

**CONTINUOUS BASELINE STUDY**

**Project 1108-13**

**Report 168**

**A Progress Report**

**to**

**FOURDRINIER KRAFT BOARD INSTITUTE, INC.**

**April 1, 1961**

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASELINE STUDY

Project 1108-13

Report 168

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

April 1, 1961

TABLE OF CONTENTS

ii

	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 March, 1961	8
Graphical Presentations of F.K.I. and Composite Mill Averages	9, 10, 11
Percentage Deviations from 42-lb. Basis Weight Speci- fications	13
Institute Data for March, 1961	
Mill A	16
Mill B	17
Mill C	17
Mill D	18
Mill E	19
Mill F	20
Mill G	20
Mill H	21
Mill I	21
Mill J	22
Mill K	23
Mill L	24
Mill M	25
Mill N	26
Mill O	27
Mill P	28

	Page
PART I: (Continued)	
Institute Data for March, 1961 (Continued)	
Mill Q	29
Mill S	30
Mill T	30
PART II: COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS	31
Preconditioning and Conditioning Data for the Mill Tests	32
Summary of Test Result Comparisons (Average Mill and Institute Results)	33
Comparison of Institute-Mill Differences by Periods	34
Comparison of Institute and Mill Data for March, 1961	
Mill A	37
Mill B	38
Mill C	39
Mill D	39
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

iv

Page

## PART II: (Continued)

## Comparison of Institute and Mill Data for March, 1961

Mill N	46
Mill O	46
Mill P	47
Mill Q	47
Mill S	48
Mill T	48

# 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 March, ninety-four sample lots of 42-lb. fourdrinier kraft linerboard representing the production of fifteen 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.	43.7	42.2	43.1
Caliper, pt.	13.6	11.3	12.6
Bursting strength, p.s.i. gage	119	105	111
Machine direction Elmendorf Tear, g./sheet	375	275	331
Cross-machine direction Elmendorf tear, g./sheet	415	342	377

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 March 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	+14		
Basis weight												
Number of mills	9	14	15									
Percentage of all mills	60.0	93.3	100.0									
Caliper												
Number of mills	0	5	10	13	14	15						
Percentage of all mills	0.0	33.3	66.7	86.7	93.3	100.0						
Bursting strength												
Number of mills	1	3	8	10	12	14	15					
Percentage of all mills	6.7	20.0	53.3	66.7	80.0	93.3	100.0					
Tearing strength, in												
Number of mills	0	2	5	6	6	8	10	11	14			
Percentage of all mills	0.0	14.3	35.7	42.9	42.9	57.1	71.4	78.6	100.0			
Tearing strength, across												
Number of mills	1	1	4	5	7	7	9	12	14			
Percentage of all mills	7.1	7.1	28.6	35.7	50.0	50.0	64.3	85.7	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 March. 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, 1960, 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 March, ninety-four different sample lots 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 March 1, 1960, to February 28, 1961. 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 43.1 lb., and the cumulative F.K.I. average basis weight is 43.6 lb. Hence, the F.K.I. index for basis weight determined in percent as previously described is 98.9 and indicates that the current F.K.I. average basis weight is lower than the cumulative F.K.I. average.

TABLE I

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	7
B	8
C	0
D	11
E	8
F	0
G	6
H	0
I	3
J	4
K	5
L	8
M	9
N	2
O	8
P	8
Q	4
S	3
T	0
Total	94

TABLE II  
SUMMARY OF COMPOSITE MILL AVERAGES--MARCH 1 THROUGH MARCH 31, 1961

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	In Machine g./sheet	Elmendorf Tear, Cross Machine
A	43.2	12.9	105	372	412
B	43.1	13.0	109	315	367
C	No samples submitted.				
D	43.0	13.2	109	310	359
E	43.3	12.7	116	330	396
F	No samples submitted.				
G	43.7	12.7	111	374	410
H	No samples submitted.				
I	42.3	12.3	108	333	382
J	43.7	12.6	112	369	367
K	42.9	12.9	110	334	384
L	42.2	13.6	108	296	344
M	42.9	11.8	110	375	415
N	43.5	11.3	109	330	377
O	43.3	13.0	114	317	359
P	43.4	12.5	111	311	366
Q	43.3	12.3	110	275	342
S	42.5	11.9	119	328	374
T	No samples submitted.				
Current FKI Average:	43.1	12.6	111	331	377
Cumulative FKI Average:	43.6	12.7	111	331	374
FKI Index, %	98.9	99.2	100.0	100.0	100.8

