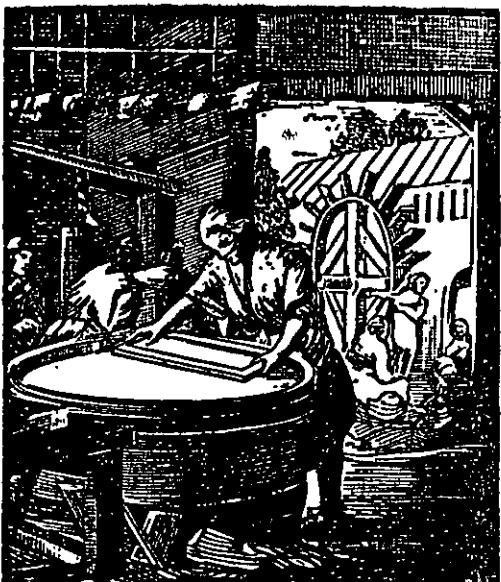


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INSTITUTE OF  
PAPER CHEMISTRY  
*Appleton, Wisconsin*

## **CONTINUOUS BASELINE STUDY**

**Project 1108-13**

**Progress Report 164**

**to**

**FOURDRINIER KRAFT BOARD INSTITUTE, INC.**

**December 1, 1960**

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 164

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

December 1, 1960

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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 November, one hundred and twenty sample lots of 42-lb. fourdrinier kraft linerboard representing the production of sixteen mills were evaluated at The Institute of Paper Chemistry. Shown below are the maximum and minimum current mill average for each test (the current

mill average is the average of the results obtained on all sample lots of linerboard submitted from a given mill during the current period); 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	42.6	43.6
Caliper, pt.	13.4	11.6	12.6
Bursting strength, p.s.i. gage	117	98	109
Machine direction Elmendorf Tear, g./sheet	367	291	328
Cross-machine direction Elmendorf tear, g./sheet	405	334	371

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 November 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					
	$\pm 0.5$	$\pm 1$	$\pm 2$	$\pm 3$	$\pm 4$	$\pm 5$
Basis weight						
Number of mills	1	7	15	16		
Percentage of all mills	6.2	43.8	93.8	100.0		
Caliper						
Number of mills	1	5	13	14	15	16
Percentage of all mills	6.2	31.2	81.2	87.5	93.8	100.0
Bursting strength						
Number of mills	3	5	8	12	13	14
Percentage of all mills	18.8	31.2	50.0	75.0	81.2	87.5
Tearing strength, in.						
Number of mills	1	2	3	5	6	7
Percentage of all mills	6.7	13.3	20.0	33.3	40.0	46.7
Tearing strength, across						
Number of mills	1	4	6	8	13	14
Percentage of all mills	6.7	26.7	40.0	53.3	86.7	93.3

## 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 November. 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.

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

During the month of November, one hundred and twenty different sample lots of 42-lb. fourdrinier kraft linerboard from sixteen different F.K.I. mills were evaluated 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 November 1, 1959, to October 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 43.6 lb., and the cumulative F.K.I. average basis weight is also 43.6 lb. Hence, the F.K.I. index for basis weight determined in per cent as previously described is 100.0 and indicates that the current

F.K.I. average basis weight is the same as the cumulative F.K.I. average.

TABLE I  
NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	9
B	9
C	10
D	8
E	7
F	10
G	0
H	8
I	2
J	0
K	14
L	6
M	0
N	6
O	5
P	2
Q	6
S	9
T	9
Total	120

TABLE II  
SUMMARY OF COMPOSITE MILL AVERAGES--NOVEMBER 1 THROUGH NOVEMBER 30, 1960

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	In Machine	Elmendorf Tear, g./sheet	Cross Machine
A	43.0	11.6	110	360	400	
B	43.7	12.6	106	356	403	
C	43.0	12.7	111	291	324	
D	44.4	12.6	112	336	365	
E	43.4	12.5	111	299	375	
F	43.1	13.4	106	331	363	
G	No samples submitted.					
H	43.7	12.2	109	322	359	
I	43.6	12.1	117	347	366	
J	No samples submitted.					
K	43.5	12.8	110	320	363	
L	44.0	13.0	107	367	405	
M	No samples submitted.					
N	44.3	12.6	114	313	379	
O	43.9	12.3	102	293	345	
P	42.6	12.3	98	341	378	
Q	44.2	12.1	117	327	365	
R	43.6	13.2	110	343	375	
S	43.8	13.0	106	299	354	
T						
Current FKI Average:	43.6	12.6	109	328	371	
Cumulative FKI Average:	43.6	12.7	110	332	374	
FKI Index, %	100.0	99.2	99.1	98.8	99.2	

