. Diff.***	-48	-53	-45	-36	-87	-52	-42	-17	+45	+29	-93
<u>Tearing Strength, across</u>											
Institute	374	326	395	430	386	416	384	395	394	374	410
Mill	363	312	403	430	341	441	369	389	404	412	366
Av. Diff.**	-11	-14	+8	0	-45	+25	-15	-6	+10	+38	-44
Max. Diff.***	-22	-42	+56	-34	-67	+59	-35	-20	+38	+51	-103

* Comparison based on averages involves only those samples on which mill test data were submitted.

** Average difference is the difference between the Institute mill average and the mill average based on mill test data.

*** Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

TABLE XIX
SUMMARY OF TEST RESULTS--COMPARISON BY PERIODS

	Average Difference, per cent					
	Basis	Caliper	Bursting	G. E.	Tearing	Strength
	Weight		Strength	Puncture	in	across
Mill A						
Current period	-0.7	-3	+0.9	0	-8	-3
69th period	-0.9	-2	+2	-3	-3	-3
68th period	-1	-2	+2	+3	+1	-0.3
Mill B						
Current period	-2	0	+1	-14	-7	-4
69th period	-0.9	-0.8	-2	-13	-15	-7
68th period	-0.7	-2	-0.9	-10	-6	-0.3
Mill C						
Current period	+0.7	-7	+2	-3	-2	+2
69th period	0	-5	+0.9	-6	-3	+2
68th period	-0.5	-3	+2	-3	-2	+1
Mill D						
Current period	+2	-2	-2	--	-4	0
69th period	-0.9	-3	-0.9	--	-1	+3
68th period	-1	-3	-2	--	-0.3	+3
Mill E						
Current period	-0.9	-12	-8	-3	-15	-12
69th period	+0.5	-8	-8	-6	-20	-15
68th period	+0.5	-7	-8	-3	-10	-6
Mill F						
Current period	0	-4	+5	0	-1	+6
69th period	-0.2	-4	+6	+8	-4	+0.2
68th period	-0.5	-3	+6	+5	-7	-4
Mill G						
Current period	-0.2	-0.8	-3	-6	-7	-4
69th period	0	0	+4	+6	-6	-3
68th period	+0.2	0	-2	+9	-5	-0.8
Mill H						
Current period	+1	-2	+1	0	-4	-2
69th period	+1	0	0	0	-6	-6
68th period	+1	-0.8	0	-3	-4	-4
Mill I						
Current period	-0.2	-2	+3	-9	+3	+3
69th period	-0.5	-3	-0.9	-9	-4	-0.3
68th period	-1	-4	0	-12	+2	+6
Mill J						
Current period	-0.9	-2	-3	+9	+2	+10
69th period	-0.2	-0.8	-0.9	0	-2	+4
68th period	0	-0.8	-3	-3	+0.3	+3
Mill L						
Current period	--	--	--	--	--	--
69th period	-0.9	-4	+0.9	--	-14	-7
68th period	-0.2	-5	+4	--	-7	-4
Mill M						
Current period	-1	-5	+3	0	-12	-11
69th period	-3	-6	+3	-3	-10	-4
68th period	-1	-4	+4	-9	-2	+5

TABLE XX
SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953

Institute Data versus Mill Data																	
Basis Weight, lb.	IPC Mill Diff.	Caliper, points	Bursting		IPC Mill Diff.	G. E.		Elmendorf Tear,		IPC Mill Diff.	IPC Mill Diff.	IPC Mill Diff.	IPC Mill Diff.				
			Strength,	p.s.i. gage		Puncture,	g./sheet										
			IPC	IPC		IPC	IPC	In	Across								
Mill A--42-lb. Linerboard																	
43.2	42.3	-0.9	13.0	12.6	=0.4	109	111	+ 2	33	33	0	331 ^a	283	=48	368 ^a	352	=16
43.2	42.4	-0.8	13.0	12.4	=0.6	107	112	+ 5	32	33	+1	335 ^a	289	=46	373 ^a	355	=18
43.2	43.1	=0.1	13.0	12.4	=0.6	108	110	+ 2	34	34	0	332 ^a	315	=17	395 ^a	373	=22
43.0	42.7	-0.3	12.5	12.0	=0.5	116	110	- 6	32	33	+1	317 ^a	292	-25	375 ^a	356	-19
42.4	42.6	+0.2	12.1	12.0	=0.1	108	110	+ 2	33	33	0	335	336	+ 1	365 ^a	371	+ 6
42.4	42.5	+0.1	12.1	12.0	=0.1	109	109	0	32	33	+1	344 ^a	329	-15	369 ^a	372	+ 3
42.9	42.6	-0.3	12.6	12.2	-0.4	109	110	+ 1	33	33	0	332	307	-25	374	363	-11

gs for one or more specimens which tore beyond the 3/8-inch limit.

data are calculated from the totals of the individual readings.