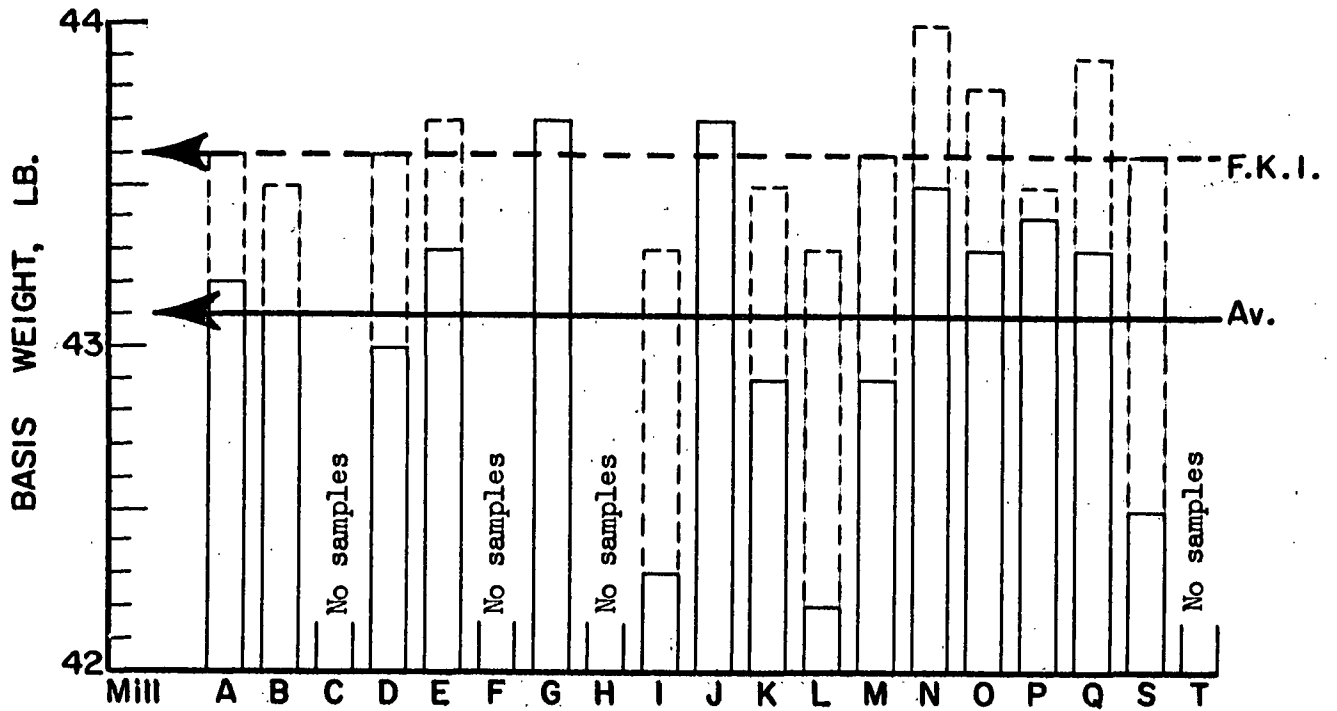


Figure 1. Comparison of Basis Weight Results for March, 1961

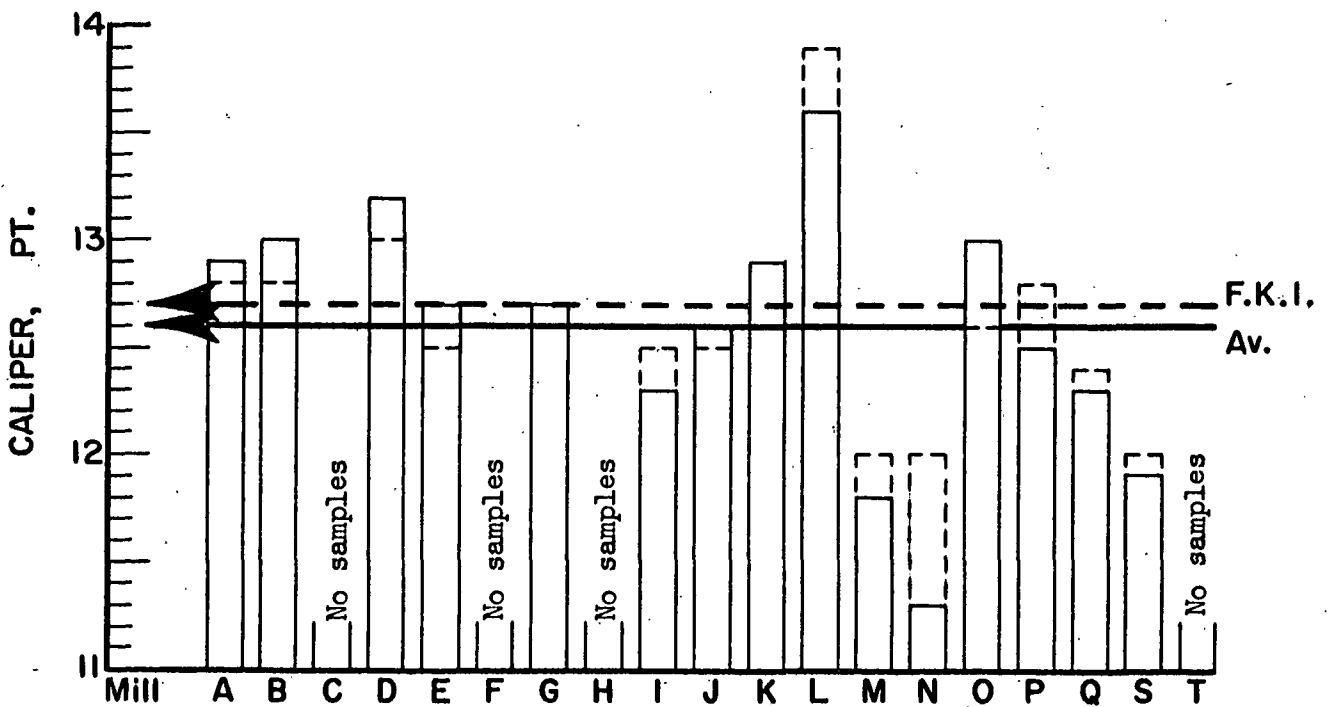


Figure 2. Comparison of Caliper Results for March, 1961

— Current mill average  
 - - - Cumulative mill average

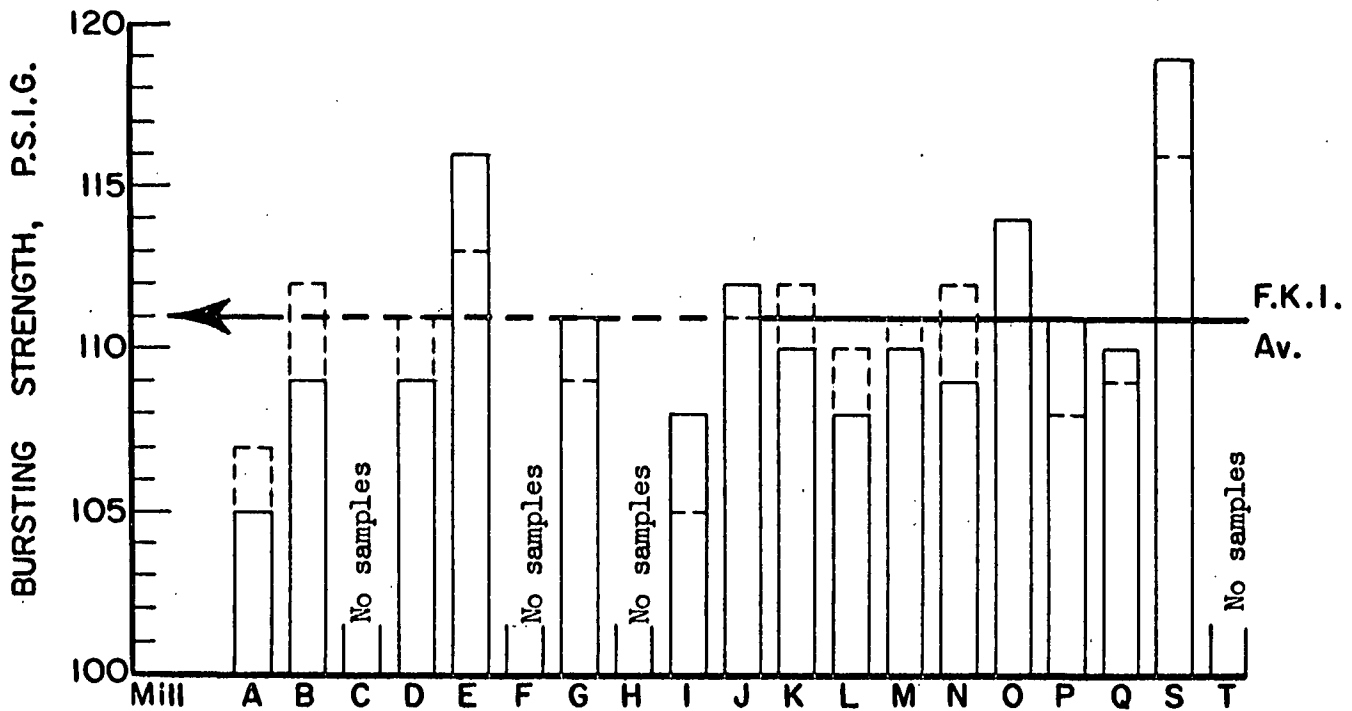