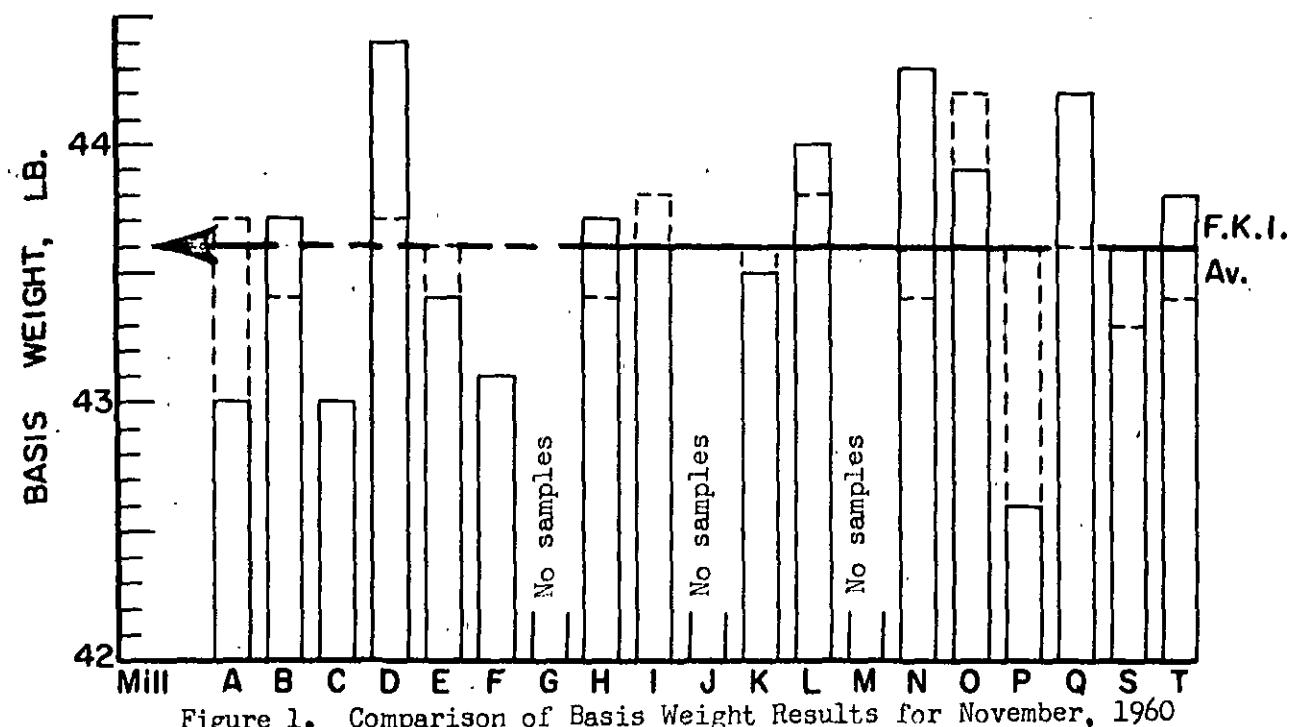


Figure 1. Comparison of Basis Weight Results for November, 1960

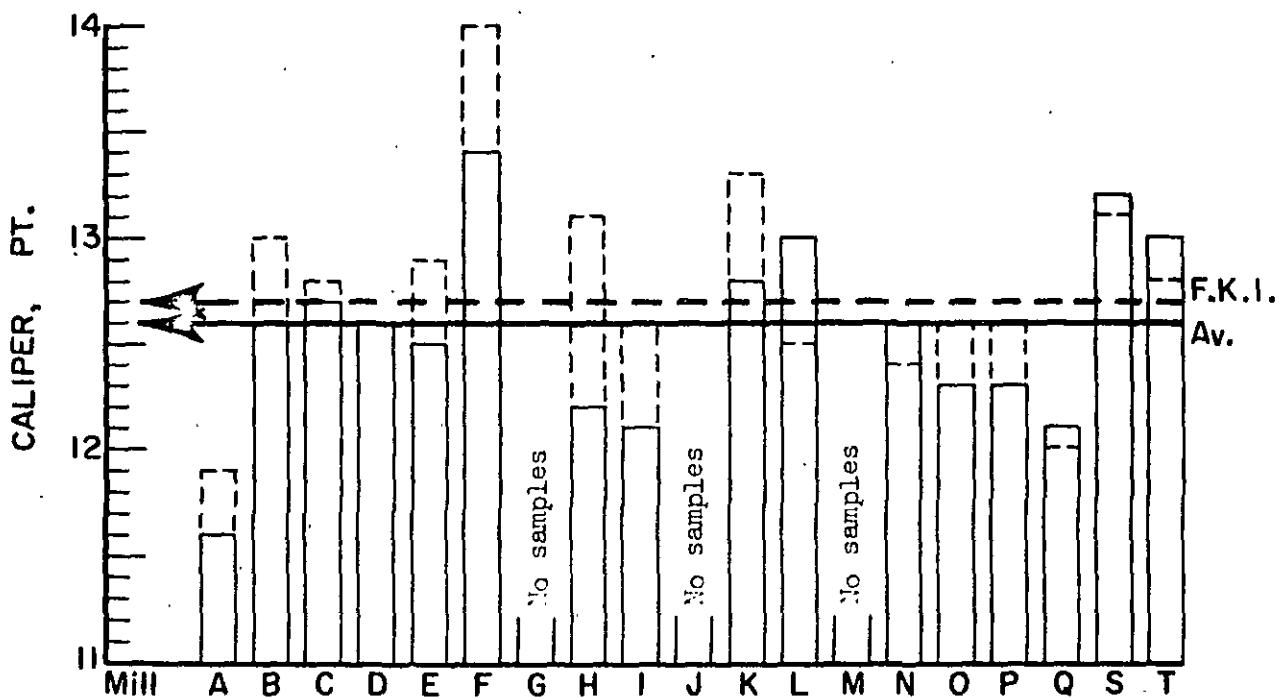


Figure 2. Comparison of Caliper Results for November, 1960

— Current mill average  
- - - Cumulative mill average

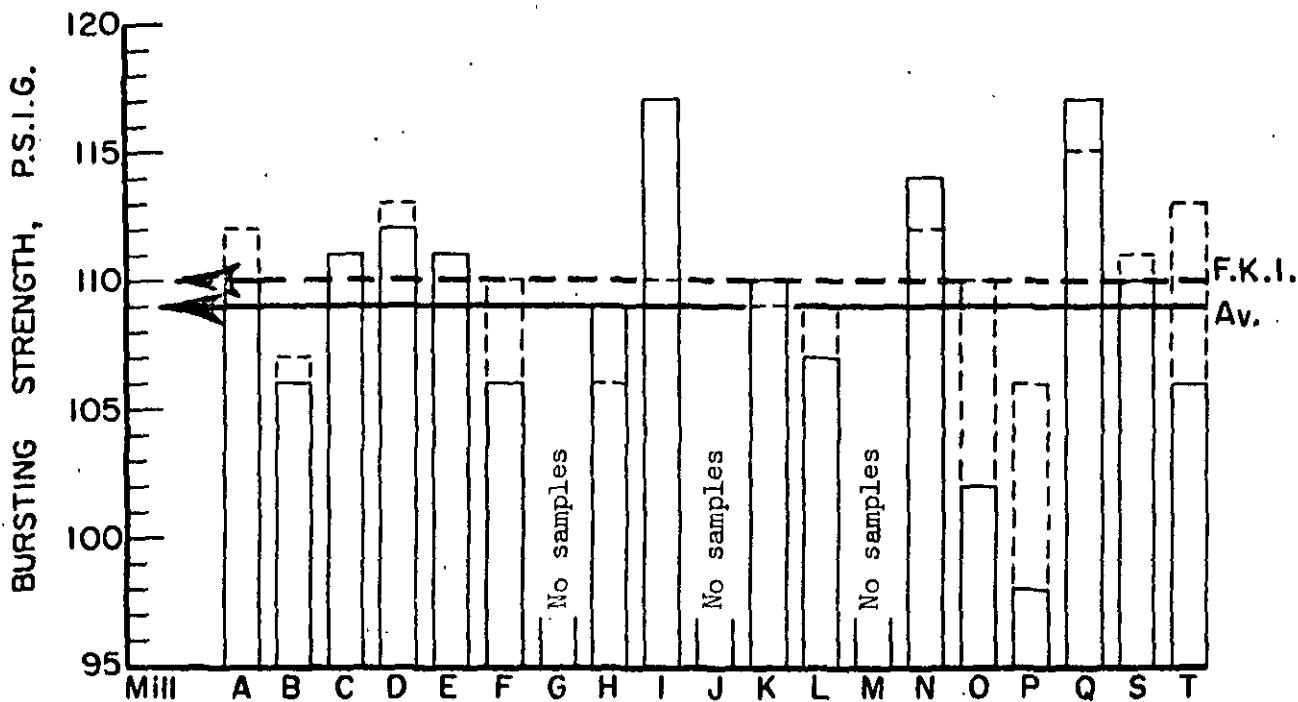


Figure 3. Comparison of Bursting Strength Results for November, 1960

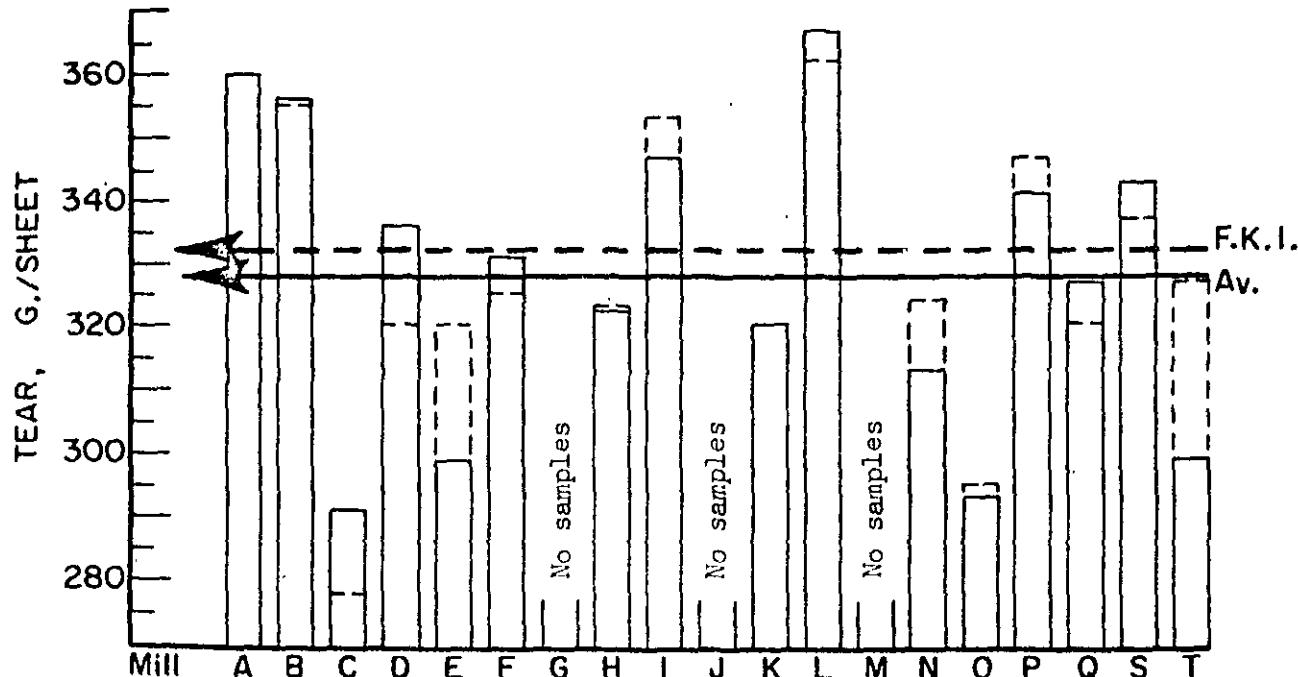


Figure 4. Comparison of Machine-Direction Tear Results for November, 1960

— Current mill average  
- - - Cumulative mill average

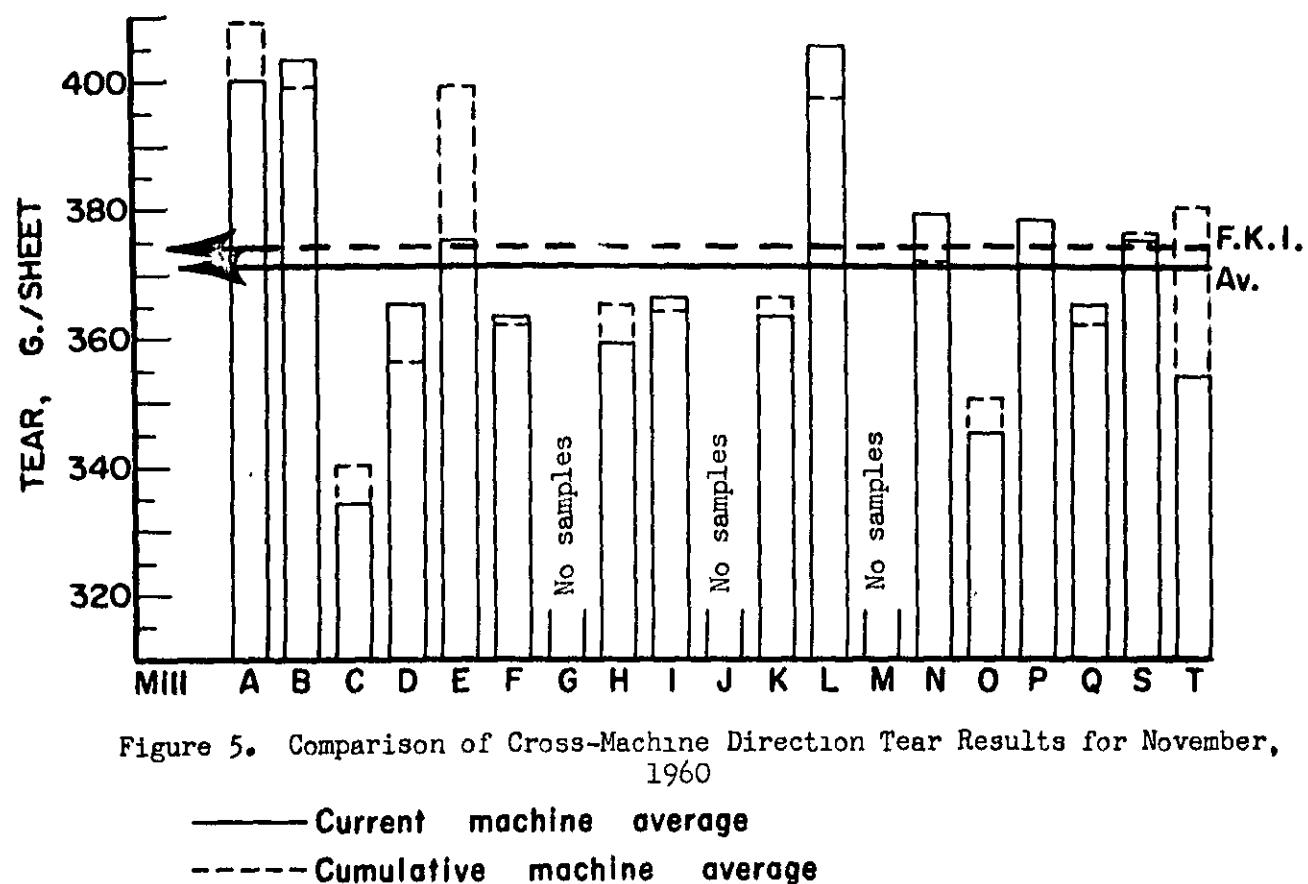


Figure 5. Comparison of Cross-Machine Direction Tear Results for November, 1960

— 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 D 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 42.6 lb. was associated with Mill P and was 1.4% higher than the 42-lb. specification. 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 decreased slightly from 43.8 lb. to 43.6 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 A to a high of 13.4 points for Mill F. The current F.K.I. caliper average was 12.6 points, which was slightly lower than the cumulative F.K.I. average of 12.7 points.