QUESTIONS

Mill A--42-1b. Linerboard

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE III

OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

it,	Caliper, points	Diff. IPC	IPC	Diff.	Bursting- Strength, p.s.i. gage	IPC	Diff.	G. E. Puncture, units	IPC	Diff.	Elmendorf Tear,			
											In	g./sheet	Across	
														Mill
Mill B-42-lb. Linerboard														
-1.0	13.3	13.2	-0.1	106	104	-2	31	27	347 ^a	330	=17	324 ^a	342	+18
-0.9	13.1	13.2	+0.1	102	104	+2	30	26	342 ^a	313	-29	325 ^a	310	-15
-1.0	13.2	13.2	0.0	97	102	+5	31	26	340 ^a	327	-13	335 ^a	313	-22
-1.0	13.2	13.2	0.0	102	101	-1	31	27	339 ^a	315	-24	335 ^a	342	+7
-1.2	13.0	13.1	+0.1	104	108	+4	26	23	270	231	-39	321 ^a	293	-28
-1.3	13.0	13.0	0.0	107	105	-2	29	24	266	243	-23	332 ^a	290	-42
-0.8	12.9	13.0	-0.1	110	108	-2	26	24	277	247	-30	327 ^a	303	-24
-0.8	13.2	13.1	-0.1	107	107	0	26	24	271	255	-16	321 ^a	309	-12
-0.7	12.9	13.0	+0.1	104	105	+1	28	24	273	240	-33	317 ^a	303	-14
-0.9	13.1	13.0	-0.1	105	105	0	28	24	291 ^a	238	-53	337 ^a	311	-26
-0.9	13.2	13.0	-0.2	105	105	0	27	24	267 ^a	241	-26	331 ^a	315	-16
-1.0	13.1	13.0	-0.1	106	108	+2	27	24	249	247	-2	320 ^a	307	-13
-0.1	12.9	12.8	-0.1	106	108	+2	27	24	275	256	-19	327 ^a	307	-20
-0.3	12.9	12.9	0.0	104	108	+4	27	24	261	259	-2	323 ^a	300	-23
-0.3	12.7	12.9	+0.2	107	109	+2	27	23	273 ^a	269	-4	323 ^a	314	-9
-0.4	12.8	12.8	0.0	108	105	-3	27	24	267 ^a	266	-1	322 ^a	340	+18
-0.9	13.0	13.0	0.0	105	106	+1	28	24	288	267	-21	326	312	-14

more specimens which tore beyond the 3/8-inch limit.

ated from the totals of the individual readings.