Figure 3. Comparison of Bursting Strength Results for March, 1961

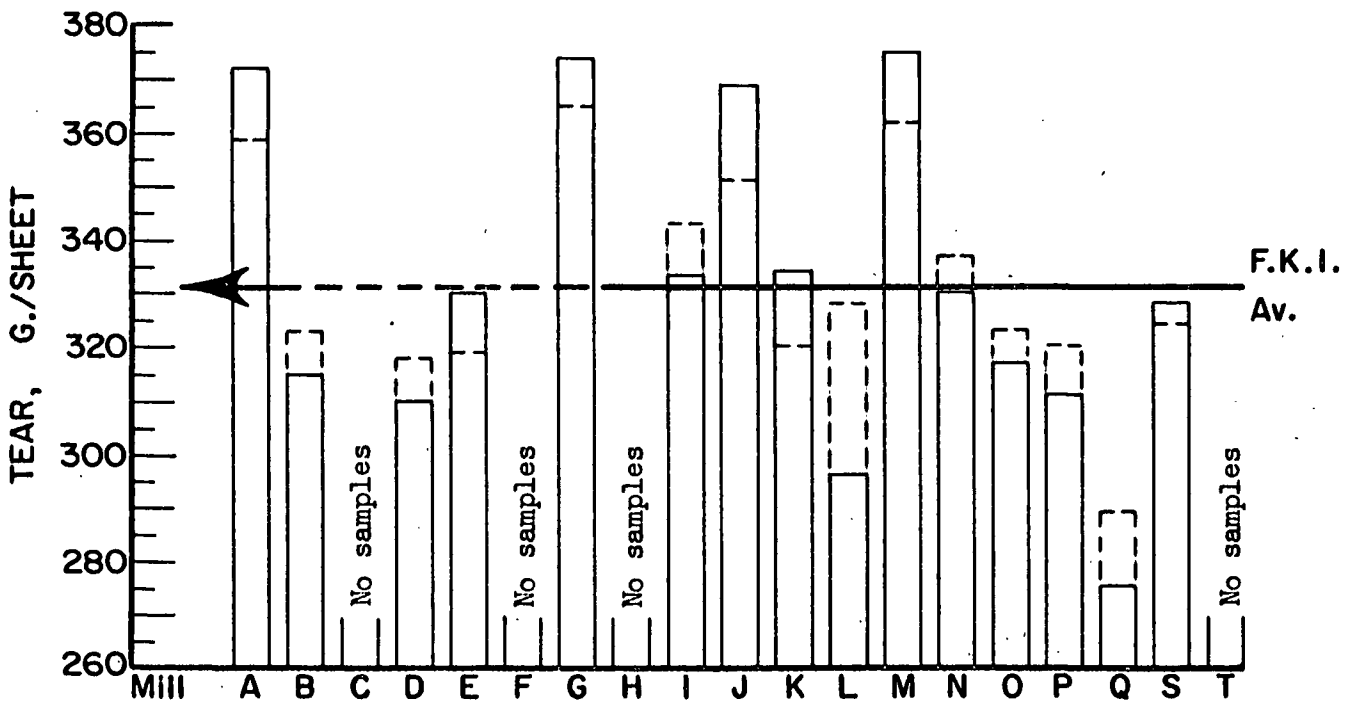


Figure 4. Comparison of Machine-Direction Tear Results for March, 1961

— Current mill average  
 - - - Cumulative mill average

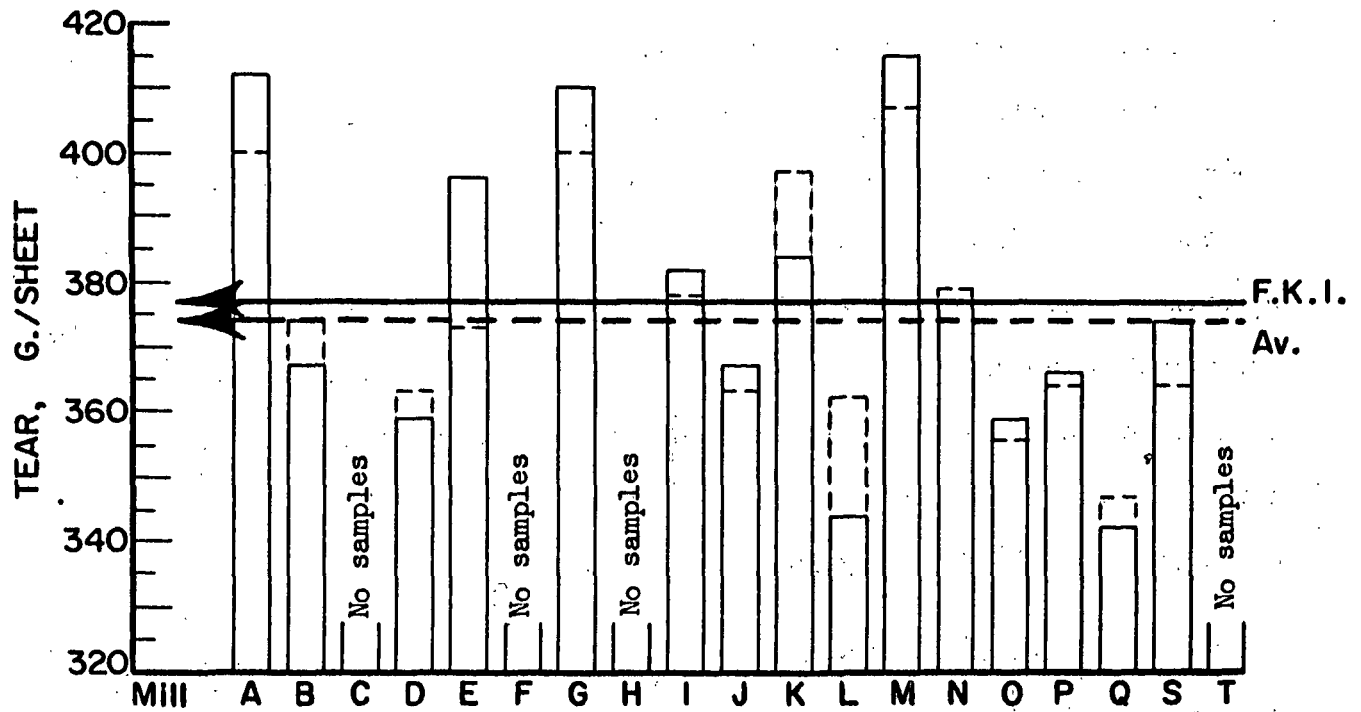


Figure 5. Comparison of Cross-Machine Direction Tear Results for March, 1961

———— 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. Mills G and J shared the highest average basis weight of 43.7 lb., which was approximately 4.0% higher than the 42-lb. specification. The lowest average basis weight of 42.2 lb. was associated with Mill L and was 0.5% 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 43.3 lb. to 43.1 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 11.3 points for Mill N to a high of 13.6 points for Mill L. 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 105 for Mill A to a high of 119 for Mill S. The current F.K.I. bursting strength average was 111 p.s.i. gage, which was the same as the cumulative F.K.I. average.