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 98 for Mill P to a high of 117 for Mills I and Q. The current F.K.I. bursting strength average was 109 p.s.i. gage, which was slightly lower than the cumulative F.K.I. average of 110 p.s.i. gage.

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 L had the highest machine direction

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

Mill Code	Per Cent
A	+2.4
B	+4.0
C	+2.4
D	+5.7
E	+3.3
F	+2.6
G	--
H	+4.0
I	+3.8
J	--
K	+3.6
L	+4.8
M	--
N	+5.5
O	+4.5
P	+1.4
Q	+5.2
S	+3.8
T	+4.3

tear average of 367 g./sheet, and Mill C had the lowest average of 291 g./sheet. It may be further noted that the highest cross-machine direction tear average of 405 g./sheet was associated with Mill L and that the lowest average of 334 g./sheet was associated with Mill C. 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 lower 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. average for basis weight is the same as the cumulative F.K.I. average, and the current F.K.I. averages for caliper, bursting strength, machine direction and cross-machine direction Elmendorf tear are slightly lower than their respective cumulative F.K.I. averages.

In order to compare the variation within a given mill, the test results for the participating mills have been tabulated in Table 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 from a given mill 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:

$$\frac{\text{Current mill average}}{\text{Cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{Current mill average}}{\text{Cumulative mill average}} \times 100 = \text{Mill index (\%)}$$

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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960

TABLE III  
MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, points			Bursting Strength, P.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
187436	W.B.	11/ 1/60	10/18/60	-	43.2	40.4	42.2	12.9	11.3	11.8	142	87	110	416	336	368 <sup>a</sup>
187472	W.B.	11/ 7/60	10/23/60	-	44.4	41.8	43.4	12.2	10.8	11.5	126	91	108	440	360	389 <sup>a</sup>
187473	W.B.	11/ 7/60	10/25/60	-	43.8	40.4	42.6	11.7	10.5	11.1	125	101	113	408	312	357 <sup>a</sup>
187580	---	11/15/60	10/27/60	-	44.0	41.0	43.3	11.6	11.0	11.2	117	86	105	400	304	356 <sup>a</sup>
187581	W.B.	11/15/60	11/ 5/60	-	44.0	42.0	43.2	12.1	11.5	11.9	134	92	111	400	312	362 <sup>a</sup>
187582	4.F.B.	11/15/60	11/ 6/60	-	43.0	40.2	42.0	12.2	11.0	11.6	120	88	107	408	328	363 <sup>a</sup>
187625	W.B.	11/21/60	11/ 9/60	-	44.0	41.6	43.6	12.0	10.9	11.5	122	86	110	352	280	329 <sup>a</sup>
187626	W.B.	11/21/60	11/10/60	-	44.0	42.2	43.4	12.0	11.1	11.6	129	91	111	392	296	357 <sup>a</sup>
187627	W.B.	11/21/60	11/14/60	-	43.8	41.8	43.3	12.3	11.0	11.6	133	93	113	432	280	362
Current Mill Average:					43.0			11.6			110			360	400	
Cumulative Mill Average:					43.7			11.9			112			360	409	
Mill Factor, %					98.4			97.5			98.2			100.0	97.8	
Mill Index, %					98.6			91.3			100.0			108.4	107.0	

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

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

TABLE IV  
MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, points			Purstring Strength, p.s.i. <del>base</del>			Elmendorf Tear, g./sheet			
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
187424	KFLS	11/ 1/60	10/24/60	2	42.6	41.6	42.0	12.3	11.1	11.8	144	86	111	408	304	353 <sup>a</sup>	
187440	KFLS	11/ 2/60	10/26/60	1	45.2	43.2	44.5	13.2	12.0	12.5	128	83	112	384	312	432	
187555	KFLS	11/14/60	11/ 3/60	1	46.0	43.6	44.6	13.0	12.1	12.7	127	76	103	384	312	456	
187556	KFLS	11/14/60	11/ 4/60	2	44.4	42.6	44.0	13.2	12.1	12.7	133	78	105	408	336	369 <sup>a</sup>	
187592	KFLS	11/16/60	11/ 4/60	1	44.6	43.6	44.1	12.9	12.3	12.6	126	84	108	400	344	367 <sup>a</sup>	
187593	KFLS	11/16/60	11/ 9/60	2	44.8	41.8	44.0	13.8	12.9	13.3	127	79	104	400	336	376 <sup>a</sup>	
187733	KFLS	11/22/60	11/15/60	1	44.0	41.8	43.4	13.1	12.1	12.6	125	79	102	368	320	341 <sup>a</sup>	
187766	KFLS	11/23/60	11/16/60	1	43.8	40.4	42.0	13.0	12.0	12.3	124	80	102	360	288	328 <sup>a</sup>	
187767	KFLS	11/23/60	11/16/60	2	45.4	44.0	44.6	13.0	12.1	12.7	132	84	110	400	344	372 <sup>a</sup>	
Current Mill Average:					43.7			12.6				106			356	403	
Cumulative Mill Average:					43.4			13.0				107			355	399	
Mill Factor, %					100.7			96.9				99.1			100.3	101.0	
Mill Index, %					100.2			99.2				96.4			107.2	107.8	

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

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

TABLE V  
MILL C -- 42-LB. LINERBOARD

No.	Finish	Date Recd.	Date Yade	No.	Basis Weight, 1lb.	Caliper, Points	Bursting Strength, P.S.I. Gauge			Elmendorf Tear, In. g./sheet Across			
							Max.	Min.	Avg.	Max.	Min.	Avg.	
18774	W.F.	11/2/60	9/20/60	1	43.2	42.4	42.9	12.7	11.9	12.2	133	77	107
18775	W.F.	11/2/60	9/24/60	1	43.4	42.0	42.8	12.7	11.8	12.3	127	94	113
18776	W.F.	11/2/60	9/26/60	1	44.0	42.0	43.0	13.7	12.6	13.0	142	85	115
18777	W.F.	11/2/60	9/29/60	1	42.6	40.0	42.0	12.7	11.6	12.2	131	82	108
18778	W.F.	11/2/60	10/4/60	1	44.4	44.0	44.1	13.6	12.8	13.1	131	61	116
18779	W.F.	11/2/60	10/7/60	1	44.0	42.2	43.6	13.2	12.6	12.9	137	80	116
18780	W.F.	11/2/60	10/10/60	1	44.0	42.2	43.5	13.2	12.9	13.0	137	80	116
18781	W.F.	11/2/60	10/13/60	1	43.8	42.0	42.4	12.2	11.8	12.1	131	68	114
18782	W.F.	11/2/60	10/19/60	1	44.2	43.8	43.9	13.2	12.9	13.0	130	80	112
18783	W.F.	11/2/60	10/22/60	1	42.8	42.0	42.2	13.5	12.8	13.1	115	80	101
Current Mill Average:							43.0	42.7	42.7	111	291	334	
Cumulative Mill Average:							43.0	42.8	42.8	111	278	340	
Mill Factor:							100.0	99.2	100.0	104.7	96.2		
Mill Index:							98.6	100.0	100.9	87.7	89.3		

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

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

TABLE VI

HILL D -- 42-LB. LINERBOARD

Test No.	Finish	Date Recd.	Date Vade	Date No.	Basis Weight, lb.	Caliper, points	Bursting Strength, P.S.I. gauge			Elmendorf Tear, g./sheet		
							Max.	Min.	Avg.	Max.	Min.	Avg.
187450	.R.	11/ 7/60	10/26/60	-	44.6	43.4	44.1	12.9	12.2	12.5	320	362 <sup>a</sup>
187450	.R.	11/ 7/60	10/27/60	-	45.0	43.4	44.0	13.7	12.5	13.1	360	304
187450	.R.	11/ 7/60	10/28/60	-	44.4	43.4	43.8	13.3	12.4	12.8	376	328
187450	.R.	11/ 10/60	11/ 2/60	-	44.8	43.6	44.2	12.4	11.8	12.1	102	120
187450	.R.	11/ 10/60	11/ 3/60	-	43.8	42.4	43.3	12.9	12.2	12.5	133	120
187536	.R.	11/11C/60	11/ 4/60	-	44.4	43.4	44.0	13.8	12.6	13.0	127	89
187760	.R.	11/23/60	11/17/60	-	46.0	45.4	45.8	13.1	11.9	12.5	102	116
187760	.R.	11/23/60	11/18/60	-	46.0	45.4	45.8	13.0	12.0	12.6	97	110
Current Hill average						44.4	12.6	112			336	365
Cumulative Hill average:						43.7	12.6	113			320	356
Hill Factor, %						101.6	100.0	99.1			105.0	102.5
Hill Incr., %						101.8	99.2	101.8			101.2	97.6