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

TABLE III

Institute Data versus Mill Data

File No.	Mill Code	Fin- ish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units						
					IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	
Mill B-42-lb. Linerboard																	
153761	B-767	WF1S	3/13/53	1	44.0	43.0	-1.0	13.3	13.2	-0.1	106	104	-2	31	27	= 4	347 ^a
153762	B-768	WF1S	3/13/53	1	43.7	42.8	-0.9	13.1	13.2	+0.1	102	104	+2	30	26	= 4	342 ^a
153763	B-769	WF1S	3/13/53	1	43.9	42.9	-1.0	13.2	13.2	0.0	97	102	+5	31	26	= 5	340 ^a
153764	B-770	WF1S	3/13/53	1	43.8	42.8	-1.0	13.2	13.2	0.0	102	101	-1	31	27	= 4	339 ^a
153796	B-771	WF1S	3/25/53	1	43.4	42.2	-1.2	13.0	13.1	+0.1	104	108	+4	26	23	= 3	270
153797	B-772	WF1S	3/25/53	1	43.7	42.4	-1.3	13.0	13.0	0.0	107	105	-2	29	24	= 5	266
153798	B-773	WF1S	3/25/53	1	43.3	42.3	-0.8	12.9	13.0	-0.1	110	108	-2	26	24	= 2	277
153799	B-774	WF1S	3/25/53	1	43.3	42.5	-0.8	13.2	13.1	-0.1	107	107	0	26	24	= 2	271
153800	B-775	WF1S	3/25/53	1	43.2	42.5	-0.7	12.9	13.0	+0.1	104	105	+1	28	24	= 4	273
153801	B-776	WF1S	3/25/53	1	43.5	42.6	-0.9	13.1	13.0	-0.1	105	105	0	28	24	= 4	291 ^a
153802	B-777	WF1S	3/25/53	1	43.3	42.4	-0.9	13.2	13.0	-0.2	105	105	0	27	24	= 3	267 ^a
153803	B-778	WF1S	3/25/53	1	43.3	42.3	-1.0	13.1	13.0	-0.1	106	108	+2	27	24	= 3	249
153821	B-779	WF1S	3/31/53	1	42.3	42.2	-0.1	12.9	12.8	-0.1	106	108	+2	27	24	= 3	275
153822	B-780	WF1S	3/31/53	1	42.4	42.1	-0.3	12.9	12.9	0.0	104	108	+4	27	24	= 3	261
153823	B-781	WF1S	3/31/53	1	42.5	42.2	-0.3	12.7	12.9	+0.2	107	109	+2	27	23	= 4	273 ^a
153824	B-782	WF1S	3/31/53	1	42.4	42.0	-0.4	12.8	12.8	0.0	108	105	-3	27	24	= 3	267 ^a
Current Mill Average:					43.3	42.4	-0.9	13.0	13.0	0.0	105	106	+1	28	24	= 4	288

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXII

OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

t, Diff.	Caliper, points IPC Mill	Diff.	Bursting Strength,		G. E. Puncture, units IPC Mill	Diff.	IPC Mill	Diff.	In IPC Mill	Elmendorf Tear,		IPC Mill	Diff.	
			p.s.i. gage IPC Mill	Diff.						g./sheet	Across IPC Mill			Diff.
<u>Mill C--42-lb. Linerboard</u>														
+0.2	14.3	13.2	=1.1	100	104	+ 4	36	33	- 3	346	337	= 9	385 ^a 390 + 5	
0.0	14.3	13.0	-1.3	102	104	+ 2	36	36	0	363	355	- 8	386 ^a 442 +56	
+0.3	14.7	13.7	-1.0	103	105	+ 2	33	34	+ 1	340	348	+ 8	403 ^a 389 -14	
+0.1	14.7	13.7	=1.0	105	106	+ 1	33	30	- 3	344	345	+ 1	385 ^a 392 + 7	
+0.4	13.7	12.9	-0.8	108	111	+ 3	31	32	+ 1	332 ^a	325	- 7	378 ^a 388 +10	
+0.4	13.7	12.9	-0.8	110	112	+ 2	32	27	- 5	329 ^a	342	+13	374 ^a 397 +23	
+0.4	14.3	13.4	=0.9	114	115	+ 1	37	37	- 0	384	339	-45	419 ^a 422 + 3	
+0.3	14.4	13.4	-1.0	114	115	+ 1	37	36	- 1	376	360	-16	429 ^a 401 -28	
+0.3	14.3	13.3	-1.0	107	109	+ 2	34	33	- 1	352	344	- 8	395 403 + 8	

TABLE XXIII

Mill D--42-lb. Linerboard

+0.8	13.7	13.4	-0.3	108	105	39	37	373 ^a	+ 4	413 ^a	425	+12
+1.2	13.0	12.7	-0.3	113	117	40	40	416 ^a	-36	435 ^a	444	+ 9
+0.9	13.3	12.9	-0.4	119	117	41	41	388 ^a	-26	437 ^a	430	- 7
+1.5	13.6	13.3	-0.3	107	103	36	36	378	- 6	421 ^a	431	+10
+1.9	13.3	13.0	-0.3	107	112	39	39	383 ^a	-18	431 ^a	421	-10
+0.2	14.1	13.7	-0.4	100	103	39	39	400 ^a	-28	453 ^a	419	-34
+0.3	13.0	12.8	-0.2	116	111	36	36	374 ^a	- 6	417 ^a	434	+17
+0.3	13.5	13.2	-0.3	119	108	36	36	391 ^a	-10	436 ^a	432	- 4
+0.9	13.4	13.1	-0.3	111	109	38	38	388	-16	430	430	0

ore specimens which tore beyond the 3/8-inch limit.
ted from the totals of the individual readings.