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 M had the highest machine direction

TABLE II-A

PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT

SPECIFICATION

Mill Code	Per Cent
A	+2.9
B	+2.6
C	--
D	+2.4
E	+3.1
F	--
G	+4.0
H	--
I	+0.7
J	+4.0
K	+2.1
L	+0.5
M	+2.1
N	+3.6
O	+3.1
P	+3.3
Q	+3.1
S	+1.2
T	--

tear average of 375 g./sheet, and Mill Q had the lowest average of 275 g./sheet. It may be further noted that the highest cross-machine direction tear average of 415 g./sheet was associated with Mill M and that the lowest average of 342 g./sheet was associated with Mill Q. It may be observed also in Table II and Figures 4 and 5 that the current F.K.I. average for machine direction Elmendorf tear was the same as its cumulative F.K.I. average whereas the current F.K.I. average for cross-machine direction Elmendorf tear was slightly higher than its cumulative F.K.I. average.

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

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

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

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--MARCH 1 THROUGH MARCH 31, 1961

TABLE III

MILL A -- 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.	Av.	Max.	Av.	Max.	Av.	Max.	Av.	Max.	Av.
188950	WFLS	3/ 1/61	1/17/61	2	45.4	44.1	13.3	12.0	143	77	105	448	384	418 <sup>a</sup>
189001	WFLS	3/ 6/61	2/27/61	1	44.2	43.2	13.3	11.8	117	70	102	400	336	404 <sup>a</sup>
189002	WFLS	3/ 6/61	2/28/61	1	43.6	42.3	13.4	12.0	131	69	99	392	320	371 <sup>a</sup>
189086	WFLS	3/13/61	3/ 7/61	2	44.0	42.9	14.2	12.7	132	89	111	448	320	399 <sup>a</sup>
189096	WFLS	3/14/61	3/ 8/61	2	44.4	43.3	13.2	12.1	130	85	110	432	320	363 <sup>a</sup>
189161	WFLS	3/22/61	3/13/61	2	44.2	43.4	13.9	12.8	136	73	106	400	264	349 <sup>a</sup>
189156	WFLS	3/21/61	3/15/61	2	44.4	43.6	13.7	12.7	134	81	102	448	344	384 <sup>a</sup>
Current Mill Average:					43.2		12.9		105		372		412	
Cumulative Mill Average:					43.6		12.8		107		359		400	
Mill Factor, %					99.1		100.8		98.1		103.6		103.0	
Mill Index, %					99.1		101.6		94.6		112.4		110.2	

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE IV

MILL B -- 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.	Av.	Max.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	
188955	----	3/ 1/61	2/ 2/61	1	43.6	42.0	13.6	11.7	12.6	142	83	109	352	240	307 <sup>a</sup>	368	296	341 <sup>a</sup>
188956	----	3/ 1/61	2/ 5/61	1	44.4	42.4	13.2	11.8	12.4	130	86	107	376	288	326	400	352	379 <sup>a</sup>
189003	----	3/ 6/61	2/ 6/61	1	42.4	41.0	14.0	13.0	13.6	134	79	108	320	272	299 <sup>a</sup>	384	288	353 <sup>a</sup>
189004	----	3/ 6/61	2/14/61	1	43.8	41.8	14.5	12.2	13.2	130	73	109	384	256	305 <sup>a</sup>	400	336	359 <sup>a</sup>
189005	----	3/ 6/61	2/17/61	1	44.0	42.0	13.2	11.8	12.5	135	89	112	384	248	308 <sup>a</sup>	456	344	380 <sup>a</sup>
189058	----	3/10/61	2/14/61	1	44.0	42.8	14.0	12.0	13.0	133	86	112	408	272	326 <sup>a</sup>	408	368	387 <sup>a</sup>
189059	----	3/10/61	2/15/61	1	44.6	42.8	13.9	12.3	13.1	127	83	107	384	288	314	384	328	361 <sup>a</sup>
189097	----	3/14/61	2/12/61	1	44.0	43.6	14.0	12.8	13.4	127	93	112	416	240	337 <sup>a</sup>	408	352	378 <sup>a</sup>
Current Mill Average:					43.1		13.0		109		315		367					
Cumulative Mill Average:					43.5		12.8		112		323		374					
Mill Factor, %					99.1		101.6		97.3		97.5		98.1					
Mill Index, %					98.9		102.4		98.2		95.2		98.1					

TABLE V

MILL C -- 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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE VI