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

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

TABLE VII  
MILL E -- 42-LB. LINERBOARD

Test No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, points			Bursting Strength, P.s.i. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
127457	TIS	11/ 7/60	10/17/60	1	44.0	42.4	43.5	13.0	12.0	12.6	123	100	111	352	240	292
127458	FIS	11/ 7/60	10/19/60	1	44.0	45.6	43.9	15.1	12.0	12.7	124	94	107	336	272	305
127459	TIS	11/ 7/60	10/21/60	1	44.2	42.6	43.4	12.9	11.9	12.4	130	92	112	336	272	305
127460	FIS	11/ 7/60	10/27/60	1	44.0	42.2	43.4	13.2	12.0	12.5	132	93	113	320	248	285a
127461	TIS	11/14/60	10/31/60	1	43.8	42.0	43.0	13.0	11.6	12.4	123	98	111	360	264	296a
127462	FIS	11/14/60	11/ 1/60	1	44.0	42.0	42.8	13.0	11.5	12.3	132	85	111	368	256	310a
127550	TIS	11/14/60	11/15/60	1	44.2	43.2	43.8	12.9	12.0	12.4	133	93	115	352	248	304a
127552	FIS	11/22/60												432	344	372a
Current Mill Average					43.4			12.5			111			299		375
Cumulative Mill Average					43.6			12.9			111			320		399
Mill Factor, %					99.5			96.9			100.0			93.4		94.0
Mill Index, %					99.5			98.4			100.9			90.1		100.3

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

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

TABLE VIII  
MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Rec'd.	Date Made	Men. No.	Basis Weight, lb.	Caliper, points	Bursting Strength, P.s.t. BasE			Elmendorf Tear, g./sheet		
							Max.	Min.	Av.	Max.	Min.	Av.
127-21	F1S	10/31/60	10/17/60	2	45.0	42.0	43.5	13.8	13.4	12.5	82	110
127-25	F1S	10/31/60	10/18/60	2	42.5	42.0	42.9	14.0	12.8	11.4	77	100
127-30	F1S	10/31/60	10/21/60	2	45.0	45.0	45.9	15.0	15.3	12.2	82	109
127-31	F1S	10/31/60	10/21/60	2	44.0	42.0	43.1	13.2	12.4	12.9	112	112
127-32	F1S	10/31/60	10/21/60	2	44.2	42.0	42.6	12.7	12.7	12.5	100	112
127-35	F1S	10/31/60	11/1/60	2	44.1	42.0	42.9	14.2	13.1	13.7	127	84
127-52	F1S	11/14/60	11/1/60	2	44.2	43.0	43.8	14.1	13.1	13.6	124	87
127-55	F1S	11/14/60	11/1/60	2	44.2	42.2	43.2	14.0	13.0	13.5	130	85
127-57	F1S	11/14/60	11/10/60	2	44.2	42.2	43.2	14.0	13.5	13.0	109	109
127-59	F1S	11/14/60	11/14/60	2	44.0	42.2	43.0	14.1	13.1	13.5	121	83
127-60	F1S	11/18/60	11/15/60	2	43.0	41.8	42.2	13.8	12.9	13.3	120	90
Current Mill Average					43.1		13.4		106		331	363
Cumulative Mill Average					43.1		14.0		110		325	362
Mill Factor, %					100.0		95.7		96.4		101.8	100.3
Mill Index, %					98.9		105.5		96.4		99.7	97.1

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

SUMMARY OF INSTITUTE DATA—NOVEMBER 1 THROUGH NOVEMBER 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.t. lage			Elmendorf Tear, g./sheet		
					Max.	Min.	Max.	Min.	Max.	Min.	Av.	Max.	Min.	Av.
No samples submitted.														

TABLE X

MILL H -- 42-LB. LINERBOARD													
187474	"F.	11/7/60	10/17/60	1	44.2	42.2	43.8	12.9	12.0	12.3	127	83	109
187475	"F.	11/7/60	10/15/60	1	43.8	42.0	42.9	12.6	12.0	12.2	124	80	107
187476	"F.	11/7/60	10/16/60	1	44.4	43.6	44.1	13.0	12.0	12.6	128	91	107
187477	"F.	11/7/60	10/20/60	1	44.8	43.8	44.1	13.0	12.0	12.3	126	103	115
187508	"F.	11/21/60	11/1/60	1	44.2	43.8	44.0	12.5	12.0	12.3	127	78	107
187609	"F.	11/21/60	11/5/60	1	46.0	43.8	44.4	13.0	11.9	12.4	139	100	115
187610	"F.	11/21/60	11/6/60	1	44.0	42.2	43.5	12.3	11.9	12.0	114	86	104
187611	"F.	11/21/60	11/10/60	1	44.0	41.8	42.8	12.1	11.1	11.8	135	83	105
Current Mill Average													
					43.7			12.2			109		322
Cumulative Mill Average													
					43.4			13.1			106		323
Mill Factor, %													
					100.7			93.1			102.8		99.7
Mill Index, %													
					100.2			96.1			99.1		97.0
													96.0

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

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

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1b.			Caliper, points			Bursting Strength, P.s.i. gage			Elmendorf Tear, In. g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
187516	"F.	11/ 9/60	10/26/60	-	44.8	42.4	44.0	12.9	11.8	12.3	129	100	116	376	320	345 <sup>a</sup>
187517	r.F.	11/ 9/60	10/25/60	-	44.2	42.2	43.2	12.3	11.5	11.9	134	92	118	400	296	348 <sup>a</sup>
Current Mill Average					43.6			12.1			117			347		
Cumulative Mill Average					43.8			12.6			110			353		
Mill Factor, %					99.5			96.0			106.4			98.3		
Mill Index, %					100.0			95.3			106.4			104.5		
																97.9

TABLE XII

MILL J -- 42-LB. LINERBOARD

No samples submitted.

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

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

TABLE XIII  
MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, Points			Bursting Strength, p.s.i. per sq. in.			Elmendorf Tear, g./sheet across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
187426	FLS	10/28/60	10/17/60	2	45.8	43.0	44.2	13.9	12.2	13.1	121	95	109	424	312	318a
187427	FLS	10/28/60	10/18/60	2	44.0	42.0	42.8	13.2	12.2	12.8	127	94	109	336	264	300
187432	FLS	10/31/60	10/19/60	2	44.0	43.0	43.7	13.1	12.9	13.0	122	100	111	360	272	218a
187462	FLS	11/7/60	10/24/60	2	44.8	43.4	44.0	13.5	12.4	12.9	123	93	109	376	296	329a
187463	FLS	11/7/60	10/25/60	2	43.6	42.0	42.8	13.1	12.4	12.8	115	88	104	352	264	299a
187464	FLS	11/7/60	10/26/60	2	42.6	41.8	42.5	13.0	12.1	12.6	120	86	105	344	272	305a
187465	FLS	11/7/60	10/27/60	2	44.2	43.6	44.0	13.1	12.2	12.8	135	94	115	400	296	359a
187515	FLS	11/9/60	10/28/60	2	44.4	43.2	43.8	13.0	12.3	12.7	141	95	116	384	304	343a
187519	FLS	11/9/60	10/28/60	2	44.2	43.0	43.8	13.3	12.6	12.9	127	88	109	344	272	313a
187523	FLS	11/15/60	11/4/60	2	44.0	42.0	43.0	12.9	12.1	12.5	127	95	112	328	264	293a
187524	FLS	11/15/60	11/5/60	2	43.0	42.0	42.4	12.9	12.0	12.4	121	93	107	352	240	298a
187612	FLS	11/21/60	11/4/60	2	44.2	42.8	43.8	13.1	12.1	12.5	127	91	110	368	288	338a
187613	FLS	11/21/60	11/6/60	2	44.2	43.0	43.8	13.1	12.1	12.6	125	98	112	352	304	325a
187729	FLS	11/25/60	11/10/60	2	45.0	44.0	44.2	14.0	13.1	13.6	119	92	107	352	296	323a
Current Mill Average:					43.5			12.8			110			320		363
Cumulative Mill Average:					43.6			13.3			109			320		366
Mill Factor, %					99.8			96.2			100.9			100.0		99.2
Mill Index, %					99.8			100.8			100.0			96.4		97.1

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

Note: The number of linerboard samples evaluated for this mill during the current period was larger than usual because some of the samples were received too late for inclusion in the previous report.

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

TABLE XIV

MILL 1 -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, points			Bursting Strength, P.s.i. gage			Elmendorf Tear, g./sheet Across					
					Max.	Mn.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
187734	M.F.	11/22/60	10/21/60	-	45.2	42.6	44.2	13.8	12.3	13.1	95	110	432	328	391 <sup>a</sup>	512	376	425 <sup>a</sup>	
187735	M.F.	11/22/60	10/23/60	-	44.2	44.0	44.1	13.2	12.3	12.9	83	106	416	336	377 <sup>a</sup>	472	360	411 <sup>a</sup>	
187736	M.F.	11/22/60	10/27/60	-	44.2	43.2	43.9	13.9	12.1	13.3	119	78	103	392	304	351 <sup>a</sup>	448	376	401 <sup>a</sup>
187737	M.F.	11/22/60	10/28/60	-	44.0	42.4	43.6	14.0	12.1	13.0	128	92	109	368	320	344 <sup>a</sup>	416	344	383 <sup>a</sup>
187738	M.F.	11/22/60	11/1/60	-	45.4	43.8	44.4	13.7	11.9	12.7	125	88	107	416	328	369 <sup>a</sup>	448	360	397 <sup>a</sup>
187739	M.F.	11/22/60	11/3/60	-	44.8	42.4	44.0	13.7	12.0	12.9	131	84	107	400	344	371 <sup>a</sup>	464	376	413 <sup>a</sup>
Current Mill Average:					44.0			13.0			107			367			405.		
Cumulative Mill Average:					43.8			12.5			109			362			397		
Mill Factor, %					100.5			104.0			98.2			101.4			102.0		
Mill Index, %					100.9			102.4			97.3			110.5			108.3		

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

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

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper, points	Bursting Strength, P.s.i. Ease			Elastomeric Tear, E./sheet		
					Max.	Min.	Avg.		Max.	Min.	Avg.	Max.	Min.	Avg.
No samples submitted.														