TABLE XXII

SUMMARY OF INDIVIDUAL TEST LOFS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

File No.	Mill Code	Firm	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units						
					EPC	Mill	Diff.	EPC	Mill	Diff.	EPC	Mill	Diff.				
Mill C--42-lb. Linerboard																	
153880	C-459	W.F.	4/ 3/53	1	43.0	43.2	+0.2	14.3	13.2	-1.1	100	104	+4	36	33	-3	346
153881	C-460	W.F.	4/ 3/53	1	43.0	43.0	0.0	14.3	13.0	-1.3	102	104	+2	36	36	0	363
153882	C-461	W.F.	4/ 6/53	1	43.5	43.8	+0.3	14.7	13.7	-1.0	103	105	+2	33	34	+1	340
153883	C-462	W.F.	4/ 6/53	1	43.4	43.5	+0.1	14.7	13.7	-1.0	105	106	+1	33	30	-3	344
153884	C-463	W.F.	4/ 7/53	1	41.4	41.8	+0.4	13.7	12.9	-0.8	108	111	+3	31	32	+1	332
153885	C-464	W.F.	4/ 7/53	1	41.6	42.0	+0.4	13.7	12.9	-0.8	110	112	+2	32	27	-5	329
153899	C-465	W.F.	4/ 9/53	1	43.7	44.1	+0.4	14.3	13.4	-0.9	114	115	+1	37	37	0	384
153900	C-466	W.F.	4/ 9/53	1	43.6	43.9	+0.3	14.4	13.4	-1.0	114	115	+1	37	36	-1	376
Current Mill Average:					42.9	43.2	+0.3	14.3	13.3	-1.0	107	109	+2	34	33	-1	352

TABLE XXIII

Mill D--42-lb. Linerboard

153795	D-639	S.F.	4/ 2/53	4	44.0	44.8	+0.8	13.7	13.4	-0.3	108	105	-3	373 ^a
153849	D-640	S.F.	4/ 5/53	4	44.6	45.8	+1.2	13.0	12.7	-0.3	113	117	+4	416 ^a
153850	D-641	S.F.	4/ 6/53	4	45.3	46.2	+0.9	13.3	12.9	-0.4	119	117	-2	388 ^a
153876	D-642	S.F.	4/ 9/53	4	42.8	44.3	+1.5	13.6	13.3	-0.3	107	103	-4	378
153905	D-643	S.F.	4/11/53	4	43.8	45.7	+1.9	13.3	13.0	-0.3	107	112	+5	383 ^a
153906	D-644	S.F.	4/12/53	4	44.1	44.3	+0.2	14.1	13.7	-0.4	100	103	+3	400 ^a
153953	D-645	S.F.	4/19/53	4	44.3	44.6	+0.3	13.0	12.8	-0.2	116	111	-5	374 ^a
153970	D-646	S.F.	4/20/53	4	44.6	44.9	+0.3	13.5	13.2	-0.3	119	108	-11	391 ^a
Current Mill Average:					44.2	45.1	+0.9	13.4	13.1	-0.3	111	109	-2	388

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIV

F INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute data versus Mill Data

Lot, off.	Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units		Elmendorf Tear, g./sheet	
	IPC	Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
							IPC	Mill Diff.

Mill E-42-lb. Linerboard

1	14.5	13	-1.5	109	102	-7	35	34	-1	412 ^a	373	-39	391 ^a	367	-24
8	14.7	12.8	-1.9	109	98	-11	34	33	-1	425 ^a	338	-87	382 ^a	315	-67
4	14.6	12.9	-1.7	109	100	-9	34	33	-1	419	356	-63	386	341	-45

TABLE XXV

Mill F-42-lb. Linerboard

4	12.9	12.3	-0.6	100	108	+8	39	40	+1	395 ^a	343	-52	411 ^a	385	-26
7	12.7	12.2	-0.5	100	106	+6	35	39	+4	375 ^a	367	-8	395 ^a	403	+8
7	13.6	12.8	-0.8	95	101	+6	41	34	-7	413 ^a	439	+26	447 ^a	477	+30
4	13.5	13.0	-0.5	99	104	+5	41	42	+1	445 ^a	425	-20	418 ^a	469	+51
3	12.7	12.6	-0.1	101	100	-1	39	42	+3	401 ^a	429	+28	409 ^a	468	+59
0	13.1	12.6	-0.5	99	104	+5	39	39	0	406	401	-5	416	441	+25

specimens which tore beyond the 3/8-inch limit.

and from the totals of the individual readings.

