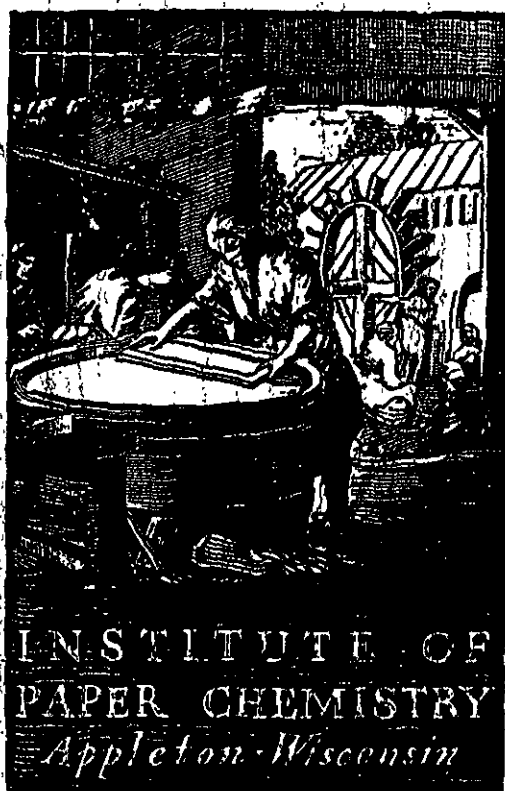




Institute of Paper Science and Technology
Central Files

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 159

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

July 1, 1960

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 159

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

July 1, 1960

TABLE OF CONTENTS

	Page
SUMMARY	1
INTRODUCTION	4
PART I: PRESENTATION AND DISCUSSION OF TEST RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY	6
Number of Sample Lots Submitted by Each Mill	7
Summary of Composite Mill Averages for June, 1960	8
Graphical Presentations of F.K.I. and Composite Mill Averages	9, 10, 11
Percentage Deviations from 42-lb. Basis Weight Specification	13
Institute Data for June, 1960	
Mill A	16
Mill B	17
Mill C	18
Mill D	18
Mill E	19
Mill F	20
Mill G	21
Mill H	22
Mill I	22
Mill J	23
Mill K	23
Mill L	24
Mill M	25
Mill N	26
Mill O	27
Mill P	28

TABLE OF CONTENTS--CONTINUED

	Page
PART I: (Continued)	
Institute Data for June, 1960 (Continued)	
Mill Q	29
Mill S	30
Mill T	31
PART II: COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS	32
Preconditioning and Conditioning Data for the Mill Tests	33
Summary of Test Result Comparisons (Average Mill and Institute Results)	34
Comparison of Institute-Mill Differences by Periods	35
Comparison of Institute and Mill Data for June, 1960	
Mill A	38
Mill B	39
Mill C	39
Mill D	40
Mill E	40
Mill F	41
Mill G	41
Mill H	42
Mill I	42
Mill J	43
Mill K	43
Mill L	44
Mill M	45

TABLE OF CONTENTS--CONTINUED

	Page
PART II: (Continued)	
Comparison of Institute and Mill Data for June, 1960	
Mill N	46
Mill O	47
Mill P	47
Mill Q	48
Mill S	49
Mill T	50

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

SUMMARY

The objective of the continuous baseline study on linerboard is twofold. The first objective is to provide an indication of the quality of the 42-lb. fourdrinier kraft linerboard being produced by each of the participating mills and by the industry as a whole. The second objective is to provide a procedure whereby the mills have the opportunity to compare their test results with those obtained at the Institute on similar materials, thus providing a convenient system of instrument verification. The first objective is implemented by the weekly sampling of the product of each machine manufacturing 42-lb. kraft linerboard and submitting these weekly samples to The Institute of Paper Chemistry where they are evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The second objective of the continuous baseline study--namely, to provide a convenient system of instrument verification--is achieved by the testing of analogous samples by the mill and the Institute. The mill data are sent to the Institute, and a comparison of Institute and mill test results is included in the monthly reports. In addition to fulfilling the two prime objectives described above, the baseline study is accumulating an invaluable ever-growing reserve of background information essential for the intelligent evaluation of specifications of any kind.

During the month of June, one hundred sample lots of 42-lb. fourdrinier kraft linerboard representing the production of seventeen mills were evaluated at The Institute of Paper Chemistry. Shown below are the maximum and minimum current mill averages for each test (the current mill average is the average of the results obtained on the sample

lots of linerboard submitted from a given mill); also shown for each test is the current F.K.I. average which is determined by averaging the current mill averages and is indicative of the test level being maintained by the industry as a whole to the degree that the industry is represented by the participating mills:

	Maximum Current Mill Av.	Minimum Current Mill Av.	Current F.K.I. Av.
Basis weight, lb.	44.4	42.9	43.7
Caliper, pt.	14.0	11.6	12.7
Bursting strength, p.s.i. gage	118	106	112
Machine direction, Elmendorf tear, g./sheet	370	284	333
Cross-machine direction, Elmendorf tear, g./sheet	420	338	378

As mentioned previously, the study provides a procedure whereby the mills have the opportunity to compare their test results with those obtained on corresponding sample lots of linerboard at the Institute so that a convenient system of instrument verification is readily available to all participants. A summary of the agreement obtained in the comparisons of Institute and mill test results for the current period is shown below. The tabulated data show the number of mills (and the percentage of all mills which this number represents) whose average test results for the month of June fall within the designated percentages from the average test results obtained at the Institute on corresponding materials.

		Average Percentage Difference Between Institute and Mill Test Results									
		+0.5	+1	+2	+3	+4	+5	+7.5	+10	+15	+18
Basis weight											
Number of mills		3	8	16	17						
Percentage of all mills		17.6	47.1	94.1	100.0						
Caliper											
Number of mills		0	4	11	13	15	16	17			
Percentage of all mills		0.0	23.5	64.7	76.5	88.2	94.1	100.0			
Bursting strength											
Number of mills		3	8	10	14	17					
Percentage of all mills		17.6	47.1	58.8	82.4	100.0					
Tearing strength, in											
Number of mills		2	4	5	7	9	9	11	12	15	16
Percentage of all mills		12.5	25.0	31.2	43.8	56.2	56.2	68.8	75.0	93.8	100.0
Tearing strength, across											
Number of mills		0	3	3	5	5	9	10	15	16	
Percentage of all mills		0.0	18.8	18.8	31.2	31.2	56.2	62.5	93.8	100.0	

INTRODUCTION

The objective of the continuous baseline study on linerboard is twofold. One objective is to provide an indication of the quality of the 42-lb. fourdrinier kraft linerboard being produced by each of the participating mills and by the industry as a whole. Another objective is to provide a procedure whereby the mills have the opportunity to compare their test results with those obtained at the Institute on similar materials, thus providing a convenient system of instrument verification. The first objective mentioned above is implemented by the weekly sampling of the product of each machine manufacturing 42-lb. kraft linerboard and submitting these weekly samples to The Institute of Paper Chemistry where they are evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The second objective of the continuous baseline study--namely, to provide a convenient system of instrument verification--is achieved by the testing of analogous samples by the mill and the Institute. The mill data are sent to the Institute, and a comparison of Institute and mill test results is included in the monthly reports. In addition to fulfilling the two prime objectives which have been described, the baseline study is accumulating an invaluable ever-growing reserve of background information essential for the intelligent evaluation of specifications of any kind.

The dual objectives of the continuous baseline study on linerboard have been described in the preceding paragraph. The remainder of the report presents the test results for the linerboard samples which were evaluated during the month of June. In line with the dual nature of

the study, the presentation is divided into two parts. Part I presents the results obtained at The Institute of Paper Chemistry, and Part II presents a comparison of results obtained at the Institute with those obtained at the mills. It should be noted that the same code letters are not used to identify the same participants in these reports from month to month. Each participant is privately advised of his own code. Attention is directed to the fact that the bursting strength results presented in these reports have been obtained, beginning in April, with the "new" diaphragm. By "new" diaphragm is meant the composition and style (fillet filled in) introduced by B. F. Perkins and Son, Inc. The same diaphragm distension characteristics, namely, 40-45 p.s.i. at 1.8 cm. distension were used; however, it was necessary to change diaphragms far more frequently than with the old style and composition diaphragm.

PART I: PRESENTATION AND DISCUSSION OF RESULTS OBTAINED AT
THE INSTITUTE OF PAPER CHEMISTRY

During the month of June, one hundred different sample lots of 42-lb. fourdrinier kraft linerboard from seventeen different F.K.I. mills were processed at The Institute of Paper Chemistry. A tabulation of the number of samples classified according to mill may be seen in Table I.

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the current 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 current F.K.I. average represents the average of the current mill averages whereas the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. Hence, in the case of the current report, the cumulative F.K.I. average covers the period from June 1, 1959 to May 31, 1960. 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 43.7 lb., and the cumulative F.K.I. average basis weight is 43.5 lb. Hence, the F.K.I. index for basis weight determined in per cent as previously described is 100.5 and indicates that the current F.K.I. average basis weight is slightly higher than the cumulative F.K.I. average.