TABLE XVI

MILL N -- 42-LB. LINERBOARD

157528	11.F.	11/21/60	10/11/60	2	45.8	42.4	44.6	13.8	12.8	13.1	137	94	112	384	288	329	416	368	393
157529	11.F.	11/21/60	10/13/60	2	45.4	44.0	44.9	13.2	12.4	12.9	135	87	112	368	304	337	432	360	391
157530	11.F.	11/21/60	10/18/60	2	44.2	43.8	44.0	12.8	11.8	12.2	127	95	114	352	272	304	384	365	344
157531	11.F.	11/21/60	10/21/60	2	45.2	44.0	44.4	13.8	12.6	13.0	130	92	112	376	272	321	432	360	401
157532	11.F.	11/21/60	11/2/60	2	44.2	43.8	44.0	12.9	11.5	12.3	132	97	113	328	256	297	408	328	360
157533	11.F.	11/21/60	11/21/60	2	44.2	43.8	44.0	12.7	11.8	12.2	137	98	118	320	248	287	400	328	362
Current Mill average:					44.3	43.4	43.4	12.6	11.4	11.2	313	313	313	379	324	372			
Cumulative Mill average:					43.4	43.4	43.4	12.4	11.2	11.2	313	313	313	379	324	372			
Mill Factor, %					102.1	101.6	101.6	101.8	96.6	96.6	101.9	101.9	101.9	101.9	101.9	101.9	101.9	101.9	101.9
Mill Index, %					101.6	99.2	99.2	103.6	94.3	94.3	103.6	103.6	103.6	103.6	103.6	103.6	103.6	103.6	103.6

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

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

TABLE XVII

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, Points			Bursting Strength, P.S.I. gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
157470	N.F.	11/ 7/60	10/10/60	1	45.6	43.0	44.3	12.8	11.7	12.2	123	60	102	360	280	314 <sup>a</sup>
157471	N.F.	11/ 7/60	10/13/60	1	43.8	42.0	43.0	13.1	11.8	12.3	123	80	99	344	264	299 <sup>a</sup>
157553	N.F.	11/14/60	10/22/60	1	46.0	42.8	44.4	12.9	11.3	12.2	125	76	102	328	248	287 <sup>a</sup>
157534	N.F.	11/21/60	10/24/60	1	45.4	44.0	44.5	13.2	11.9	12.4	124	86	106	312	248	282 <sup>a</sup>
157535	N.F.	11/21/60	10/27/60	1	44.0	42.2	43.4	13.2	11.8	12.4	118	84	101	320	248	283 <sup>a</sup>
Current Mill average:					43.9			12.3			102			293		345
Cumulative Mill Average:					44.2			12.6			110			295		350
Mill Factor, %					99.3			97.6			92.7			99.3		98.6
Mill Index, %					100.7			96.9			92.7			88.3		92.2

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

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

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mech. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.s.i. <sup>b</sup>			Elmendorf Tear, g./sheet			
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
18435	S.P.	11/1/60	10/18/60	7	44.8	40.8	42.2	13.1	11.5	12.5	125	72	92	424	288	347	
18757	S.P.	11/14/60	11/1/60	7	44.4	40.4	43.0	12.7	11.3	12.0	130	87	103	400	280	335 <sup>a</sup>	
Current Mill Average:					42.6			12.3			98			341			378
Cumulative Mill Average					43.6			12.6			106			347			378
Mill Factor, %					97.7			97.6			92.5			98.3			100.0
Mill Index, %					97.7			96.9			89.1			102.7			102.1

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

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

TABLE XIX  
MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1lb.			Caliper, Points			Bursting Strength, P.s.i./gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
187437	"F.	11/ 1/60	10/ 9/60	1	44.6	43.8	44.2	12.5	11.7	12.1	133	107	119	368	288	321 <sup>a</sup>
187438	"F.	11/ 1/60	10/15/60	2	44.2	42.2	43.4	12.2	11.0	11.6	136	85	114	400	304	353 <sup>a</sup>
187623	"F.	11/21/60	11/ 9/60	1	46.2	45.8	46.0	13.2	12.6	12.9	139	97	117	360	288	321 <sup>a</sup>
187624	"F.	11/21/60	11/ 9/60	1	44.4	44.0	44.1	12.4	11.8	12.1	137	86	118	352	280	317 <sup>a</sup>
187782	"F.	11/25/60	11/17/60	2	44.0	43.0	43.8	12.4	11.5	12.0	125	103	115	352	304	328 <sup>a</sup>
187781	J.F.	11/25/60	11/17/60	2	44.0	43.6	43.9	12.6	11.8	12.1	132	103	117	400	232	321 <sup>a</sup>
Current Mill Average					44.2			12.1			117			365		
Cumulative Mill Average					43.6			12.0			115			362		
Mill Factor, %					101.4			100.8			101.7			100.8		
Mill Index, %					101.4			95.3			106.4			98.5		
														97.6		

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

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

TABLE XX  
MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1b.			Caliper, points			Bursting Strength, P.s.i. sage			Elmendorf Tear, g./sheet			Across In.			
					Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	
157-32	151S	11/ 1/60	10/11/60	1	44.6	43.0	44.0	14.0	12.9	13.3	126	94	116	416	312	365	472	352	393 <sup>a</sup>	
157-32	151S	11/ 1/60	10/12/60	1	44.8	43.8	44.1	13.9	12.8	13.3	126	97	114	392	320	355 <sup>a</sup>	416	352	365 <sup>a</sup>	
157-32	151S	11/ 7/60	10/21/60	1	45.2	42.6	43.6	14.1	13.1	13.6	124	92	109	368	312	342 <sup>a</sup>	432	312	360 <sup>a</sup>	
157-32	151S	11/ 7/60	10/23/60	1	44.6	43.4	44.0	14.2	13.0	13.8	123	98	110	400	304	349 <sup>a</sup>	432	336	368 <sup>a</sup>	
157-32	151S	11/11/60	10/24/60	1	45.2	43.8	44.3	13.8	12.5	13.5	121	124	89	111	432	320	375 <sup>a</sup>	456	368	407 <sup>a</sup>
157-32	151S	11/14/60	10/27/60	1	44.4	43.6	44.0	13.9	12.6	13.1	133	92	114	408	288	355 <sup>a</sup>	416	360	384 <sup>a</sup>	
157-32	151S	11/18/60	10/31/60	1	43.8	42.0	42.6	13.2	12.5	12.9	120	84	105	352	296	321 <sup>a</sup>	384	328	355 <sup>a</sup>	
157-32	151S	11/21/60	11/ 1/60	1	43.6	42.0	42.6	13.2	12.3	12.9	122	87	104	352	280	316	392	344	370 <sup>a</sup>	
157-32	151S	11/25/60	11/ 5/60	1	44.0	42.4	43.0	13.4	12.5	13.0	122	82	105	344	280	315 <sup>a</sup>	384	328	355 <sup>a</sup>	
Current Mill Average:					43.6			13.2			210			343			375			
Cumulative Mill Average:					43.3			13.1			111			337			376			
Mill Factor, %					100.7			100.8			99.1			101.8			99.7			
Mill Index, %					100.0			103.9			100.0			103.3			100.3			

<sup>a</sup>This average includes the readings for one or more specimens which tore beyond the 1/8-inch limit.

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

TABLE XXI

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, 1b.			Caliper, points	Bursting Strength, P.s.i. gaze	In g./sheet			Elmendorf Tear, Max. Min. Av.						
					Max.	Min.	Av.			Max.	Min.	Av.							
137314	---	11/21/60	9/13/60	1	45.4	43.8	44.2	14.2	12.0	13.1	128	77	102	368	280	316 <sup>a</sup>	184	312	347 <sup>a</sup>
137315	---	11/21/60	9/14/60	1	45.4	44.2	44.6	14.2	13.0	13.6	122	80	99	312	240	283 <sup>a</sup>	400	312	347 <sup>a</sup>
137616	---	11/21/60	9/19/60	1	45.0	43.4	44.0	13.7	12.1	12.9	128	85	104	320	248	287 <sup>a</sup>	320	276	342 <sup>a</sup>
137617	---	11/21/60	9/19/60	1	44.4	43.0	44.0	13.9	12.9	13.4	132	86	108	352	232	283 <sup>a</sup>	360	320	342 <sup>a</sup>
137618	---	11/21/60	9/21/60	1	45.0	43.8	44.2	13.6	12.7	13.0	134	82	106	344	232	292 <sup>a</sup>	322	322	338 <sup>a</sup>
137619	---	11/21/60	9/21/60	1	45.2	42.4	44.1	13.6	12.1	12.8	133	87	108	326	264	301 <sup>a</sup>	416	336	348 <sup>a</sup>
137620	---	11/21/60	9/22/60	1	45.0	44.0	44.2	13.6	12.3	12.9	130	75	105	352	288	321 <sup>a</sup>	408	312	366 <sup>a</sup>
137621	---	11/21/60	9/25/60	1	43.8	41.6	42.3	13.0	11.6	12.3	147	91	111	360	248	298 <sup>a</sup>	416	344	375 <sup>a</sup>
137622	---	11/21/60	9/25/60	1	43.8	42.0	42.9	13.6	11.9	12.6	142	95	114	352	256	309 <sup>a</sup>	392	328	364 <sup>a</sup>
Current	All - average				43.8		13.0				106			299					
Cumulative	All - average				43.4		12.8				113			327					
All Factor,																			
All Index,																			

<sup>a</sup>This 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 current mill averages--i.e., 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  
PFECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

Mill Code	Relative Humidity, %	Temperature, °F.	Preconditioning		Conditioning		Time, hr.	Time, hr.
			Relative Humidity, %	Temperature, °F.	Relative Humidity, %	Temperature, °F.		
A	None	45-54	72-75	48				
B	None	50	73	24-72				
C	None	43-76	75-90	—				
D	77-78	48-52	72-73	16				
E	None	55-58	72-76	—				
F	72	24	None					
G	50	No samples submitted. 24	73	24				
H	50	50	73	24				
I	None	50	73	24				
J	70-74	No samples submitted. 120	73	24				
K	73-74	50	73	24				
L	48+	50	73	24				
M	73	No samples submitted. 24	73	24				
N	74-82	50	73	24				
O	73	0.5	73	24				
P	50	50	None					
Q	None	50	73	24				
S	None	50-68	69-80	—				
T	72	48	72	3				