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

TABLE XXIV

Institute data versus Mill Data

File No.	Mill Code	Fin- ish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units	
					IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
<u>Mill E-42-lb. Linerboard</u>												
153793	E-354	W.F.	4/ 1/53	1	42.0	-0.1	14.5	13	109	102	35	34
153967	E-359	W.F.	4/21/53	1	43.2	-0.8	14.7	12.8	109	98	34	33
Current Mill Average:					42.6	-0.4	14.6	12.9	109	100	34	33

TABLE XXV

Mill F-42-lb. Linerboard

153825	F-19	W.F.	3/16/53	--	43.0	-0.4	12.9	12.3	100	108	39	40
153826	F-20	W.F.	3/17/53	--	40.8	+0.7	12.7	12.2	100	106	35	39
153827	F-21	--	3/20/53	--	43.4	-0.7	13.6	12.8	95	101	41	34
153828	F-22	W.F.	3/20/53	--	43.3	+0.4	13.5	13.0	99	104	41	42
153829	F-23	--	3/25/53	--	42.8	+0.3	12.7	12.6	101	100	39	42
Current Mill Average:					42.7	0.0	13.1	12.6	99	104	39	39

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

RY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

t,	Caliper, points	IPC	Mill	Diff.	Bursting Strength, p.s.i.	gage	IPC	Mill	Diff.	G. E. Puncture, units	IPC	Mill	Diff.	In	g./sheet	Across	IPC	Mill	Diff.
<u>MILL G-42-1b. Linerboard</u>																			
.01	13.2	13.0	-0.2	113	113	-	0	34	31	347 ^a	315	-32	394 ^a	383	-11				
.03	13.2	12.8	-0.4	113	109	=	4	34	31	331 ^a	321	-10	367 ^a	379	+12				
.02	12.6	12.6	0.0	112	111	=	1	36	32	341 ^a	325	=16	378 ^a	372	- 6				
.03	12.1	12.6	+0.5	112	110	-	2	34	31	323 ^a	312	-11	363 ^a	369	+ 6				
.01	12.9	12.9	-0.0	113	107	-	6	34	32	351 ^a	320	-31	384 ^a	368	-16				
.02	12.9	12.8	-0.1	113	111	=	2	33	31	339 ^a	321	-18	395 ^a	360	-35				
.02	13.4	13.1	-0.3	112	110	-	2	34	33	342 ^a	300	-42	396 ^a	361	-35				
.04	13.5	13.2	-0.3	115	113	-	2	34	34	327 ^a	315	-12	397 ^a	363	-34				
.01	13.0	12.9	-0.1	113	110	-	3	34	32	338	316	-22	384	369	-15				

TABLE XXVII

<u>Mill H-42-lb. Linerboard</u>															
1.4	13.2	13.1	-0.1	105	106	+ 1	35	34	- 1	364	347	-17	391 ^a	398	+ 7
0.0	12.5	12.2	-0.3	106	107	+ 1	33	34	+ 1	351	339	-12	400 ^a	380	-20
0.6	12.9	12.6	-0.3	105	106	+ 1	34	34	0	358	343	-15	395	389	- 6

the specimens which tore beyond the 3/8-inch limit.
ed from the totals of the individual readings.

TABLE XXVI

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continue)

Institute Data versus Mill Data

File No.	Mill Code	Fin- ish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units			
					IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.		
					Mill G-42-lb. Linerboard									
153788	G-484	WFL	3/27/53	1	44.5	-0.1	13.2	13.0	113	-0.2	34	31	= 3	347 ^a
153789	G-485	WFL	3/27/53	1	43.5	+0.3	13.2	12.8	113	-0.4	34	31	= 3	331 ^a
153804	G-486	WFL	3/31/53	1	43.7	-0.2	12.6	12.6	112	0.0	36	32	= 4	341 ^a
153805	G-487	WFL	3/31/53	1	42.2	+0.3	12.1	12.6	112	+0.5	34	31	= 3	323 ^a
153912	G-488	WFL	4/ 9/53	1	43.5	+0.1	12.9	12.9	113	-0.0	34	32	= 2	351 ^a
153913	G-489	WFL	4/ 9/53	1	43.4	-0.2	12.9	12.8	113	-0.1	33	31	= 2	339 ^a
153922	G-490	WFL	4/14/53	1	43.8	-0.2	13.4	13.1	112	-0.3	34	33	= 1	342 ^a
153923	G-491	WFL	4/14/53	1	44.1	-0.4	13.5	13.2	115	-0.3	34	34	0	327 ^a
Current Mill Average:					43.6	-0.1	13.0	12.9	113	-0.1	34	32	= 2	338