TABLE I
NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	8
B	2
C	6
D	0
E	8
F	3
G	7
H	4
I	0
J	4
K	1
L	8
M	9
N	9
O	5
P	4
Q	7
S	7
T	<u>8</u>
Total	100

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES---JUNE 1 THROUGH JUNE 30, 1960

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	In Machine	Elmendorf Tear, g./sheet Cross Machine
A	42.9	14.0	113	328	366
B	43.5	12.1	111	359	387
C	43.5	11.6	118	319	363
D	No samples submitted.				
E	44.1	12.6	115	321	360
F	44.3	12.0	114	361	409
G	43.8	12.3	106	284	338
H	43.3	12.4	109	352	360
I	No samples submitted.				
J	44.1	13.6	107	328	363
K	44.4	12.0	114	364	414
L	43.4	12.3	117	310	360
M	43.7	12.9	111	333	379
N	42.9	13.0	113	337	378
O	43.9	13.5	111	320	407
P	43.3	13.3	110	286	340
Q	43.3	12.9	115	320	376
S	43.9	12.6	110	367	401
T	43.9	13.2	110	370	420
Current FKl Average:	43.7	12.7	112	333	378
Cumulative FKl Average:	43.5	12.7	109	330	372
FKl Index, %	100.5	100.0	102.8	100.9	101.6