TABLE XXXIII  
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	9	9	10	8	7	10	0	8	2	0	14	6	0	6	5	2	6	9	9
Institute	43.0	43.7	43.0	44.4	43.4	43.1	43.7	43.6	43.5	44.0	43.2	42.8	43.2	43.9	42.6	44.2	43.6	43.8	
Mill	42.5	42.9	42.1	43.6	43.0	43.0	43.2	43.2	42.9	42.8	42.1	42.1	42.3	42.9	42.7	42.7	42.7	42.7	
Av. Diff. **	-0.5	-0.8	-0.9	-0.4	-0.1	-0.5	-0.4	-0.5	-0.4	-0.7	-0.8	-0.7	-0.8	-0.5	-0.3	-1.3	-0.9	-0.7	
Max. Diff. ***	-1.1	-1.3	-2.0	-1.6	-0.7	-0.9	-0.8	-0.5	-0.5	-1.2	-1.2	-1.0	-0.8	-1.0	-0.4	-2.7	-1.6	-1.2	
<u>Basis Weight</u>																			
Institute	11.6	12.6	12.7	12.6	12.5	13.4	12.2	12.1	12.8	13.0	12.7	12.0	12.7	12.3	12.3	12.1	13.2	13.0	
Mill	11.3	11.8	12.4	12.4	12.5	13.2	12.3	12.2	13.0	12.0	12.1	11.8	12.9	12.0	12.0	11.8	12.9	12.5	
Av. Diff. **	-0.3	-0.8	-0.3	-0.2	0.0	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.1	-0.3	-0.2	-0.2	-0.3	-0.3	-0.5	
Max. Diff. ***	-0.5	-1.1	-0.7	-0.4	-0.1	-0.5	-0.3	-0.3	-0.1	-0.6	-0.4	-0.2	-0.3	-0.2	-0.2	-0.7	-0.8	-0.8	
<u>Caliper</u>																			
Institute	10.0	10.6	11.1	11.2	11.2	11.1	10.6	10.9	11.7	11.0	11.0	11.4	11.4	10.2	98	11.7	11.0	106	
Mill	11.2	10.9	11.1	11.2	11.2	10.8	10.4	11.1	11.2	10.9	11.0	11.4	10.7	10.9	10.5	11.6	11.3	11.7	
Av. Diff. **	+2	+3	0	-3	-2	-3	-2	-2	-5	-7	-7	0	+3	+9	+11	-1	+3	+11	
Max. Diff. ***	+8	+14	+6	+4	+6	+7	-6	-6	+5	-5	+7	+8	+3	+12	-3	+8	+14	+14	
<u>Bursting Strength</u>																			
Institute	360	356	291	336	299	331	322	347	320	367	313	293	341	327	343	299	327	332	268
Mill	331	--	254	294	319	223	336	329	298	365	294	285	313	325	322	325	332	268	
Av. Diff. **	-29	--	-37	-42	+20	-8	+14	-18	-22	-2	-19	-8	-28	-2	-11	-31	-2	-31	
Max. Diff. ***	-58	--	-88	-56	+42	-11	+48	-23	-38	-12	-40	-16	-33	-18	-46	-18	-46	-73	
<u>Tearing Strength, across</u>																			
Institute	400	403	334	365	375	363	359	366	363	405	379	345	378	365	375	354	375	354	
Mill	396	--	340	342	389	375	398	354	376	403	365	359	361	370	381	352	370	352	
Av. Diff. **	-4	--	+6	-23	+24	+12	+39	-12	+13	-2	-14	+14	-17	+5	+6	-2	+5	-2	
Max. Diff. ***	-26	--	+21	+58	+46	+58	+58	-12	+81	-14	-21	+27	-29	+32	+33	+31	+31	+31	

\* 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	Caliper per	Bursting Strength	Tear, in	Tear, across	Mill	Period	Basis Weight	Caliper per	Bursting Strength	Tear, in across
A	Current	-1	-3	+2	-8	-1	K	Current	-2	+2	-0.9	-7
	163rd	-1	-3	-0.9	-9	0	163rd	-2	+3	-4	-6	
B	Current	-2	-2	+3	-1	-1	L	Current	-2	2	+3	-0.5
	163rd	-2	-2	-2	-1	-1	163rd	-2	-0.8	0	+5	
C	Current	-2	-2	0	-13	+2	M	Current	-1	-2	-0.9	-1
	163rd	-2	-2	-10	-10	+3	162nd	-1	-2	0	+10	
D	Current	-2	-2	0	-22	-6	N	Current	-1	+0.8	-2	-2
	163rd	-2	-2	-17	-17	-10	163rd	-2	-2	-4	-2	
E	Current	-0.9	-0.9	-3	-13	-8	P	Current	-2	-2	-5	-4
	163rd	-1	-2	-4	-4	-4	162nd	-2	-5	-2	-3	
F	Current	-0.2	-0.2	-1	-2	-2	Q	Current	-2	-2	-2	-4
	163rd	-0.2	-0.2	-0.7	-4	-4	162nd	-2	-0.8	-4	-3	
G	Current	-0.5	-0.5	0	-6	-5	R	Current	-1	-1	-1	-1
	162nd	-1	-1	-1	-1	-1	163rd	-2	-1	-1	-1	
H	Current	-1	-1	-1	-1	-1	S	Current	-2	-2	-2	-3
	163rd	-1	-1	-1	-1	-1	163rd	-2	-2	-2	+2	
I	Current	-0.9	-0.8	-4	-5	-3	T	Current	-2	-2	-2	+6
	163rd	-1	-1	-3	-3	-4	162nd	-2	-4	-4	+11	
J	Current	-2	-2	-5	-5	-4	U	Current	-2	-2	-2	-6
	162nd	-2	-2	-4	-4	-5	163rd	-2	-4	-4	+10	

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 two per cent. Further, it may be noted that the average basis weight results for all 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 six per cent. This was lower than the maximum variation of eight per cent for the previous two periods. Compared with the Institute's results, the average test results for Mills H, I, K, and N were higher, the average result for Mill E was the same, and the average test results for the other mills were lower. Agreement was very good for the majority of comparisons of Institute and mill caliper result. Only the variation for Mill B appeared to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of eleven per cent for the current period. The maximum variation for the two preceding periods was seven per cent. The average bursting strength results for Mills C, D, and N were the same as the corresponding results for the Institute, the average results for Mills A, B, H, L, O, P, S and T 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 with the exception of the variations noted for Mills P and T.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills E and H 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 thirteen per cent which was lower than the maximum variation of seventeen per cent associated with the two preceding periods. Agreement between the Institute and mill results was generally good. However, the variations for Mills C, D, and T appeared to be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills C, E, F, H, K, O, Q, and S 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 thirteen 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 variation for Mill H appeared to be 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 November fall within designated percentages from the average test results obtained at the Institute.

COMPARISON OF INSTITUTE AND MILL DATA--NOVEMBER 1 THROUGH NOVEMBER 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. gauge			Elmendorf Tear, E./sheet		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
137436	N.B.	10/18/60	-	42.2	41.9	-0.3	11.8	11.5	-0.3	110	110	0	368 <sup>a</sup>	328	-40
137472	N.B.	10/23/60	-	43.4	42.5	-0.9	11.5	11.6	+0.1	108	111	+3	389 <sup>a</sup>	331	-58
137473	N.B.	10/25/60	-	42.6	42.7	+0.1	11.1	11.0	-0.1	113	116	+3	357 <sup>a</sup>	320	-37
137580	N.B.	10/27/60	-	43.3	42.5	-0.8	11.2	11.0	-0.2	105	108	+3	356 <sup>a</sup>	329	-27
137581	N.B.	11/5/60	-	43.2	43.0	-0.2	11.9	11.5	-0.4	111	119	+8	362 <sup>a</sup>	319	-43
137582	N.S.	11/6/60	-	42.0	42.2	+0.2	11.6	11.6	0.0	107	109	+2	365 <sup>a</sup>	349	-14
137625	N.B.	11/9/60	-	43.6	42.7	-0.9	11.5	11.0	-0.5	110	112	+2	329 <sup>a</sup>	312	-17
137626	N.B.	11/10/60	-	43.4	42.4	-1.0	11.6	11.4	-0.2	111	112	+1	357 <sup>a</sup>	364	+7
137627	N.B.	11/14/60	-	43.3	42.2	-1.1	11.6	11.4	-0.2	113	109	-4	362	328	-34
Current Mill Average.				43.0	42.5	-0.5	11.6	11.3	-0.3	110	112	+2	360	331	-29
													400	396	-4

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

\*One "mill average" data are calculated from the totals of the individual readings.