TABLE XXVII

Mill H-42-lb. Linerboard

153870	H-391	WFLS	3/30/53	2	43.5	+0.4	13.2	13.1	105	-0.1	35	34
153871	H-392	WFLS	4/ 1/53	2	42.4	+1.0	12.5	12.2	106	-0.3	33	34
Current Mill Average:					43.0	+0.6	12.9	12.6	105	-0.3	34	34

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

Caliper, points	IPC	Mill	Diff.	IPC	Mill	Diff.	Bursting Strength, p.s.i. gage	IPC	Mill	Diff.	G. E. Puncture, units		IPC	Mill	Diff.	In	IPC	Mill	Diff.	Across	IPC	Mill	Diff.
											IPC	Mill											
Mill I--42-lb. Linerboard																							
13.4	13.0	-0.4	106	110	+	4	33	29	= 4	337	339	+ 2	413 ^a	395	-18					395		-18	
13.6	13.1	-0.5	106	111	+	5	33	30	-3	311	356	+45	397 ^a	418	+21					418		+21	
13.6	13.1	-0.5	105	112	+	7	33	31	- 2	342	354	+12	402 ^a	415	+13					415		+13	
13.5	13.0	-0.5	108	111	+	3	32	32	0	343 ^a	353	+10	396 ^a	419	+23					419		+23	
13.4	13.1	-0.3	104	110	+	6	32	31	- 1	333	351	+18	393 ^a	414	-21					414		-21	
13.4	13.0	-0.4	109	107	- 2		33	30	- 3	334 ^a	339	+ 5	381 ^a	395	+14					395		+14	
14.2	13.8	-0.4	103	107	+	4	32	25	= 7	350 ^a	346	- 4	383 ^a	399	+16					399		+16	
13.3	13.0	-0.3	106	109	+	3	31	30	- 1	329 ^a	349	+20	375 ^a	413	+38					413		+38	
13.3	13.0	-0.3	103	107	+	4	31	29	- 2	332	338	+ 6	407 ^a	399	- 8					399		- 8	
13.4	13.0	-0.4	107	106	- 1		32	28	= 4	334 ^a	336	+ 2	389 ^a	392	+ 3					392		+ 3	
13.2	13.0	-0.2	106	106	- 0		32	28	- 4	311	334	+23	384 ^a	395	+11					395		+11	
13.4	13.1	-0.3	105	105	- 1		32	30	= 2	345	343	= 2	403 ^a	409	+ 6					409		+ 6	
13.4	13.0	-0.4	102	106	+	4	32	29	= 3	337 ^a	328	= 9	403 ^a	390	-13					390		-13	
13.6	13.2	-0.4	103	109	+	6	32	30	= 2	344	341	- 3	378 ^a	400	+22					400		+22	
13.4	13.0	-0.4	105	108	+	3	31	30	- 1	329	339	+10	389 ^a	397	+ 8					397		+ 8	
13.5	13.0	-0.5	103	108	+	5	32	30	= 2	340 ^a	339	- 1	387 ^a	401	+14					401		+14	
13.4	13.0	-0.4	101	108	+	7	32	29	- 3	321 ^a	338	+17	400 ^a	404	+ 4					404		+ 4	
13.4	12.9	-0.5	105	108	+	3	32	29	= 3	339 ^a	337	- 2	399 ^a	402	+ 3					402		+ 3	
13.4	12.9	-0.5	104	108	+	4	32	29	- 3	339 ^a	350	+11	406 ^a	411	+ 5					411		+ 5	
13.4	13.1	-0.3	105	108	+	3	32	29	- 3	334	343	+ 9	394	404	+10					404		+10	

specimens which tore beyond the 3/8-inch limit.

from the totals of the individual readings.