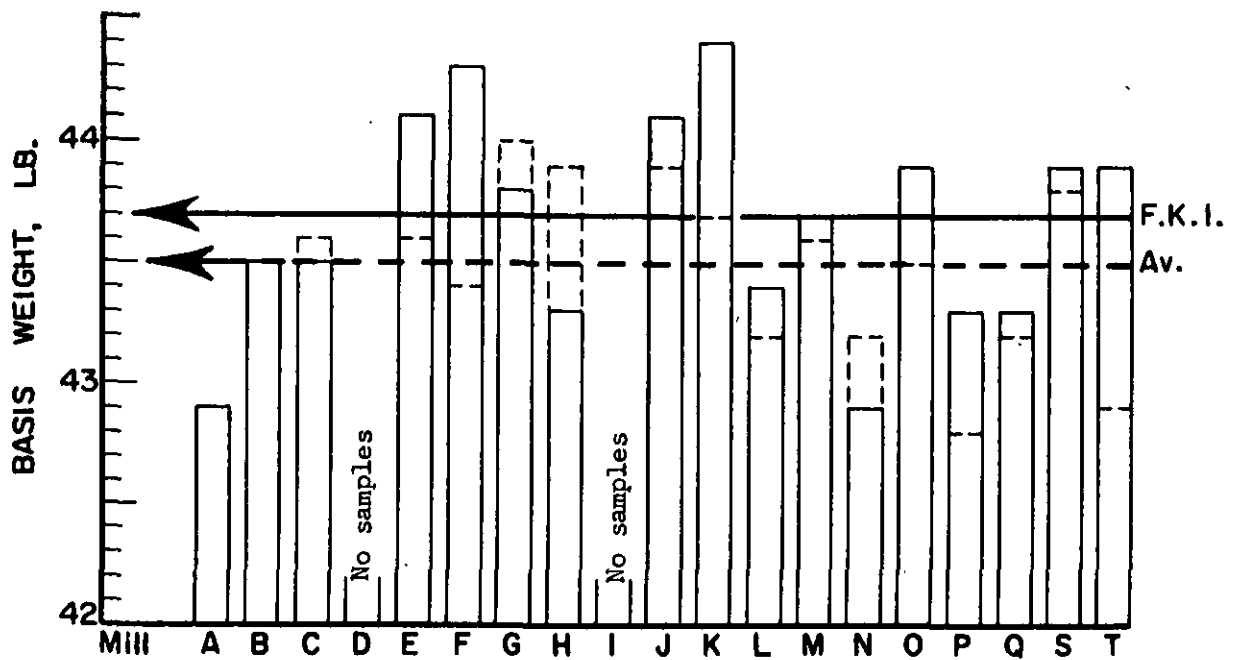


Figure 1

Comparison of Basis Weight Results for June, 1960

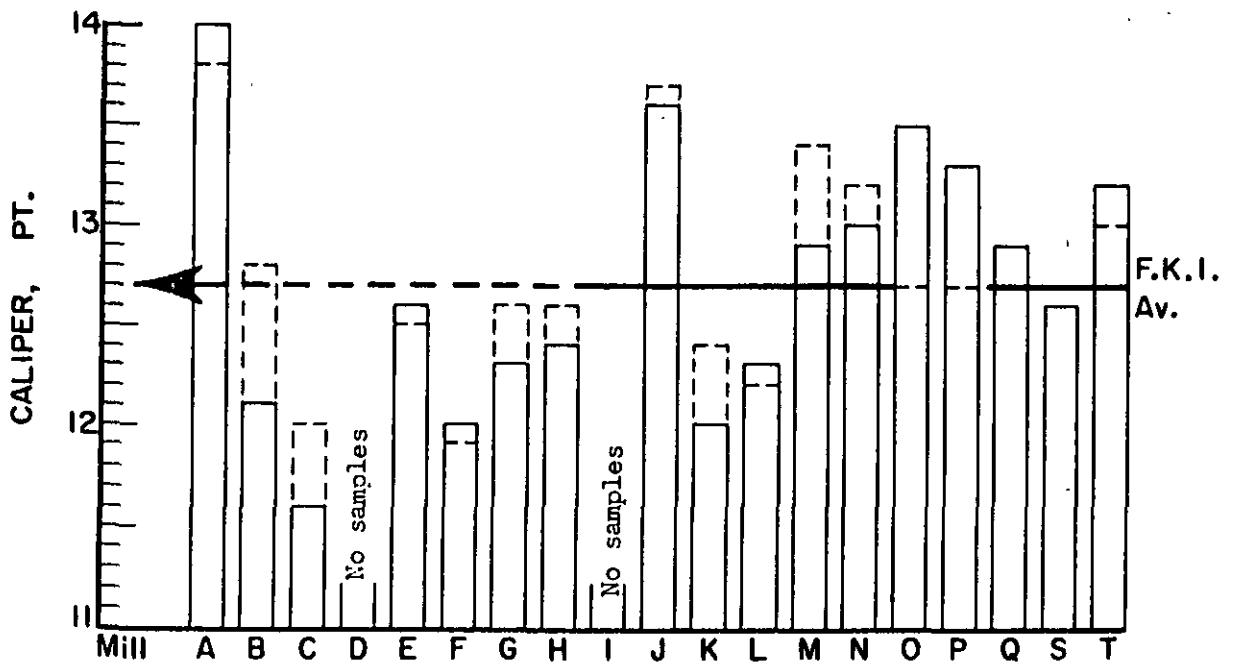


Figure 2

Comparison of Caliper Results for June, 1960

— Current mill average
----- Cumulative mill average

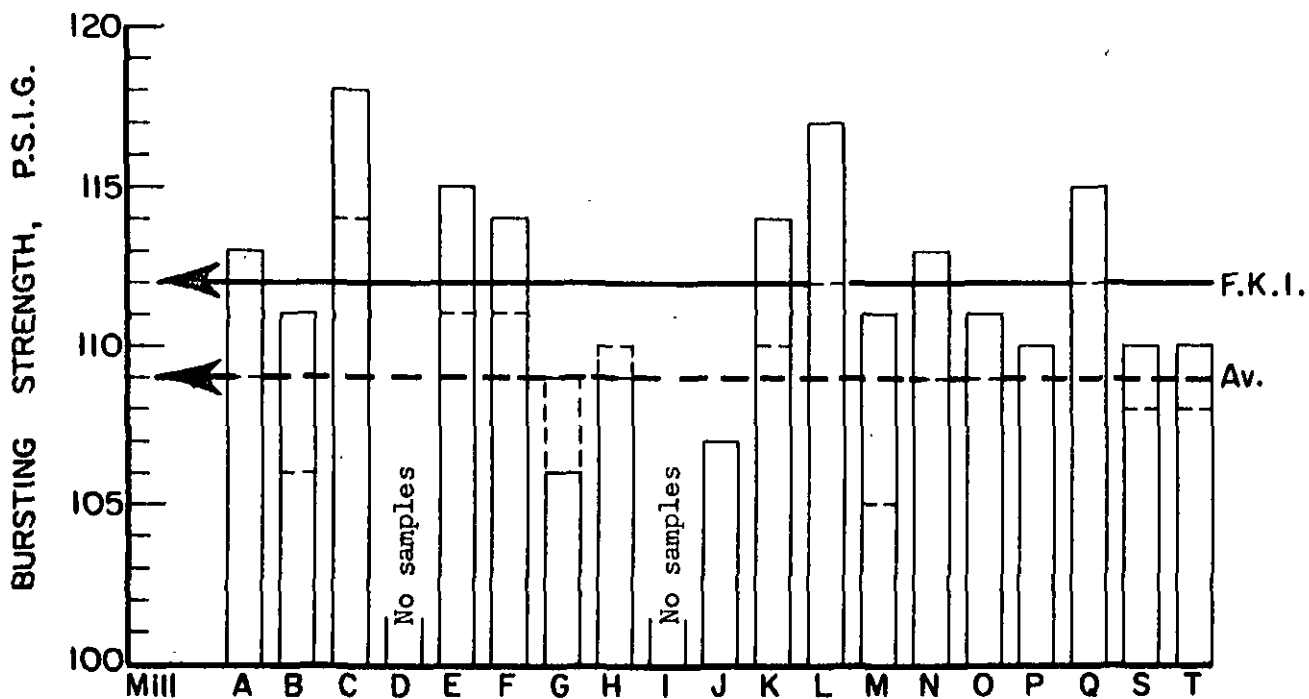


Figure 3

Comparison of Bursting Strength Results for June, 1960

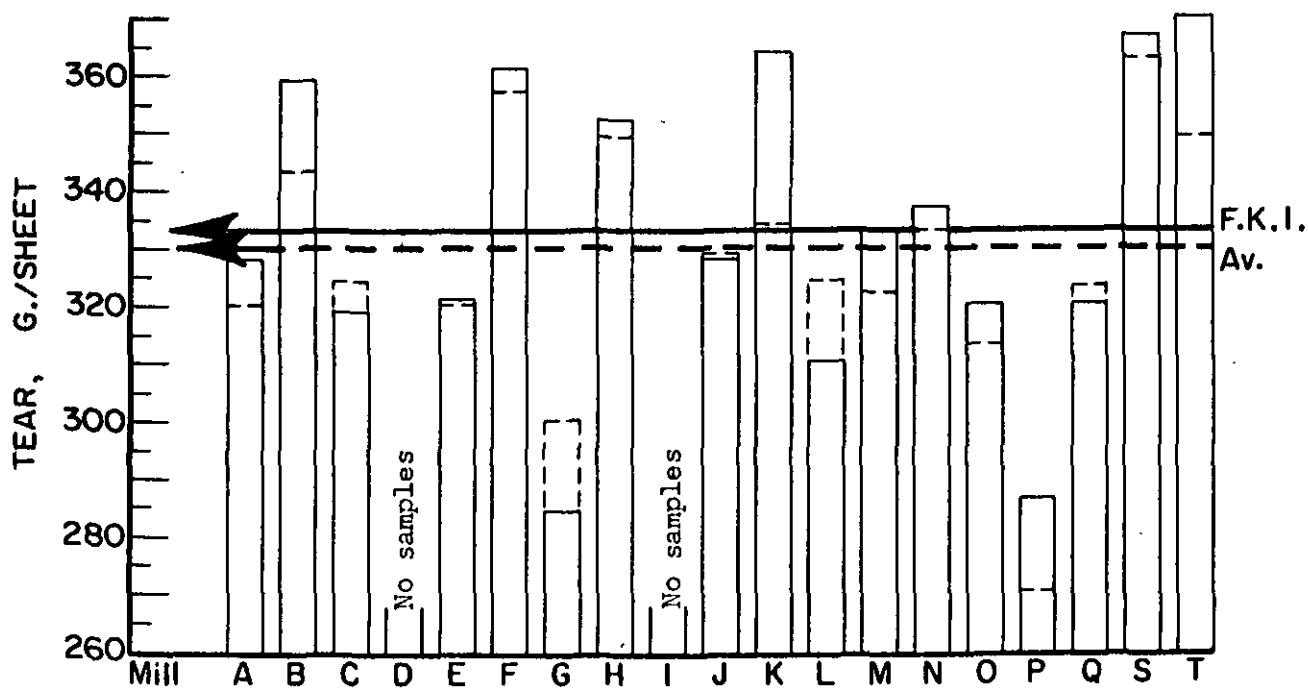


Figure 4

Comparison of Machine-Direction Tear Results for June, 1960

— Current mill average
- - - Cumulative mill average

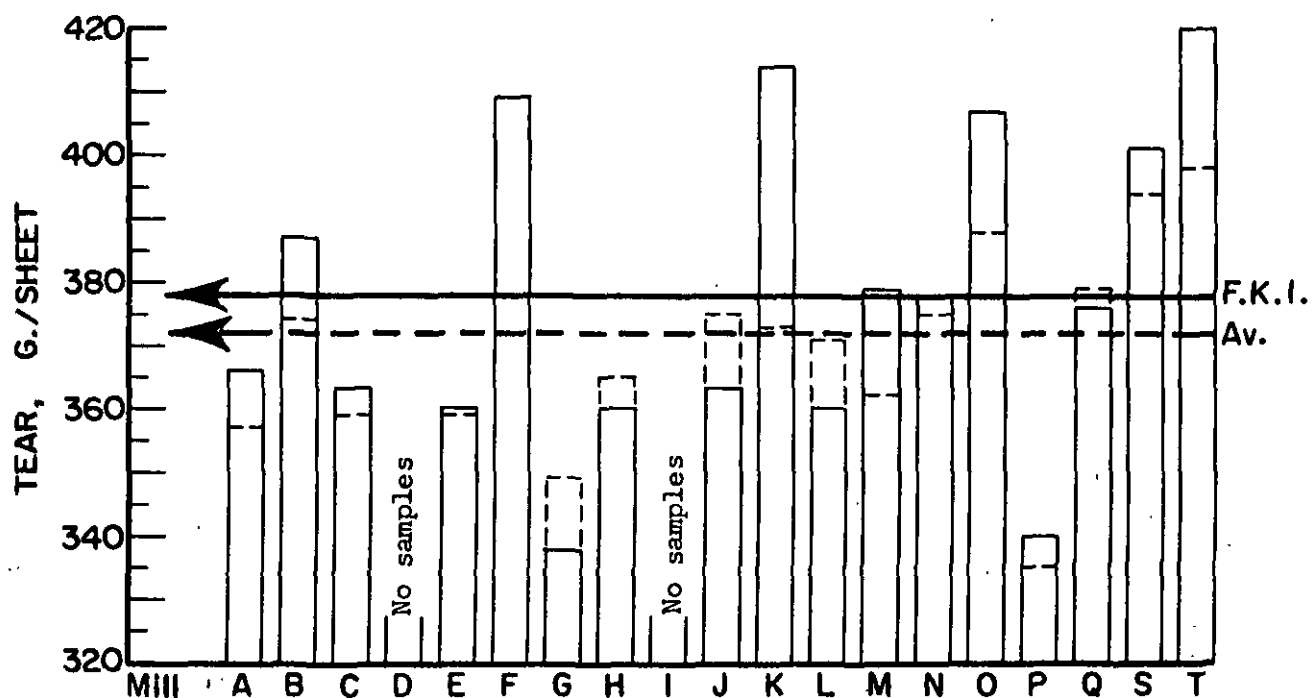


Figure 5

Comparison of Cross-Machine Direction Tear Results for June, 1960

———— Current machine average
----- Cumulative machine average

A comparison of the current mill averages 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 K had the highest average basis weight of 44.4 lb. which was approximately 5.7% higher than the 42-lb. specification. The lowest average basis weight of 42.9 lb. was shared by Mills A and N.

The amount by which the mills vary from the 42-lb. specification is shown in Table II-A.

A comparison of the current F.K.I. basis weight average for this period with that for the previous period shows that basis weight has increased from 43.6 lb. to 43.7 lb.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the current mill averages varied from a low of 11.6 points for Mill C to a high of 14.0 points for Mill A. The current F.K.I. caliper average was 12.7 points, which was the same as the cumulative F.K.I. average.

The average bursting strength values given in Table II for each mill are graphically presented in Figure 3. It may be observed in Table II and Figure 3 that the current mill averages for bursting strength ranged from a low of 106 for Mill G to a high of 118 for Mill C. The current F.K.I. bursting strength average was 112 p.s.i. gage, which was higher than the cumulative F.K.I. average of 109.

TABLE II-A
PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT
SPECIFICATION

Mill Code	Per Cent
A	+2.1
B	+3.6
C	+3.6
D	--
E	+5.0
F	+5.5
G	+4.3
H	+3.1
I	--
J	+5.0
K	+5.7
L	+3.3
M	+4.0
N	+2.1
O	+4.5
P	+3.1
Q	+3.1
S	+4.5
T	+4.5

The Elmendorf tear results shown in Table II for the various mills are presented graphically in Figures 4 and 5. From these presentations it may be observed that Mill T had the highest machine direction tear average of 370 g./sheet, and Mill G had the lowest average of 284 g./sheet. It may be further noted that the highest cross-machine direction tear average of 420 g./sheet was associated with Mill T and that the lowest average of 338 g./sheet was associated with Mill G. It may be observed also in Table II and Figures 4 and 5 that the current F.K.I. averages for machine direction and cross-machine direction Elmendorf tear are slightly higher than their respective cumulative F.K.I. averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, bursting strength, machine direction, and cross-machine direction Elmendorf tear are slightly higher than their respective cumulative F.K.I. averages, and the current F.K.I. average for caliper is the same as the cumulative F.K.I. average.

In order to compare the variation within a given mill, the test results for the participating mills have been tabulated in Tables III to XXI alphabetically. In addition to the current and cumulative average, a mill factor and mill index are given for each mill. The current mill average represents the average test result obtained for all samples evaluated during the current period. The cumulative mill average for each test, on the other hand, represents the average of the current mill averages for the previous twelve months excluding the current period. 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 are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that information is included about the sheet finish. A review of the tables for the mills which supplied this information indicates that some kind of water finish is being used by all.

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960

TABLE III

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper, points			Bursting Strength, P.S.I. Page			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185921	WFIS	6/ 1/60	5/23/60	2	45.0	43.2	44.2	14.8	13.9	14.2	135	80	110	336	240	297 ^a
185922	WFIS	6/ 1/60	5/24/60	2	43.4	41.6	42.6	14.3	13.2	14.0	134	102	114	384	272	323 ^a
186000	WFIS	6/13/60	6/ 1/60	2	44.0	41.0	42.8	14.5	13.0	13.8	129	96	113	400	320	354
186001	WFIS	6/13/60	6/ 3/60	2	44.0	41.0	43.0	14.2	12.5	13.4	145	91	114	384	304	331 ^a
186002	WFIS	6/13/60	6/ 9/60	2	43.8	41.8	42.7	14.2	13.1	13.7	131	104	116	368	288	315 ^a
186003	WFIS	6/13/60	6/10/60	2	44.0	41.8	42.7	15.0	13.3	14.1	130	86	108	400	288	337 ^a
186065	WFIS	6/20/60	6/15/60	2	44.0	42.2	43.2	15.0	13.8	14.3	125	104	114	400	288	331 ^a
186066	WFIS	6/20/60	6/16/60	2	43.0	41.2	42.1	15.0	13.5	14.3	127	84	114	408	280	334 ^a
Current Mill Average:					42.9			14.0			113			328		
Cumulative Mill Average:					42.9			13.8			109			320		
Mill Factor, %					100.0			101.4			103.7			102.5		
Mill Index, %					98.6			110.2			103.7			99.4		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE IV