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

TABLE XXVI  
MILL S - 42-LB. LINERBOARD

File No.	Finsen No.	Date Made	Mon. No.	Basis Weight, lb.		Caliper, points IPC Mill Diff.	Bursting Strength, g./sheet		In IPC Mill Diff.	Across IPC Mill Diff.		
				IPC Mill	Diff.		IPC Mill Diff.	D.S.I. Gage IPC Mill Diff.				
102-57	421S	10/24/60	2	42.0	42.5	-0.5	11.8	11.3	-0.5	101	-10	353a
102-58	421S	10/26/60	1	44.5	44.5	0.0	12.5	11.8	-0.7	112	+10	343
102-59	421S	11/1/60	1	44.6	45.6	-1.0	12.7	11.6	-1.1	103	+11	355a
102-60	421S	11/4/60	2	44.0	42.8	-1.2	12.7	11.7	-1.0	105	+11	355a
102-61	421S	11/4/60	1	44.1	45.1	-1.0	12.6	11.8	-0.8	115	+10	369a
102-62	421S	11/9/60	2	44.0	43.5	-0.5	13.3	12.3	-1.0	108	+12	423a
102-63	421S	11/15/60	1	43.4	42.1	-1.3	12.6	11.8	-0.8	104	+2	367a
102-64	421S	11/16/60	1	42.0	41.0	-1.0	12.3	11.6	-0.7	102	+5	341a
102-65	421S	11/16/60	2	44.6	43.8	-0.8	12.7	11.9	-0.8	102	+1	335a
Current Mill Average:				43.7	42.9	-0.8	12.6	11.8	-0.8	106	+3	356
										403		

<sup>a</sup>Current 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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXVII  
MILL C — 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. Face		Elmendorf Tear, In. g./sheet		Across IPC Mill Diff.	
				IPC	Mill	IPC	Mill	IPC	Mill	IPC	Mill	IPC	Mill
187441	N.F.	9/20/60	1	42.9	42.0	-0.9	-0.9	12.2	12.2	0.0	107	112	+5
187442	N.F.	9/24/60	1	42.8	42.2	-0.6	-0.6	12.3	12.0	-0.3	113	110	-3
187443	N.F.	9/26/60	1	43.0	42.5	-0.5	-0.5	13.0	12.6	-0.4	115	115	0
187444	N.F.	9/29/60	1	42.0	42.2	+0.2	+0.2	12.2	12.1	-0.1	108	109	+1
187753	N.F.	10/4/60	1	44.1	42.1	-2.0	-2.0	13.1	12.5	-0.6	116	111	-5
187754	N.F.	10/7/60	1	43.6	42.1	-1.5	-1.5	12.9	12.3	-0.6	116	111	-5
187755	N.F.	10/10/60	1	43.5	42.2	-1.3	-1.3	13.0	12.3	-0.7	112	114	+2
187756	N.F.	10/13/60	1	42.4	41.9	-0.5	-0.5	12.1	12.3	+0.2	114	110	-4
187757	N.F.	10/19/60	1	43.9	42.1	-1.8	-1.8	13.0	12.5	-0.5	112	112	0
187758	N.F.	10/22/60	1	42.2	41.9	-0.3	-0.3	13.1	13.0	-0.1	101	107	+6
Current Mill Average:				43.0	42.1	-0.9	-0.9	12.7	12.4	-0.3	111	111	0
											291	254	-37
											334	340	+6

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--NOVEMBER 1 THROUGH NOVEMBER 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.			
187458	W.F.	10/26/60	-	44.1	43.7	-0.4	12.5	12.7	+0.2	108	108	0	362 <sup>a</sup>	311	-51	367 <sup>a</sup>	351	-16
187459	W.F.	10/27/60	-	44.0	43.5	-0.5	13.1	12.8	-0.3	109	107	-2	331 <sup>a</sup>	300	-31	368 <sup>a</sup>	343	-25
187460	W.F.	10/28/60	-	43.8	43.2	-0.6	12.8	12.4	-0.4	113	110	-3	351 <sup>a</sup>	317	-34	357 <sup>a</sup>	348	-9
187534	W.F.	11/ 2/60	-	44.2	44.1	-0.1	12.1	11.9	-0.2	120	124	+4	326 <sup>a</sup>	297	-29	367 <sup>a</sup>	345	-22
187535	W.F.	11/ 2/60	-	43.3	43.0	-0.3	12.5	12.2	-0.3	108	108	0	320 <sup>a</sup>	270	-50	355 <sup>a</sup>	336	-19
187536	W.P.	11/ 4/60	-	44.0	43.2	-0.8	13.0	12.7	-0.3	110	108	-2	309 <sup>a</sup>	271	-38	368 <sup>a</sup>	347	-21
187768	W.F.	11/17/60	-	45.8	44.3	-1.5	12.5	12.1	-0.4	116	118	+2	326 <sup>a</sup>	273	-53	365 <sup>a</sup>	324	-41
187769	W.F.	11/18/60	-	45.8	44.2	-1.6	12.6	12.2	-0.4	110	111	+1	365 <sup>a</sup>	309	-56	376 <sup>a</sup>	341	-35
Current Mill Average:				44.4	43.6	-0.8	12.6	12.4	-0.2	112	112	0	336	294	-42	365	342	-23

<sup>a</sup>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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXIX  
MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date	McN. No.	Basis Weight.	Caliper, points	Bursting Strength.			Elmendorf Tear, g./sheet									
						IPC	Mill	Diff.	IPC	Mill	Diff.	IPC						
137467	WFIS	10/17/60	1	43.5	43.2	-0.3	12.6	12.5	-0.1	111	104	-7	292	334	+42	389 <sup>a</sup>	401	+12
137468	WFIS	10/19/60	1	43.9	43.2	-0.7	12.7	12.6	-0.1	107	109	+2	305	323	+18	382 <sup>a</sup>	378	-4
137469	WFIS	10/24/60	1	43.4	43.1	-0.3	12.4	12.4	0.0	112	108	-4	300 <sup>a</sup>	303	+3	362 <sup>a</sup>	399	+37
137548	WFIS	10/27/60	1	43.4	42.9	-0.5	12.5	12.4	-0.1	113	108	-5	285 <sup>a</sup>	293	+8	380 <sup>a</sup>	343	-37
137549	WFIS	10/31/60	1	43.0	42.5	-0.5	12.4	12.4	0.0	111	105	-6	296 <sup>a</sup>	331	+35	357 <sup>a</sup>	415	+58
137550	WFIS	11/1/60	1	42.8	42.8	0.0	12.3	12.4	+0.1	111	107	-4	310 <sup>a</sup>	338	+28	381 <sup>a</sup>	407	+26
137732	WFIS	11/15/60	1	43.8	43.1	-0.7	12.4	12.4	0.0	115	112	-3	304 <sup>a</sup>	309	+5	372 <sup>a</sup>	384 <sup>a</sup>	+12
Current Mill Average:				43.4	43.0	-0.4	12.5	12.5	0.0	111	108	-3	299	319	+20	375	389	+14.

<sup>a</sup>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—NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXX  
MILL F -- 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	IPC	Mill	IPC	Mill	IPC	Mill	Across
187428	WFIS	10/17/60	2	43.5	43.3	-0.2	13.4	13.3	-0.1	110	104	-6
187429	WFIS	10/18/60	2	42.9	43.0	+0.1	13.3	13.0	-0.3	100	100	0
187430	WFIS	10/26/60	2	43.9	44.0	+0.1	13.3	13.3	0.0	109	107	-2
187431	WFIS	10/27/60	2	43.1	42.8	-0.3	12.9	12.8	-0.1	101	100	-1
187551	WFIS	11/1/60	2	42.6	43.3	+0.7	13.1	13.0	-0.1	112	108	-4
187552	WFIS	11/1/60	2	42.9	42.0	-0.9	13.7	13.6	-0.1	108	109	+1
187553	WFIS	11/9/60	2	43.8	43.7	-0.1	13.6	13.5	-0.1	105	102	-3
187554	WFIS	11/10/60	2	43.2	42.7	-0.5	13.5	13.3	-0.2	109	105	-4
187599	WFIS	11/14/60	2	43.0	42.9	-0.1	13.5	13.0	-0.5	103	104	+1
187600	WFIS	11/15/60	2	42.2	42.2	0.0	13.3	13.1	-0.2	106	104	-2
Current Mill Average:				43.1	43.0	-0.1	13.4	13.2	-0.2	106	104	-2
										331	323	-8
											363	375
												+12

<sup>a</sup>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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

File No.	Finish:	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points	Bursting Strength, D.s.i. page		Elmendorf Tear, g./sheet	
				IPC	Mill		IPC	Mill	IPC	Mill
No samples submitted										

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

137-74 K.F.	10/17/60	1	43.8	43.1	-0.7	12.3	12.5	+0.2	109	110
137-75 K.F.	10/15/60	1	42.9	42.5	-0.4	12.2	12.2	0.0	107	108
137-76 K.F.	10/16/60	1	44.1	43.6	-0.5	12.6	12.6	0.0	107	109
137-77 K.F.	10/20/60	1	44.1	43.8	-0.3	12.3	12.6	+0.3	107	109
137-86C K.F.	11/1/60	1	44.0	43.5	-0.5	12.2	12.2	0.0	115	115
137-86S K.F.	11/5/60	1	44.4	43.7	-0.7	12.4	12.3	-0.1	107	111
137-87 K.F.	11/6/60	1	43.5	42.7	-0.8	12.0	11.9	-0.1	115	115
137-87L K.F.	11/10/60	1	42.8	42.7	-0.1	11.8	11.9	+0.1	104	105
Current Mill Average:			43.7	43.2	-0.5	12.2	12.3	+0.1	109	111
								+2	322	326
									359	359
										+39

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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

Sample No.	Finish	Date made	Weight, lbs.	Caliper, Points			Bursting Strength, P.S.I. gauge			Elmendorf Tear, g./sheet				
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.		
187516	F.	10/26/60	-	44.0	43.7	-0.3	12.3	12.4	+0.1	116	111	-5		
187517	F.	10/25/60	-	43.5	42.7	-0.5	11.9	12.0	+0.1	118	113	-5		
Current Mill Average			43.6	43.2	-0.4	12.1	12.2	+0.1	117	112	-5	347	329	-18
										366	322	-44		
										361 <sup>a</sup>	349	-12		
										372 <sup>a</sup>	360	-12		

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

No samples submitted

<sup>a</sup> 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.