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

TABLE XVIII

Institute Data versus Mill Data

File No.	Mill Code	Fin- ish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		G. E. Puncture, units				
					IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill
Mill I-42-lb. Linerboard															
153768	I-284	WF1S	3/17/53	1	42.9	42.5	-0.4	13.4	13.0	106	+4	33	29	= 4	337
153769	I-285	WF1S	3/24/53	1	43.0	42.8	-0.2	13.6	13.1	106	+5	33	30	-3	311
153770	I-286	WF1S	3/24/53	1	43.2	42.4	-0.8	13.6	13.1	105	+7	33	31	-2	342
153771	I-287	WF1S	3/25/53	1	42.7	42.7	0.0	13.5	13.0	108	+3	32	32	0	343 ^a
153772	I-288	WF1S	3/25/53	1	42.5	42.7	+0.2	13.4	13.1	104	+6	32	31	-1	333
153792	I-289	WF1S	3/31/53	1	43.0	42.8	-0.2	13.4	13.0	109	-2	33	30	-3	334 ^a
153806	I-290	WF1S	4/ 1/53	1	42.8	42.5	-0.3	14.2	13.8	103	+4	32	25	= 7	350 ^a
153830	I-291	WF1S	4/ 2/53	1	42.4	42.4	0.0	13.3	13.0	106	+3	31	30	-1	329 ^a
153872	I-292	WF1S	4/ 6/53	1	42.7	42.7	0.0	13.3	13.0	103	+4	31	29	-2	332
153873	I-293	WF1S	4/ 6/53	1	42.6	42.6	0.0	13.4	13.0	107	-1	32	28	= 4	334 ^a
153874	I-294	WF1S	4/ 6/53	1	42.3	42.8	+0.5	13.2	13.0	106	-0	32	28	-4	311
153875	I-295	WF1S	4/ 7/53	1	42.2	42.8	+0.6	13.4	13.1	106	-1	32	30	-2	345
153930	I-296	WF1S	4/ 8/53	1	42.3	42.7	+0.4	13.4	13.0	102	+4	32	29	-3	337 ^a
153931	I-297	WF1S	4/ 9/53	1	42.8	42.4	-0.4	13.6	13.2	103	+6	32	30	-2	344
153932	I-298	WF1S	4/11/53	1	42.5	42.5	0.0	13.4	13.0	105	+3	31	30	-1	329
153933	I-299	WF1S	4/11/53	1	42.9	42.6	-0.3	13.5	13.0	103	+5	32	30	= 2	340 ^a
153934	I-300	WF1S	4/12/53	1	42.8	42.5	-0.3	13.4	13.0	101	+7	32	29	-3	321 ^a
153948	I-301	WF1S	4/14/53	1	42.8	42.5	-0.3	13.4	12.9	105	+3	32	29	= 3	339 ^a
153949	I-302	WF1S	4/17/53	1	42.6	42.5	-0.1	13.4	12.9	104	+4	32	29	-3	339 ^a
Current Mill Average:					42.7	42.6	-0.1	13.4	13.1	105	+3	32	29	-3	334

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXX

INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

Caliper, points	IPC Mill	Diff.	Bursting Strength,		p.s.i. gage	IPC Mill	Diff.	G. E. Puncture, units	IPC Mill	Diff.	Elmendorf Tear,		IPC Mill	Diff.	
			IPC Mill	Diff.							In	g./sheet			Across
Mill J-42-lb. Linerboard															
13.7	13.4	13.2	-0.2	109	112	+ 3	34	38	+ 4	373 ^a	363	-10	367 ^a	417	+50
13.4	13.3	13.2	-0.1	112	107	+ 5	33	38	+ 5	367 ^a	362	- 5	388 ^a	414	+26
13.5	13.1	13.0	-0.1	116	108	- 8	30	33	+ 3	345 ^a	374	+29	372 ^a	423	+51
13.3	13.2	13.1	-0.1	113	109	- 4	32	33	+ 1	341 ^a	348	+ 7	370 ^a	393	+23
13.4	13.3	13.1	-0.2	112	109	- 3	33	36	+ 3	356	362	+ 6	374	412	+38

TABLE XXX

Mill K--42-lb. Linerboard

No samples submitted.

TABLE XXXI

Mill L--42-lb. Linerboard

No samples submitted.

average includes the readings for one or more specimens which round the 3/8-inch limit.

1 "current mill average" data are calculated from the totals of individual readings.