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper,			Bursting Strength,			Elmendorf Tear,					
					lb.			points			p.s.i. gage			g./sheet					
					Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.			
185951	S.F.	6/ 6/60	5/25/60	7	44.6	42.0	43.8	13.0	11.3	12.2	134	87	112	416	320	374	496	368	418 ^a
186018	S.F.	6/14/60	6/ 4/60	7	45.0	42.2	43.3	12.5	11.3	12.0	138	79	111	416	272	343 ^a	400	328	357 ^a
Current Mill Average:					43.5			12.1			111			359			387		
Cumulative Mill Average:					43.5			12.8			106			343			374		
Mill Factor, %					100.0			94.5			104.7			104.7			103.5		
Mill Index, %					100.0			95.3			101.8			108.8			104.0		

SUMMARY OF INSTITUTE DATA---JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185872	W.F.	5/26/60	5/21/60	2	44.0	43.0	43.4	12.3	11.4	11.8	125	93	109	352	288	322
185947	W.F.	6/ 6/60	5/29/60	2	43.8	42.6	43.4	12.1	11.2	11.7	145	101	122	352	304	325
185948	W.F.	6/ 6/60	5/29/60	2	43.6	42.2	43.2	12.1	11.1	11.7	131	93	115	384	272	329 ^a
186038	W.F.	6/15/60	6/10/70	2	44.0	43.0	43.4	12.2	11.0	11.4	142	95	122	352	288	313
186039	W.F.	6/15/60	6/10/60	2	44.0	42.6	43.5	11.8	11.0	11.4	137	107	121	320	272	301
186063	W.F.	6/17/60	6/12/60	2	44.4	43.0	43.9	12.0	11.2	11.5	138	107	120	384	272	324
Current Mill Average:					43.5			11.6			118			319		
Cumulative Mill Average:					43.6			12.0			114			324		
Mill Factor, %					99.8			96.7			103.5			98.5		
Mill Index, %					100.0			91.3			108.3			96.7		

TABLE VI

MILL D -- 42-LB. LINERBOARD

No samples submitted.

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE VII

MILL E -- 42-1B. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185933	W.F.	6/ 6/60	6/ 1/60	-	45.6	44.0	44.8	12.8	12.0	12.3	135	101	120	344	280	322 ^a
185934	W.F.	6/ 6/60	6/ 2/60	-	45.0	44.0	44.3	13.1	12.3	12.9	140	107	123	368	288	318 ^a
185935	W.F.	6/ 6/60	6/ 3/60	-	45.0	43.8	44.2	13.8	13.0	13.3	129	90	110	360	288	335 ^a
186049	W.F.	6/16/60	6/ 8/60	-	43.8	42.4	43.2	13.0	12.2	12.7	126	95	111	368	272	326
186050	W.F.	6/16/60	6/ 9/60	-	45.0	44.0	44.6	13.0	12.1	12.5	129	106	118	336	288	310
186051	W.F.	6/16/60	6/10/60	-	45.0	44.2	44.8	12.6	11.7	12.2	142	112	123	368	304	330
186099	W.F.	6/21/60	6/16/60	-	44.0	42.4	43.6	12.9	12.0	12.4	124	94	109	360	272	311
186100	W.F.	6/21/60	6/17/60	-	44.0	42.2	43.6	13.0	12.0	12.4	137	92	109	344	272	315 ^a
Current Mill Average:					44.1			12.6			115			321		
Cumulative Mill Average:					43.6			12.5			111			320		
Mill Factor, %					101.1			100.8			103.6			100.3		
Mill Index, %					101.4			99.2			105.5			97.3		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE VIII

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper,			Bursting Strength,			Elmendorf Tear,					
					lb.			points			p.s.i. gage			g./sheet					
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	In	Max.	Min.	Av.		
185917	N.B.	6/ 1/60	4/29/60	-	45.2	43.4	44.4	12.5	11.6	12.1	140	96	113	400	280	361	448	368	414a
185918	N.B.	6/ 1/60	5/18/60	-	46.0	42.6	44.8	12.6	11.3	12.0	150	95	119	432	320	369 ^a	448	384	411a
185919	N.B.	6/ 1/60	5/22/60	-	44.4	43.2	43.9	12.5	11.2	11.8	127	88	110	384	320	351	448	368	401a
Current Mill Average:							44.3			12.0			114			361		409	
Cumulative Mill Average:							43.4			11.9			111			357		409	
Mill Factor, %							102.1			100.8			102.7			101.1		100.0	
Mill Index, %							101.8			94.5			104.6			109.4		109.9	

^aThis average includes the readings for one or more specimens which tore beyond the 3/5-inch limit.

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE IX

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
185914	W.F.	6/ 1/60	5/ 9/60	1	44.4	42.4	43.5	12.2	11.1	11.8	138	93	108	304	240	267
185915	W.F.	6/ 1/60	5/11/60	1	44.6	42.4	43.4	12.4	11.5	12.1	123	92	106	320	240	265
185916	W.F.	6/ 1/60	5/15/60	1	44.2	42.4	43.2	12.7	11.8	12.2	118	87	104	336	248	281
185959	W.F.	6/ 8/60	5/23/60	1	44.4	43.0	43.6	12.5	11.3	11.9	126	82	111	304	240	283
186166	W.F.	6/24/60	5/26/60	1	45.2	43.8	44.2	13.3	12.2	12.9	120	84	106	352	264	304
186221	W.F.	6/27/60	5/30/60	1	45.2	43.0	44.2	13.0	12.0	12.5	124	86	105	328	216	291 ^a
186222	W.F.	6/27/60	6/ 3/60	1	45.4	43.8	44.4	13.1	12.1	12.5	117	84	103	360	232	301 ^a
Current Mill Average:					43.8			12.3			106			284		
Cumulative Mill Average:					44.0			12.6			109			300		
Mill Factor, %					99.5			97.6			97.2			94.7		
Mill Index, %					100.7			96.8			97.2			86.1		
														338		
														349		
														96.8		
														90.9		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE X

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
186052	W.F.	6/16/60	6/ 5/60	-	46.2	42.4	13.3	12.0	128	88	432	328
186053	W.F.	6/16/60	6/ 5/60	-	44.0	42.0	13.5	12.0	125	85	432	336
186223	W.F.	6/27/60	6/13/60	-	44.2	41.8	13.0	11.9	120	87	416	304
186224	W.F.	6/27/60	6/13/60	-	44.2	42.4	12.8	11.4	130	90	400	304
Current Mill Average:					43.3		12.4		109		352	
Cumulative Mill Average:					43.9		12.6		110		349	
Mill Factor, %					98.6		98.4		99.1		100.9	
Mill Index, %					99.5		97.6		100.0		106.7	

TABLE XI

MILL I -- 42-LB. LINERBOARD

No samples submitted.

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XII

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185927	WFLS	6/1/60	5/20/60	2	45.0	43.6	44.4	14.0	13.3	13.8	124	88	107	376	280	339
185946	WFLS	6/6/60	5/23/60	2	45.0	43.4	44.0	14.0	13.0	13.4	125	89	104	352	288	322
185998	WFLS	6/10/60	5/30/60	2	44.4	43.0	43.6	14.0	13.0	13.6	121	87	103	384	304	331 ^a
186165	----	6/24/60	6/10/60	2	45.4	43.8	44.4	14.6	13.2	13.8	133	95	113	392	272	321 ^a
Current Mill Average:					44.1			13.6			107			328		
Cumulative Mill Average:					43.9			13.7			107			329		
Mill Factor, %					100.5			99.3			100.0			99.7		
Mill Index, %					101.4			107.1			98.2			99.4		

TABLE XIII

MILL K -- 42-LB. LINERBOARD

186069	W.F.	6/20/60	5/13/60	2	45.2	44.0	44.4	12.4	11.5	12.0	139	80	114	408	312	364	480	384	414 ^a
Current Mill Average:					44.4			12.0			114			364			414		
Cumulative Mill Average:					43.7			12.4			110			334			373		
Mill Factor, %					101.6			96.8			103.6			109.0			111.0		
Mill Index, %					102.1			94.5			104.6			110.3			111.3		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185923	W.F.	6/ 1/60	4/20/60	2	44.2	42.6	43.3	13.0	12.2	12.5	138	93	118	360	256	294
185924	W.F.	6/ 1/60	5/18/60	2	43.2	41.4	42.6	12.5	11.8	12.2	140	101	116	352	240	282
185925	W.F.	6/ 1/60	5/18/60	2	44.0	42.8	43.3	13.0	11.9	12.4	132	99	116	392	272	313
186004	W.F.	6/13/60	5/15/60	2	43.8	42.0	42.6	12.2	11.8	12.0	132	96	118	344	272	301
186005	W.F.	6/13/60	5/17/60	2	44.2	42.2	43.6	12.6	11.2	11.9	137	97	118	360	288	319 ^a
186006	W.F.	6/13/60	5/17/60	2	44.4	43.8	44.0	13.0	12.1	12.6	132	96	113	392	264	330 ^a
186007	W.F.	6/13/60	5/15/60	1	45.0	43.0	44.0	13.0	12.0	12.6	129	97	116	424	264	323 ^a
186008	W.F.	6/13/60	5/15/60	1	44.2	42.0	43.5	12.5	11.3	11.9	144	103	121	360	272	317 ^a
Current Mill Average:					43.4			12.3			117			310		
Cumulative Mill Average:					43.2			12.2			112			324		
Mill Factor, %					100.5			100.8			104.5			95.7		
Mill Index, %					99.8			96.9			107.3			93.9		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185936	W.F.	6/ 6/60	5/16/60	1	45.4	42.0	43.7	13.0	11.9	12.3	138	84	112	352	272	304
185937	W.F.	6/ 6/60	5/17/60	1	43.8	43.0	43.5	14.1	12.9	13.6	125	85	109	368	296	325 ^a
185938	W.F.	6/ 6/60	5/20/60	1	45.2	43.0	43.9	13.2	12.1	12.8	130	90	112	448	304	364 ^a
185939	W.F.	6/ 6/60	5/23/60	1	45.6	44.4	45.1	13.7	11.8	12.5	133	97	113	360	304	329 ^a
185940	W.F.	6/ 6/60	5/25/60	1	45.0	42.2	43.4	13.9	13.0	13.4	126	87	104	352	280	311
185941	W.F.	6/ 6/60	5/26/60	1	45.0	43.8	44.2	13.2	12.2	12.8	143	85	114	384	288	333
186218	W.F.	6/27/60	6/ 3/60	1	44.0	42.6	43.6	13.0	12.0	12.4	125	91	109	392	312	352
186219	W.F.	6/27/60	6/ 9/60	1	43.2	41.8	42.3	13.6	12.5	13.1	126	88	108	368	280	329 ^a
186220	W.F.	6/27/60	6/ 9/60	1	44.0	42.0	43.6	13.3	12.2	12.9	130	87	112	416	304	353 ^a
Current Mill Average:					43.7			12.9			111			333		
Cumulative Mill Average:					43.6			13.4			105			322		
Mill Factor, %					100.2			96.3			105.7			103.4		
Mill Index, %					100.5			101.6			101.8			100.9		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XVI