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

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

Ply No.	Times	Date	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.		
159-25	PIS	10/17/60	2	44.2	43.1	-1.1	13.1	13.2	+0.1	109	108	-1	338a	308	-30
159-27	PIS	10/18/60	2	42.8	42.3	-0.5	12.8	13.1	+0.3	109	108	-1	300	311	+11
159-31	PIS	10/19/60	2	43.7	42.8	-0.9	13.0	13.0	0.0	111	105	-6	218a	291	-73
159-32	PIS	10/24/60	2	44.0	42.9	-1.1	12.9	13.4	+0.5	109	107	-2	329a	302	-27
159-33	PIS	10/25/60	2	42.8	42.4	-0.4	12.8	13.2	+0.4	104	106	+2	299a	285	-14
159-34	PIS	10/26/60	2	42.5	42.0	-0.5	12.6	13.2	+0.6	105	105	0	305a	275	-30
159-35	PIS	10/27/60	2	44.0	43.2	-0.8	12.8	13.2	+0.4	115	114	-1	359a	329	-30
159-36	PIS	10/28/60	2	43.8	43.3	-0.5	12.7	13.1	+0.4	116	114	-2	359a	329	-30
159-37	PIS	10/29/60	2	43.8	43.0	-0.8	12.9	13.2	+0.3	109	116	0	343a	321	-22
159-38	PIS	11/4/60	2	43.0	42.6	-0.4	12.5	12.4	-0.1	103	103	-6	313a	286	-27
159-39	PIS	11/5/60	2	42.4	43.0	+0.6	12.4	13.0	+0.6	109	112	+3	293a	269	-24
159-40	PIS	11/4/60	2	43.9	42.8	-1.0	12.5	12.6	+0.1	107	114	+7	298a	279	-19
159-41	PIS	11/6/60	2	43.8	43.6	-0.2	12.6	13.1	+0.5	110	107	-3	338a	300	-38
159-42	PIS	11/10/60	2	44.2	43.0	-1.2	13.6	13.0	-0.6	107	111	+4	325a	309	-16
Current Mill Average				43.5	42.9	-0.7	12.8	13.0	+0.2	110	109	-1	320	298	-22
													363	376	+13

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

\*or all "current mill average" data are calculated from the totals of the individual readings.

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

TABLE XXXVI  
MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date	Mch. No.	Basis Weight,		Caliper,		Bursting Strength,		Elmendorf Tear, g./sheet	
				IPC	lb.	IPC	Mill	Diff.	IPC	Mill	Diff.
137734	K.F.	10/21/60	-	44.2	44.0	+0.2	13.1	13.1	110	114	+4
137735	K.F.	10/23/60	-	44.1	43.5	-0.6	12.9	12.5	106	104	-2
137735	K.F.	10/27/60	-	43.9	42.9	-1.0	13.3	12.9	103	103	0
137737	K.F.	10/28/60	-	43.6	42.6	-1.0	13.0	12.6	109	112	+3
137736	K.F.	11/1/60	-	44.4	43.3	-1.1	12.7	12.5	107	115	+8
137739	K.F.	11/3/60	-	44.0	42.8	-1.2	12.9	12.6	107	112	+5
Current M122 Average:				44.0	43.2	-0.8	13.0	12.7	107	110	+3

TABLE XXXVII

MILL M -- 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--NOVEMBER 1 THROUGH NOVEMBER 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. sage		Elmendorf Tear, g./sheet		IPC Mill Diff.	In IPC Mill Diff.	Across IPC Mill Diff.	
				IPC	Mill	IPC	Mill	IPC	Mill	IPC	Mill				
187528	N.F.	10/11/60	2	44.6	44.2	-0.4	13.1	0.0	112	111	-1	329	307	-22	
187529	N.P.	10/13/60	2	44.9	44.1	-0.8	12.9	0.0	112	110	-2	337 <sup>a</sup>	297	-40	
187530	N.F.	10/18/60	2	44.0	43.2	-0.8	12.2	12.4	+0.2	114	115	+1	304 <sup>a</sup>	275	-29
187531	N.F.	10/21/60	2	44.4	44.2	-0.2	13.0	0.0	112	115	+3	321 <sup>a</sup>	311	-10	
187532	N.P.	11/2/60	2	44.0	43.4	-0.6	12.3	0.0	113	115	+2	297 <sup>a</sup>	292	-5	
187633	N.P.	11/9/60	2	44.0	43.5	-0.5	12.2	12.3	+0.1	118	116	-2	287 <sup>a</sup>	284	-3
Current Mill Average:				44.3	43.8	-0.5	12.6	12.7	+0.1	114	114	0	313	294	-19
													379	365	-14

<sup>a</sup>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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points	Bursting Strength, P.S.I. Basis		Elmendorf Tear, g./sheet	
				IPC	Mill		IPC	Mill	IPC	Mill
18770	S.F.	10/10/60	1	44.3	43.4	-0.9	12.2	11.9	-0.3	102
187471	W.F.	10/13/60	1	43.0	42.3	-0.7	12.3	12.0	-0.3	108
187558	W.F.	10/22/60	1	44.4	43.7	-0.7	12.2	12.0	-0.2	102
187624	W.F.	10/24/60	1	44.5	43.5	-1.0	12.4	---	---	106
187635	A.F.	10/27/60	1	43.4	42.5	-0.9	12.4	12.1	-0.3	106
Current Mill Average			43.9	43.1	-0.8	12.3	12.0	-0.3	102	107

TABLE XL

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points	Bursting Strength, P.S.I. Basis		Elmendorf Tear, g./sheet	
				IPC	Mill		IPC	Mill	IPC	Mill
187435	S.F.	10/18/60	7	42.2	42.0	-0.2	12.5	12.3	-0.2	92
187557	S.F.	11/1/60	7	43.0	42.6	-0.4	12.0	12.0	0.0	103
Current Mill Average			42.6	42.3	-0.3	12.3	12.1	-0.2	98	109

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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XII  
MILL Q -- 42-LB. LINERBOARD

Line No.	Finish No.	Date made	Vch. No.	Basis Weight, lb.		Caliper, points	Bursting Strength P.S.I. gage		Elmendorf Tear, g./sheet	
				IPC	Mill		IPC	Mill	IPC	Mill
187437	"F.	10/ 9/60	1	44.2	42.3	-0.9	12.1	11.9	+1	321 <sup>a</sup>
187438	"F.	10/15/60	2	43.4	42.9	-0.5	11.6	11.6	0	353 <sup>b</sup>
187623	"F.	11/ 9/60	1	46.0	43.3	-2.7	12.9	12.2	-0.7	321 <sup>b</sup>
187624	"F.	11/ 9/60	1	44.1	42.7	-1.4	12.1	11.7	-3	317 <sup>b</sup>
187732	"F.	11/17/60	2	43.8	42.7	-1.1	12.0	11.7	-0.4	318 <sup>b</sup>
187781	"F.	11/17/60	2	43.9	42.6	-1.3	12.1	11.8	-0.3	328 <sup>b</sup>
Current Mill Average				44.2	42.9	-1.3	12.1	11.8	-0.3	327 <sup>b</sup>
							117	117	0	326 <sup>b</sup>
									+5	367 <sup>b</sup>
									-2	365
									370	+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.

CORPORATION OF INSTITUTE AND MILL DATA--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XLII  
MILL S -- 42-lb. LINERBOARD

S-13 No.	Printed No.	Date made	Inch No.	Basis weight, lb.	Caliper, points			Bursting Strength, P.s.i. gauge			Elmendorf Tear, g./sheet				
					IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.		
137-29	315	10/11/60	2	44.0	43.8	-0.2	13.3	13.1	-0.2	116	119	+3	384	434	+31
137-32	315	10/12/60	1	44.1	42.9	-0.3	13.3	13.1	-0.2	114	117	+3	355 <sup>a</sup>	393 <sup>a</sup>	+38
137-31	315	10/21/60	1	43.8	42.4	-1.4	13.6	13.1	-0.5	109	111	+2	342 <sup>a</sup>	318	-24
137-36	315	10/23/60	1	44.0	42.4	-1.6	13.8	13.0	-0.8	110	110	0	349 <sup>a</sup>	319	-30
137-37	315	10/24/60	1	44.3	43.1	-1.2	13.1	12.7	-0.4	111	119	+8	375 <sup>a</sup>	329	-46
137-38	315	10/27/60	1	44.0	43.1	-0.9	13.1	12.7	-0.4	114	118	+4	355 <sup>a</sup>	332	-23
137-39	315	10/27/60	1	42.6	42.0	-0.6	12.9	12.7	-0.2	105	109	+4	321 <sup>a</sup>	305	-16
137-40	315	11/1/60	1	42.6	41.9	-0.7	12.9	12.7	-0.2	104	108	+4	316	304	-12
137-41	315	11/1/60	1	43.0	41.9	-1.1	13.0	12.7	-0.3	105	108	+3	315 <sup>a</sup>	304	-11
Current - mill Average				43.6	42.7	-0.9	13.2	12.9	-0.3	110	113	+3	343	332	-11
													375	381	+ 6

<sup>a</sup>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--NOVEMBER 1 THROUGH NOVEMBER 30, 1960 (continued)

TABLE XLIII  
MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date	inch No.	Basis weight, lb.	Caliper, points	Bursting Strength, D.S.I. Page			Elmendorf Tear g./sheet			
						IPC	Mill	Diff.	IPC	Mill	Diff.	
13761*	---	9/13/60	1	44.2	42.6	-0.6	13.1	12.7	-0.4	102	116	+14
137615	---	9/14/60	1	44.6	43.7	-0.9	12.6	13.0	-0.6	99	108	+9
137615	---	9/19/60	1	44.0	43.6	-0.4	12.9	12.6	-0.3	104	118	+14
137617	---	9/19/60	2	44.0	43.3	-0.7	13.4	12.6	-0.8	108	111	+3
137615	---	9/21/60	1	44.2	43.6	-0.6	12.0	12.4	-0.6	106	115	+9
137619	---	9/21/60	1	44.1	43.5	-0.6	12.8	12.6	-0.2	108	119	+11
137620	---	9/22/60	1	44.2	43.6	-0.6	12.9	12.6	-0.3	105	119	+14
137621	---	9/25/60	1	42.3	42.5	-0.8	12.3	12.0	-0.3	111	120	+9
137622	---	9/25/60	1	42.9	41.7	-1.2	12.6	12.1	-0.5	114	123	+9
Current Mill Average				43.8	43.1	-0.7	13.0	12.5	-0.5	106	117	+11
										299	268	-31
										354	352	-2

at's 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 individuals readings.

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THE INSTITUTE OF PAPER CHEMISTRY

W. N. Hubert

W. N. Hubert, Research Aide  
Container Section

R. C. McKee

R. C. McKee, Chief, Container Section