SUMMARY OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data versus Mill Data

File No.	Mill Code	Fin- ish	Date Made	Mch. No.	Basis Weight,		Caliper,		Bursting		G. E. Puncture, units	IPC Mill Diff.	IPC				
					lb.	Diff.	points	Diff.	Strength, p.s.i.	gage							
					IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC			
<u>Mill J-42-lb. Linerboard</u>																	
1153807	J-417	B.F.	3/29/53	—	42.6	41.9	-0.7	13.4	13.2	-0.2	109	112	+ 3	34	38	+ 4	373 ^a
1153808	J-418	B.F.	3/29/53	—	42.6	42.2	-0.4	13.3	13.2	- 0.1	112	107	" 5	33	38	+ 5	367 ^a
1153968	J-419	B.F.	4/11/53	1	43.5	43.0	-0.5	13.1	13.0	-0.1	116	108	- 8	30	33	+ 3	345 ^a
1153969	J-420	B.F.	4/11/53	1	43.1	42.8	-0.3	13.2	13.1	-0.1	113	109	- 4	32	33	+ 1	341 ^a
Current Mill Average:					42.9	42.5	-0.4	13.3	13.1	-0.2	112	109	- 3	33	36	+3	356

TABLE XXX

Mill K-42-1b. Linerboard

No samples submitted.

TABLE XXXI

Mill L-42-lb. Linerboard

No samples submitted.

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

OF INDIVIDUAL TEST LOTS--APRIL 1 THROUGH APRIL 30, 1953 (continued)

[illegible]

Mill E-14/16-1b, Drum Linerboard

+0.9	15.1	13.8	=1.3	109	104	-	-5	40	40	0	463 ^a	449	-14	432 ^a	427	-5
-0.1	14.7	13	-1.7	109	106	-	3	39	39	0	435 ^a	388	-47	407 ^a	395	-12
-0.2	15.0	14.2	-0.8	112	105	=	7	40	42	+2	445 ^a	434	=11	427 ^a	427	0
=0.6	15.8	15.2	-0.6	107	96	=	11	41	42	+1	457 ^a	447	=10	413 ^a	391	=22
-0.2	15.5	13.8	-1.7	109	104	=	5	38	38	-0	447 ^a	363	-84	455 ^a	386	-69
-1.4	15.4	13.4	-2.0	99	92	-	7	40	32	-8	439 ^a	314	-125	411 ^a	317	-94
-0.3	15.3	13.9	-1.4	107	101	-	6	40	39	-1	447	399	-48	424	390	-34

ore specimens which tore beyond the 3/8-inch limit.
board.
board.

ated from the totals of the individual readings.

TABLE XXII

SUMMARY OF INDIVIDUAL TEST LOTS—APRIL 1 THROUGH APRIL 30, 1953 (continued)

Institute Data Versus Mill Data

File No.	Mill Code	Fish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		G. E. Puncture, units	
					IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.
Mill M-42-lb. Linerboard												
153766	M-153	W.	3/17/53	2	42.4	+0.7	13.6	-1.0	114	-3	35	33
153767	M-154	W.	3/18/53	2	42.3	-0.9	13.1	-0.7	111	+1	33	32
153896	M-155	W.	3/25/53	2	44.0	0.0	13.9	-0.2	111	+8	36	40
153897	M-156	W.	3/30/53	2	43.2	0.0	13.9	-0.3	106	+6	34	39
153898	M-157	W.	4/2/53	2	42.6	-0.1	13.6	-0.6	110	+5	33	33
153946	M-158	W.	4/13/53	2	42.6	-0.6	13.8	-0.8	105	+9	34	33
153947	M-159	W.	4/16/53	2	42.4	-1.0	13.6	-1.4	112	-1	34	29
Current Mill Average:					42.8	-0.5	13.6	-0.7	110	+3	34	34
												369

TABLE XXIII

Mill E-44/46-lb. Drum Linerboard

153765	E-353 ^b	W.F.	3/25/53	1	47.6	+0.9	15.1	-1.3	109	-5	40	0
153794	E-355 ^b	W.F.	4/3/53	1	47.6	-0.1	14.7	-1.7	109	-3	39	0
153878	E-356 ^b	W.F.	4/10/53	1	48.7	-0.2	15.0	-0.8	112	-7	40	+2
153879	E-356 ^c	W.F.	4/9/53	1	49.2	-0.6	15.8	-0.6	107	-11	41	+1
153911	E-357 ^b	W.F.	4/14/53	1	48.1	-0.2	15.5	-1.7	109	-5	38	-0
153924	E-358	W.F.	4/15/53	1	46.0	-1.4	15.4	-2.0	99	-7	40	-8
Current Mill Average:					47.9	-0.3	15.3	-1.4	107	-6	40	-1

a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

b This sample was identified as 47-lb. Drum Linerboard.

c This sample was identified as 48-lb. Drum Linerboard.

Note: All "current mill average" data are calculated from the totals of the individual readings.