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		In		g./sheet		Across						
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
185913	WFLS	6/ 1/60	5/11/60	1	44.2	42.4	43.2	14.1	13.2	13.6	127	90	108	352	256	297	448	320	373 ^a		
185949	WFLS	6/ 6/60	5/12/60	1	44.0	42.6	43.3	14.6	13.1	13.6	127	82	108	368	296	337	448	352	393 ^a		
185952	WFLS	6/ 7/60	5/13/60	1	44.0	42.0	43.3	14.6	13.0	13.6	125	95	109	416	280	341 ^a	432	360	390 ^a		
185999	WFLS	6/10/60	5/23/60	1	44.0	43.6	43.8	13.5	12.1	13.0	135	111	124	400	336	367	432	352	383 ^a		
186010	WFLS	6/13/60	5/24/60	1	44.0	42.8	43.4	13.2	12.2	12.8	137	106	120	416	312	374 ^a	408	336	370 ^a		
186067	WFLS	6/20/60	6/ 6/60	1	42.0	40.0	40.7	12.2	11.3	11.8	130	89	116	352	272	323	448	336	367 ^a		
186068	WFLS	6/20/60	6/ 7/60	1	41.8	39.6	40.4	12.5	11.5	11.9	127	91	113	368	304	333	400	320	363 ^a		
186217	WFLS	6/27/60	6/14/60	1	44.0	43.2	43.8	13.6	13.0	13.2	134	90	105	352	256	315 ^a	424	328	382 ^a		
186226	WFLS	6/27/60	6/15/60	1	44.2	43.8	44.0	14.0	12.9	13.2	123	98	110	408	312	344 ^a	440	344	383 ^a		
Current Mill Average:							42.9		13.0		113				337		378				
Cumulative Mill Average:							43.2		13.2		109				333		375				
Mill Factor, %							99.3		98.5		103.7				101.2		100.8				
Mill Index, %							98.6		102.4		103.7				102.1		101.6				

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XVII

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
185920	WFLS	6/ 1/60	5/24/60	1	45.0	42.0	14.0	13.2	135	88	320	256
185931	WFLS	6/ 2/60	5/26/60	1	45.0	43.2	14.1	12.8	133	90	368	272
185997	WFLS	6/10/60	6/ 3/60	1	45.0	42.8	14.2	13.0	125	89	352	288
186163	WFLS	6/24/60	6/13/60	1	44.2	43.0	13.6	12.5	126	94	432	288
186164	WFLS	6/24/60	6/14/60	1	44.4	43.8	14.0	12.8	127	95	456	288
Current Mill Average:					43.9		13.5		111		320	
Cumulative Mill Average:					43.5		12.7		109		313	
Mill Factor, %					100.9		106.3		101.8		102.2	
Mill Index, %					100.9		106.3		101.8		97.0	
											407	
											388	
											104.9	
											109.4	

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

SUMMARY OF INSTITUTE DATA—JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185942	W.F.	6/ 6/60	5/ 3/60	1	44.4	42.6	43.4	14.0	13.2	13.5	126	88	109	304	240	283
185943	W.F.	6/ 6/60	5/ 6/60	1	43.6	42.0	42.5	13.2	12.4	12.9	127	85	111	304	240	283
185944	W.F.	6/ 6/60	5/ 9/60	1	44.2	43.0	43.5	13.9	13.0	13.4	128	85	108	368	272	301
185945	W.F.	6/ 6/60	5/12/60	1	44.0	43.4	43.7	13.8	13.0	13.3	130	89	111	320	240	278
Current Mill Average:					43.3			13.3			110			286		
Cumulative Mill Average:					42.8			12.7			110			270		
Mill Factor, %					101.2			104.7			100.0			105.9		
Mill Index, %					99.5			104.7			100.9			86.7		

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

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper,			Bursting Strength,			Elmendorf Tear,					
					lb.	Max.	Min.	Av.	points	Max.	Min.	Av.	p.s.i. gage	Max.	Min.	Av.	g./sheet	Max.	Min.
186011	----	6/14/60	4/10/60	1	43.0	41.4	42.4	13.7	12.2	12.9	133	84	111	360	248	305 ^a	416	328	369 ^a
186012	----	6/14/60	4/ 9/60	1	44.0	40.8	42.3	13.2	12.2	12.8	139	97	113	336	272	309 ^a	408	344	375 ^a
186013	----	6/14/60	4/10/60	1	44.4	42.2	43.0	13.8	12.2	12.9	147	102	121	344	280	315 ^a	400	328	374 ^a
186014	----	6/14/60	4/10/60	1	44.8	43.0	44.0	14.0	12.2	13.1	147	90	118	400	248	328 ^a	424	328	377 ^a
186015	----	6/14/60	4/25/60	1	45.0	42.8	43.8	13.8	12.3	13.0	138	92	112	368	272	340 ^a	456	352	382 ^a
186016	----	6/14/60	4/26/60	1	45.6	42.0	43.4	13.3	12.0	12.8	135	93	113	376	248	314 ^a	392	336	363 ^a
186017	----	6/14/60	4/28/60	1	44.4	44.0	44.1	14.0	12.5	13.1	139	87	118	416	264	328	440	344	395 ^a
Current Mill Average:					43.3			12.9			115			320			376		
Cumulative Mill Average:					43.2			12.9			112			323			379		
Mill Factor, %					100.2			100.0			102.7			99.1			99.2		
Mill Index, %					99.5			101.6			105.5			97.0			101.1		

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper, points			Bursting Strength, p.s.i.			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
185975	W.F.	6/ 9/60	5/21/60	-	44.2	43.0	43.5	13.0	11.9	12.5	137	98	113	400	320	367 ^a
185976	W.F.	6/ 9/60	5/21/60	-	45.4	43.0	43.8	12.7	12.0	12.2	132	88	114	400	328	369 ^a
185977	W.F.	6/ 9/60	5/26/60	-	45.6	42.2	43.8	13.1	12.0	12.7	122	85	110	432	336	376 ^a
185978	W.F.	6/ 9/60	5/30/60	-	45.6	42.2	44.0	13.0	12.2	12.7	132	84	105	416	320	371
186070	W.F.	6/20/60	6/ 4/60	-	44.2	43.8	44.0	13.0	11.4	12.4	124	87	106	416	288	367 ^a
186071	W.F.	6/20/60	6/ 7/60	-	45.0	44.0	44.2	13.5	12.6	13.1	123	94	111	400	320	361 ^a
186072	W.F.	6/20/60	6/ 9/60	-	44.4	43.6	44.1	12.9	12.3	12.5	136	91	114	416	320	363
Current Mill Average:					43.9			12.6			110			367		
Cumulative Mill Average:					43.8			12.6			108			363		
Mill Factor, %					100.2			100.0			101.9			101.1		
Mill Index, %					100.9			99.2			100.9			111.2		

^aThis average includes the readings for one or more specimens which tore beyond the 3/2-inch limit.

SUMMARY OF INSTITUTE DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXI

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
185926	WFLS	6/ 1/60	5/25/60	2	46.0	43.2	44.6	14.3	13.4	13.9	140	79
185950	WFLS	6/ 6/60	5/27/60	2	44.6	42.0	43.6	13.9	12.2	13.1	136	87
186009	----	6/13/60	6/ 7/60	2	43.2	42.0	42.7	13.7	12.3	13.0	125	91
186019	----	6/14/60	6/ 8/60	2	44.0	41.6	42.9	13.7	12.7	13.1	142	90
186040	----	6/15/60	6/ 9/60	2	45.0	42.2	43.9	14.0	12.7	13.3	136	85
186097	WFLS	6/21/60	6/14/60	1	44.6	42.4	43.9	13.4	12.0	12.8	135	87
186098	WFLS	6/21/60	6/15/60	1	44.8	43.6	44.1	13.3	12.2	12.8	127	91
186225	----	6/27/60	6/21/60	2	46.2	45.2	45.8	13.8	13.0	13.2	132	83
Current Mill Average:					43.9		13.2		110		370	
Cumulative Mill Average:					42.9		13.0		108		349	
Mill Factor, %					102.3		101.5		101.9		106.0	
Mill Index, %					100.9		103.9		100.9		112.1	

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

PART II: COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF
PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS

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. Mill test conditions are shown in Table XXII, where it may be noted that the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the preconditioning and conditioning time periods varied considerably.

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of percentage differences between Institute and mill test results is given in Table XXIV for the current period and the two previous periods.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. In Table XXIII the over-all average difference between Institute and mill results is shown for each of these tests based on the data for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the over-all average differences shown for each test in Table XXIII 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.

TABLE XXII

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temperature, °F.	Time, hr.	R.H., %	Temperature, °F.	Time, hr.
A	50	72	24	50	None	24
B	50	73	24		None	
C		None			73	
D			No samples submitted.			
E	33-35	77-78	8	48-52	72-73	16
F		None		45-46	71-72	48
G	38-47	71-79	0.5	50	73	24-48
H		None		50	73	0.5
I			No samples submitted.			
J	50	70-72	120	50	70-72	120
K		None		50	73	24
L	50	73	24	50	73	24
M	50	73	24	50	73	24
N		None		55-70	81-90	--
O		None		55-56	70-72	--
P		None		33-48	84-88	--
Q	50	72	90-118	50	72	3-3.5
S	50	73-74	48+	50	73	48+
T	50	72	24	50	72-73	24

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

Mills*	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T
No. of Samples Compared	8	2	6	0	8	3	7	4	0	4	1	8	9	9	5	4	7	7	8
	<u>Basis Weight</u>																		
Institute Mill	42.9	43.5	43.5	43.5	44.1	44.3	43.8	43.3	44.1	44.1	44.4	43.4	43.7	42.9	43.9	43.3	43.3	43.9	43.9
Av. Diff.**	43.1	42.6	42.8	43.5	43.5	43.9	42.9	42.4	43.3	44.1	44.1	43.4	43.1	42.4	43.0	42.4	43.4	43.2	42.8
Max. Diff.***	+0.2	-0.9	-0.7	-0.6	-0.6	-0.4	-0.9	-0.9	-0.8	-0.3	-0.3	0.0	-0.6	-0.5	-0.9	-0.9	+0.1	-0.7	-1.1
	+0.8	-1.0	-1.0	-1.8	-1.8	-0.6	-1.4	-1.1	-1.1	-0.3	-0.3	-0.3	-1.4	-1.0	-1.3	-1.7	+1.0	-1.0	-1.4
	<u>Caliber</u>																		
Institute Mill	14.0	12.1	11.6	12.6	12.6	12.0	12.3	12.4	13.6	13.4	12.0	12.3	12.9	13.0	13.5	13.3	12.9	12.6	13.2
Av. Diff.**	13.9	11.9	11.5	12.3	12.3	11.7	11.8	12.1	13.4	13.4	11.7	12.4	12.7	12.6	12.9	12.4	12.7	12.0	12.8
Max. Diff.***	-0.1	-0.2	-0.1	-0.3	-0.3	-0.3	-0.5	-0.3	-0.2	-0.2	-0.3	+0.1	-0.2	-0.4	-0.6	-0.9	-0.2	-0.6	-0.4
	-0.5	-0.3	-0.3	-0.7	-0.7	-0.4	-0.8	-0.5	-0.6	-0.6	-0.3	+0.2	-0.4	-0.9	-0.7	-1.3	-0.3	-0.7	-0.5
	<u>Bursting Strength</u>																		
Institute Mill	113	111	118	115	114	114	106	109	107	107	114	117	111	113	111	110	115	110	110
Av. Diff.**	108	114	117	114	114	114	109	107	106	106	118	113	109	110	107	111	115	110	109
Max. Diff.***	-5	+3	-1	-1	0	0	+3	-2	-1	-1	+4	-4	-2	-3	-4	+1	0	0	-1
	-8	+5	+8	-8	-2	-2	+7	-6	+6	+6	+4	-8	-5	-9	-10	+4	-4	+7	-7
	<u>Tearing Strength, in</u>																		
Institute Mill	328	359	319	321	361	361	284	352	328	307	364	310	333	337	320	286	320	367	370
Av. Diff.**	337	347	307	280	368	368	283	290	307	307	407	337	330	362	320	248	324	352	--
Max. Diff.***	+9	-12	-12	-41	+7	+7	-1	-62	-21	-21	+43	+27	-3	+25	0	-38	+4	-15	--
	+35	-22	-29	-67	+12	+12	-18	-74	-43	-43	+43	+56	-36	+66	+32	-64	+12	-40	--
	<u>Tearing Strength, across</u>																		
Institute Mill	366	387	363	360	409	409	338	360	363	404	414	360	379	378	407	340	376	401	420
Av. Diff.**	395	384	360	342	422	422	356	324	404	404	439	397	412	409	393	335	393	380	--
Max. Diff.***	+29	-3	-3	-18	+13	+13	+18	-36	+41	+41	+25	+37	+33	+31	-14	-5	+17	-21	--
	+67	-24	-27	-39	+17	+17	+49	-61	+58	+58	+25	+39	+61	+60	-52	-11	+33	-48	--

* Comparison based on averages involved 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 averages for any sample submitted by that particular mill.

TABLE XIV
COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Difference, Per Cent

Mill	Period	Basis Weight	Calli- per	Bursting Strength	Tear, in	Tear, across	Mill	Period	Basis Weight	Calli- per	Bursting Strength	Tear, in	Tear, across
A	Current	+0.5	-0.7	-4	+3	+8	K	Current	-0.7	-2	+4	+12	+6
	158th	0	-2	0	0	+8		158th	0	-2	+2	+7	+11
	157th	+0.9	-1	-2	+0.3	+8		157th	+0.5	-2	-3	+6	+7
B	Current	-2	-2	+3	-3	-0.8	L	Current	0	+0.8	-3	+9	+10
	158th	-2	-2	+6	+1	+5		158th	0	-0.8	+2	+8	+11
	157th	-1	-0.8	+2	-10	-6		157th	+0.5	-0.8	-2	+3	+9
C	Current	-2	-0.9	-0.8	-4	-0.8	M	Current	-1	-2	-2	-0.9	+9
	158th	-1	-2	+2	+3	+4		158th	-0.9	0	+3	+6	+14
	157th	-0.9	-2	-0.9	+2	+6		157th	-0.2	-0.8	+2	+0.9	+9
D	Current	--	--	--	--	--	N	Current	-1	-3	-3	+7	+8
	158th	-1	-4	+9	-5	-6		158th	-0.9	-2	0	+7	+8
	157th	+0.2	-4	+2	-1	-7		157th	-2	-5	-3	-5	+1
E	Current	-1	-2	-0.9	-13	-5	O	Current	-2	-4	-4	0	-3
	158th	-0.7	-3	0	-9	-8		158th	-2	-3	-2	+6	+3
	157th	+1	-2	+3	-8	-4		157th	-0.7	-2	-6	+5	-0.5
F	Current	-0.9	-2	0	+2	+3	P	Current	-2	-7	+0.9	-13	-1
	158th	-0.7	-2	+0.9	-0.8	+3		158th	-3	-2	-2	-21	-11
	157th	-0.5	-3	0	-1	+3		157th	-0.7	-2	-2	-14	-7
G	Current	-2	-4	+3	-0.4	+5	Q	Current	+0.2	-2	0	+1	+5
	158th	-1	-2	+4	-0.3	+3		158th	-1	-4	-2	-3	+2
	157th	-1	-2	+4	-3	-0.6		157th	0	-3	-4	-3	+2
H	Current	-2	-2	-2	-18	-10	S	Current	-2	-5	0	-4	-5
	158th	-2	-2	+0.9	-14	-3		158th	-1	-0.8	-3	-0.3	-9
	157th	-2	-4	-3	-17	-4		157th	-2	0	0	+8	-4
I	Current	--	--	--	--	--	T	Current	-3	-3	-0.9	--	--
	158th	--	--	--	--	--		158th	-2	-3	+2	--	--
	157th	--	--	--	--	--		157th	-0.7	-2	-0.9	--	--
J	Current	-2	-1	-0.9	-6	+11		Current					
	158th	-1	-2	+0.9	-4	+6		158th					
	157th	-0.9	+0.8	-4	-6	+8		157th					

It may be noted in Table XXIV that for the current period the largest average percentage difference between the average basis weight results of the Institute and those of a given mill on corresponding samples was three per cent. By comparison, the largest average percentage difference noted for the previous two periods was also three per cent. Further, it may be noted that the average basis weight results for Mills A and Q were higher than those for the Institute and the average result for Mill L was the same as that for the Institute, and the results for the other mills were lower than the corresponding results for the Institute. In general, agreement between Institute and mill basis weight results was good.

The maximum variation in caliper for the current period was seven per cent. This was higher than the maximum variation of five per cent for the previous two periods. Compared with the Institute's results, the average test result for Mill L was higher, and the average test results for the other mills were lower. Agreement was good for the majority of comparisons of Institute and mill caliper results. The difference noted for Mill P appeared to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of four per cent for the current period. The maximum variation for the two preceding periods was nine per cent. The average bursting strength results for Mills F, Q, and S were the same as the corresponding results for the Institute, the average results for Mills B, G, K, and P were higher than those for the Institute, and the average results for the other mills were lower. Agreement between Institute and mill results was very good.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills A, F, K, L, N, and Q were higher than those for the Institute, the average result for Mill O was the same as that for the Institute, and the average results for the other mills were lower. The maximum variation for the current period was eighteen per cent compared with a maximum variation of twenty-one per cent for the two preceding periods. Agreement between the Institute and mill results was generally good. However, the variations for Mills E, H, K, and P appeared to be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills A, F, G, J, K, L, M, N, and Q were higher than those for the Institute, and the average results for the other mills were lower. The maximum variation for the current period was eleven per cent, which was slightly lower than the maximum variation of fourteen per cent for the two preceding periods. As in the case of the machine direction results, agreement between Institute and Mill results was generally good. However, the variations for Mills H, J, and L appeared excessive.

The comparisons of Institute and mill data for individual sample lots are given alphabetically in Tables XXV to XLIII for the various mills. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

The reader's attention is directed to page 3 of this report where the comparison of Institute and mill test data is summarized to show the number of mills (and the percentage of all mills which this number represents) whose average test results for the month of June fall within designated percentages from the average test results obtained at the Institute.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		IPC		In		IPC		Elmendorf Tear, g./sheet		Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	IPC	Mill
185921	WFIS	5/23/60	2	44.2	44.3	+0.1	14.2	14.5	+0.3	110	106	-4	297 ^a	332	+35	363 ^a	376	376	+13
185922	WFIS	5/24/60	2	42.6	42.7	+0.1	14.0	14.0	0.0	114	107	-7	323 ^a	340	+17	341 ^a	408	408	+67
186000	WFIS	6/1/60	2	42.8	42.0	-0.8	13.8	13.8	0.0	113	112	-1	354	339	-15	373 ^a	400	400	+27
186001	WFIS	6/3/60	2	43.0	43.0	0.0	13.4	13.5	+0.1	114	110	-4	331 ^a	324	-7	361 ^a	408	408	+47
186002	WFIS	6/9/60	2	42.7	43.3	+0.6	13.7	13.5	-0.2	118	112	-6	315 ^a	347	+32	366 ^a	404	404	+38
186003	WFIS	6/10/60	2	42.7	42.7	0.0	14.1	14.0	-0.1	108	105	-3	337 ^a	361	+24	365 ^a	405	405	+40
186065	WFIS	6/15/60	2	43.2	44.0	+0.8	14.3	14.2	-0.1	114	106	-8	331 ^a	328	-3	386 ^a	400	400	+14
186066	WFIS	6/16/60	2	42.1	42.7	+0.6	14.3	13.8	-0.5	114	110	-4	334 ^a	327	-7	375 ^a	360	360	-15
Current Mill Average:				42.9	43.1	+0.2	14.0	13.9	-0.1	113	108	-5	328	337	+9	366	395	395	+29

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet			
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill	Diff.	Across
185951	S.F.	5/25/60	7	43.8	-1.0	12.2	11.9	-0.3	112	117	+5	374	418a
186018	S.F.	6/4/60	7	43.3	-0.8	12.0	11.8	-0.2	111	111	0	343a	357a
Current Mill Average:				43.5	-0.9	12.1	11.9	-0.2	111	114	+3	359	387
												347	384
												-12	-3

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

185872	W.F.	5/21/60	2	43.4	43.4	0.0	11.8	11.5	-0.3	109	112	+3	322	313	-9	358a	363	+5
185947	W.F.	5/29/60	2	43.4	42.7	-0.7	11.7	11.7	0.0	122	123	+1	325	321	-4	355a	364	+9
185948	W.F.	5/29/60	2	43.2	42.8	-0.4	11.7	11.7	0.0	115	123	+8	329a	326	-3	357a	378	+21
186038	W.F.	6/10/60	2	43.4	42.7	-0.7	11.4	11.3	-0.1	122	115	-7	313	299	-14	377a	360	-17
186039	W.F.	6/10/60	2	43.5	42.6	-0.9	11.4	11.3	-0.1	121	115	-6	301	286	-15	357a	346	-11
186063	W.F.	6/12/60	2	43.9	42.9	-1.0	11.5	11.4	-0.1	120	116	-4	324	295	-29	374a	347	-27
Current Mill Average:				43.5	42.8	-0.7	11.6	11.5	-0.1	118	117	-1	319	307	-12	363	360	-3

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet							
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across				
No samples submitted																	
TABLE XXIX																	
MILL E -- 42-LB. LINERBOARD																	
185933	W.F.	6/ 1/60	-	44.8	43.0	-1.8	12.3	12.2	-0.1	120	112	-8	322a	270	363a	328	-35
185934	W.F.	6/ 2/60	-	44.3	44.2	-0.1	12.9	12.2	-0.7	123	123	0	318a	283	365a	344	-21
185935	W.F.	6/ 3/60	-	44.2	42.8	-1.4	13.3	13.0	-0.3	110	107	-3	335a	268	360a	333	-27
186049	W.F.	6/ 8/60	-	43.2	43.2	0.0	12.7	12.3	-0.4	111	109	-2	326	299	365a	360	-5
186050	W.F.	6/ 9/60	-	44.6	44.0	-0.6	12.5	12.0	-0.5	118	117	-1	310	293	357a	347	-10
186051	W.F.	6/10/60	-	44.8	44.2	-0.6	12.2	12.0	-0.2	123	117	-6	330	297	373a	380	+7
186099	W.F.	6/16/60	-	43.6	43.4	-0.2	12.4	12.3	-0.1	109	114	+5	311	267	359a	320	-39
186100	W.F.	6/17/60	-	43.6	43.1	-0.5	12.4	12.1	-0.3	109	110	+1	315a	263	341a	323	-18
Current Mill Average:				44.1	43.5	-0.6	12.6	12.3	-0.3	115	114	-1	321	280	360	342	-18

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

185933	W.F.	6/ 1/60	-	44.8	43.0	-1.8	12.3	12.2	-0.1	120	112	-8	322 ^a	270	363 ^a	328	-35
185934	W.F.	6/ 2/60	-	44.3	44.2	-0.1	12.9	12.2	-0.7	123	123	0	318 ^a	283	365 ^a	344	-21
185935	W.F.	6/ 3/60	-	44.2	42.8	-1.4	13.3	13.0	-0.3	110	107	-3	335 ^a	268	360 ^a	333	-27
186049	W.F.	6/ 8/60	-	43.2	43.2	0.0	12.7	12.3	-0.4	111	109	-2	326	299	365 ^a	360	-5
186050	W.F.	6/ 9/60	-	44.6	44.0	-0.6	12.5	12.0	-0.5	118	117	-1	310	293	357 ^a	347	-10
186051	W.F.	6/10/60	-	44.8	44.2	-0.6	12.2	12.0	-0.2	123	117	-6	330	297	373 ^a	380	+7
186099	W.F.	6/16/60	-	43.6	43.4	-0.2	12.4	12.3	-0.1	109	114	+5	311	267	359 ^a	320	-39
186100	W.F.	6/17/60	-	43.6	43.1	-0.5	12.4	12.1	-0.3	109	110	+1	315 ^a	263	341 ^a	323	-18
Current Mill Average:				44.1	43.5	-0.6	12.6	12.3	-0.3	115	114	-1	321	280	360	342	-18

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXX

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight,		Caliper,		Bursting Strength,				Elmendorf Tear,				
				lb.		points		p.s.i. gage				g./sheet		g./sheet		
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	
185917	W.B.	4/29/60	-	44.4	43.9 -0.5	12.1	11.9 -0.2	113	113	0	361	360	- 1	414a	431	+17
185918	W.B.	5/18/60	-	44.8	44.4 -0.4	12.0	11.6 -0.4	119	117	-2	369a	381	+12	411a	420	+9
185919	W.B.	5/22/60	-	43.9	43.3 -0.6	11.8	11.5 -0.3	110	111	+1	351	363	+12	401a	416	+15
Current Mill Average:				44.3	43.9 -0.4	12.0	11.7 -0.3	114	114	0	361	368	+ 7	409	422	+13

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

185914	W.F.	5/9/60	1	43.5	43.1 -0.4	11.8	11.5 -0.3	108	110 +2	267	277 +10	313a	362 +49
185915	W.F.	5/11/60	1	43.4	42.7 -0.7	12.1	11.6 -0.5	106	112 +6	265	277 +12	318a	346 +28
185916	W.F.	5/15/60	1	43.2	42.2 -1.0	12.2	11.6 -0.6	104	106 +2	281	277 -4	324a	348 +24
185919	W.F.	5/23/60	1	43.6	42.9 -0.7	11.9	11.6 -0.3	111	109 -2	283	285 +2	353a	357 +4
186166	W.F.	5/26/60	1	44.2	42.8 -1.4	12.9	12.1 -0.8	106	109 +3	304	289 -15	367a	359 -8
186221	W.F.	5/30/60	1	44.2	43.4 -0.8	12.5	12.3 -0.2	105	109 +4	291a	289 -2	339a	357 +18
186222	W.F.	6/3/60	1	44.4	43.2 -1.2	12.5	12.1 -0.4	103	110 +7	301a	283 -18	349a	361 +12
Current Mill Average:				43.8	42.9 -0.9	12.3	11.8 -0.5	106	109 +3	284	283 -1	338	356 +18

*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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		IPC		In		Elmendorf Tear, g./sheet		Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill
186052	W.F.	6/ 5/60	-	43.6	42.6	-1.0	12.7	12.3	-0.4	111	105	-6	354a	295	-59	367a	341
186053	W.F.	6/ 5/60	-	43.0	42.2	-0.8	12.5	12.0	-0.5	110	108	-2	350	276	-74	383a	322
186223	W.F.	6/13/60	-	43.2	42.4	-0.8	12.3	12.2	-0.1	106	107	+1	347a	295	-52	343a	314
186224	W.F.	6/13/60	-	43.5	42.4	-1.1	12.1	12.1	0.0	108	106	-2	356a	293	-63	347a	317
Current Mill Average:				43.3	42.4	-0.9	12.4	12.1	-0.3	109	107	-2	352	290	-62	360	324

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

No samples submitted

*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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		In		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
185927	WFLS	5/20/60	2	44.4	43.5 -0.9	13.8	13.7 -0.1	107	102 -5	339	338	363a	421 +58
185946	WFLS	5/23/60	2	44.0	43.2 -0.8	13.4	13.3 -0.1	104	104 0	322	305	351a	404 +53
185998	WFLS	5/30/60	2	43.6	43.1 -0.5	13.6	13.0 -0.6	103	109 +6	331a	288	362a	379 +17
186165	---	6/10/60	2	44.4	43.3 -1.1	13.8	13.5 -0.3	113	111 -2	321a	298	375a	413 +38
Current Mill Average:				44.1	43.3 -0.8	13.6	13.4 -0.2	107	106 -1	328	307	363	404 +41

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

186069	W.F.	5/13/60	2	44.4	44.1 -0.3	12.0	11.7 -0.3	114	118 +4	364	407	414a	439 +25
Current Mill Average:				44.4	44.1 -0.3	12.0	11.7 -0.3	114	118 +4	364	407	414	439 +25

*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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. gage		In		Elmendorf Tear, g./sheet		Across	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
185923	W.F.	4/20/60	2	43.3	43.0 -0.3	12.5	12.5 0.0	118	116 -2	294	350	367 ^a	406	367 ^a	+39
185924	W.F.	5/18/60	2	42.6	----	12.2	----	116	----	282	----	339 ^a	----	339 ^a	----
185925	W.F.	5/18/60	2	43.3	----	12.4	----	116	----	313	----	347 ^a	----	347 ^a	----
186004	W.F.	5/15/60	2	42.6	0.0	12.0	12.1 +0.1	118	113 -5	301	330	353 ^a	382	353 ^a	+29
186005	W.F.	5/17/60	2	43.6	0.0	11.9	12.0 +0.1	118	114 -4	319 ^a	342	373 ^a	399	373 ^a	+26
186006	W.F.	5/17/60	2	44.0	0.0	12.6	12.8 +0.2	113	111 -2	330 ^a	331	379 ^a	404	379 ^a	+25
186007	W.F.	5/15/60	1	44.0	-0.3	12.6	12.6 0.0	116	110 -6	323 ^a	333	360 ^a	393	360 ^a	+33
186008	W.F.	5/15/60	1	43.5	-0.1	11.9	12.1 +0.2	121	113 -8	317 ^a	335	367 ^a	399	367 ^a	+32
Current Mill Average:				43.4	43.4 0.0	12.3	12.4 +0.1	117	113 -4	310	337	360	397	360	+37

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		In Elmendorf Tear, g./sheet		Across	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
185913	WFLS	5/11/60	1	43.2	-0.6	13.6	12.7	-0.9	108	107	-1	297	347
135949	WFLS	5/12/60	1	43.3	-0.9	13.6	13.2	-0.4	108	106	-2	337	364
185952	WFLS	5/13/60	1	43.3	-0.6	13.6	13.2	-0.4	109	106	-3	341a	351
185999	WFLS	5/23/60	1	43.8	-0.6	13.0	12.6	-0.4	124	115	-9	367	364
186010	WFLS	5/24/60	1	43.4	-0.3	12.8	12.6	-0.2	120	115	-5	374a	359
186067	WFLS	6/ 6/60	1	40.7	+0.1	11.8	11.7	-0.1	116	112	-4	323	349
186068	WFLS	6/ 7/60	1	40.4	+0.7	11.9	11.6	-0.3	113	112	-1	333	355
186217	WFLS	6/14/60	1	43.8	-0.7	13.2	12.9	-0.3	105	106	+1	315a	381
186226	WFLS	6/15/60	1	44.0	-1.0	13.2	12.9	-0.3	110	108	-2	344a	384
Current Mill Average:				42.9	-0.5	13.0	12.6	-0.4	113	110	-3	337	362
												378	409
												423	+50
												384	-9
												391	+1
												416	+33
												416	+46
												391	+24
												390	+27
												442	+60
												383a	+45

*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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XXIX

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet								
				IPC Mill Diff.		IPC Mill Diff.		IPC Mill Diff.		In		Across						
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.					
185920	WFLS	5/24/60	1	43.8	43.0	-0.8	13.6	13.1	-0.5	112	107	-5	287	319	+32	387a	396	+9
185931	WFLS	5/26/60	1	44.0	43.1	-0.9	13.6	13.1	-0.5	110	107	-3	313	312	-1	409a	398	-11
185997	WFLS	6/3/60	1	43.8	43.4	-0.4	13.7	13.1	-0.6	106	108	+2	320	307	-13	385a	401	+16
186163	WFLS	6/13/60	1	43.9	43.0	-0.9	13.2	12.5	-0.7	111	109	-2	331	327	-4	415a	363	-52
186164	WFLS	6/14/60	1	44.0	42.7	-1.3	13.3	12.6	-0.7	116	106	-10	348a	333	-15	439a	405	-34
Current Mill Average:				43.9	43.0	-0.9	13.5	12.9	-0.6	111	107	-4	320	320	0	407	393	-14

TABLE XL

MILL P -- 42-LB. LINERBOARD

185942	W.F.	5/3/60	1	43.4	-0.8	13.5	12.6	-0.9	109	109	0	283	257	-26	343a	341	-2
185943	W.F.	5/6/60	1	42.5	-0.5	12.9	12.1	-0.8	111	112	+1	283	230	-53	337a	326	-11
185944	W.F.	5/9/60	1	43.5	-1.7	13.4	12.1	-1.3	108	112	+4	301	237	-64	333a	325	-8
185945	W.F.	5/12/60	1	43.7	-0.5	13.3	12.8	-0.5	111	111	0	278	267	-11	347a	349	+2
Current Mill Average:				43.3	-0.9	13.3	12.4	-0.9	110	111	+1	286	248	-38	340	335	-5

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XLI
MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet								
				lb.	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.				
186011	---	4/10/60	1	42.4	+0.1	12.9	12.7	-0.2	111	114	+3	305a	317	+12	369a	400	+31	
186012	---	4/ 9/60	1	42.3	+1.0	12.8	12.6	-0.2	113	112	-1	309a	317	+8	375a	408	+33	
186013	---	4/10/60	1	43.0	+0.4	12.9	12.8	-0.1	121	117	-4	315a	318	+3	374a	395	+21	
186014	---	4/10/60	1	44.0	-0.4	13.1	12.8	-0.3	118	114	-4	328a	332	+4	377a	392	+15	
186015	---	4/25/60	1	43.8	-0.4	13.0	12.8	-0.2	112	112	0	340a	344	+4	382a	386	+4	
186016	---	4/26/60	1	43.4	+0.1	12.8	12.6	-0.2	113	114	+1	314a	313	-1	363a	373	+10	
186017	---	4/28/60	1	44.1	-0.1	13.1	12.8	-0.3	118	119	+1	328	324	-4	395a	395	0	
Current Mill Average:				43.3	43.4	+0.1	12.9	12.7	-0.2	115	115	0	320	324	+4	376	393	+17

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

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

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight,		Caliper, points		Bursting Strength, p.s.i.		In		g./sheet		Across	
				IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.
185975	W.F.	5/21/60	-	43.5	-0.7	12.5	11.8	113	106	367 ^a	348	394 ^a	-19	389	-5
185976	W.F.	5/21/60	-	43.8	-0.6	12.2	11.7	114	112	369 ^a	365	397 ^a	-4	376	-21
185977	W.F.	5/26/60	-	43.8	-1.0	12.7	12.2	110	110	376 ^a	336	407 ^a	-40	381	-26
185978	W.F.	5/30/60	-	44.0	-0.8	12.7	12.0	105	106	371	363	401 ^a	-8	384	-17
186070	W.F.	6/ 4/60	-	44.0	-0.4	12.4	11.8	106	113	367 ^a	331	405 ^a	-36	357	-48
186071	W.F.	6/ 7/60	-	44.2	-1.0	13.1	12.5	111	110	361 ^a	359	396 ^a	-2	377	-19
186072	W.F.	6/ 9/60	-	44.1	-0.5	12.5	12.0	114	110	363	360	405 ^a	-3	393	-12
Current Mill Average:				43.9	-0.7	12.6	12.0	110	110	367	352	401	-15	380	-21

^aThis 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.

COMPARISON OF INSTITUTE AND MILL DATA--JUNE 1 THROUGH JUNE 30, 1960 (continued)

TABLE XLIII

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
185926	WF1S	5/25/60	2	44.6	43.2 -1.4	13.9	13.4 -0.5	114	107 -7	363	408a
185950	WF1S	5/27/60	2	43.6	42.4 -1.2	13.1	12.8 -0.3	108	110 +2	372a	428a
186009	----	6/ 7/60	2	42.7	41.8 -0.9	13.0	12.8 -0.2	107	108 +1	339	409a
186019	----	6/ 8/60	2	42.9	41.8 -1.1	13.1	12.6 -0.5	110	115 +5	359	428a
186040	----	6/ 9/60	2	43.9	42.7 -1.2	13.3	13.0 -0.3	110	105 -5	370	426a
186097	WF1S	6/14/60	1	43.9	43.0 -0.9	12.8	12.3 -0.5	111	109 -2	364a	407a
186098	WF1S	6/15/60	1	44.1	43.2 -0.9	12.8	12.5 -0.3	111	106 -5	377a	412a
186225	----	6/21/60	2	45.8	44.6 -1.2	13.2	13.1 -0.1	107	109 +2	419a	441a
Current Mill Average:				43.9	42.8 -1.1	13.2	12.8 -0.4	110	109 -1	370	420

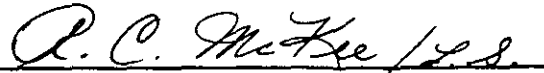
^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

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

THE INSTITUTE OF PAPER CHEMISTRY



W. N. Hubert, Research Aide
Container Section



R. C. McKee, Chief, Container Section