MILL D -- 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		Across							
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.	Max.		
189057	WFLS	3/10/61	2/13/61	2	43.8	42.0	42.8	14.0	12.3	13.1	125	93	111	336	272	308 <sup>a</sup>	392	320	355 <sup>a</sup>	
188952	WFLS	2/28/61	2/14/61	2	44.0	42.0	43.2	13.8	12.2	13.2	132	99	114	360	272	309 <sup>a</sup>	408	320	361 <sup>a</sup>	
188951	WFLS	2/27/61	2/15/61	2	44.4	42.4	43.2	14.2	12.8	13.5	120	94	109	384	312	337	392	336	356 <sup>a</sup>	
188953	WFLS	2/28/61	2/18/61	2	44.0	42.2	43.4	13.9	12.9	13.4	133	95	111	360	272	317 <sup>a</sup>	400	328	361 <sup>a</sup>	
189143	WFLS	3/20/61	2/26/61	2	43.6	42.6	43.1	13.7	12.8	13.1	119	93	103	336	240	298 <sup>a</sup>	416	336	365 <sup>a</sup>	
189085	WFLS	3/13/61	2/27/61	2	44.2	43.6	43.9	13.8	13.0	13.4	130	90	109	384	272	331 <sup>a</sup>	400	320	365 <sup>a</sup>	
189144	WFLS	3/20/61	3/1/61	2	43.6	42.4	43.0	13.4	12.7	13.0	130	101	114	320	248	290 <sup>a</sup>	392	320	357 <sup>a</sup>	
189145	WFLS	3/20/61	3/2/61	2	43.4	41.0	42.1	14.1	12.4	13.2	129	85	107	376	240	303	384	312	351 <sup>a</sup>	
189146	WFLS	3/20/61	3/5/61	2	43.4	42.0	42.7	13.2	12.7	13.0	129	89	109	368	288	313 <sup>a</sup>	392	336	361 <sup>a</sup>	
189147	WFLS	3/20/61	3/6/61	2	43.0	41.8	42.4	13.7	12.8	13.1	127	91	109	320	280	297 <sup>a</sup>	376	320	343 <sup>a</sup>	
189176	WFLS	3/24/61	3/12/61	2	44.0	42.2	43.5	13.9	13.0	13.5	129	81	107	344	264	303	416	328	365 <sup>a</sup>	
Current Mill Average:					43.0		43.0		13.2		109		310		310		359			
Cumulative Mill Average:					43.6		43.6		13.0		111		318		318		363			
Mill Factor, %					98.6		98.6		101.5		98.2		97.5		97.5		98.9			
Mill Index, %					98.6		98.6		103.9		98.2		93.7		93.7		96.0			

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE VII  
MILL E -- 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.	Av.	Max.	Av.	Max.	Av.	In	Across	Max.	Av.					
189127	W.F.	3/17/61	2/9/61	2	44.0	42.0	43.2	13.2	12.2	12.8	144	90	114	376	288	325 <sup>a</sup>	464	352	385 <sup>a</sup>
189128	W.F.	3/17/61	2/23/61	2	44.0	42.0	43.1	13.0	12.2	12.5	127	99	114	368	272	327	416	336	381 <sup>a</sup>
189129	W.F.	3/17/61	2/23/61	2	44.0	42.4	43.2	13.1	12.4	12.8	139	92	118	392	304	350 <sup>a</sup>	464	368	412 <sup>a</sup>
189130	W.F.	3/17/61	2/27/61	2	44.2	42.4	43.2	13.0	12.1	12.5	140	95	115	360	256	321 <sup>a</sup>	480	368	410 <sup>a</sup>
189131	W.F.	3/17/61	2/27/61	2	44.0	42.0	43.0	13.0	12.2	12.6	135	94	114	384	272	309 <sup>a</sup>	432	336	384 <sup>a</sup>
189132	W.F.	3/17/61	3/2/61	2	44.0	42.0	43.2	13.2	12.1	12.8	134	91	118	384	272	344 <sup>a</sup>	416	336	391 <sup>a</sup>
189133	W.F.	3/17/61	3/2/61	2	44.4	42.8	43.7	13.1	12.0	12.6	140	91	120	392	256	329 <sup>a</sup>	464	368	401 <sup>a</sup>
189134	W.F.	3/17/61	3/6/61	2	44.4	42.0	43.6	13.2	12.2	12.7	132	94	116	368	304	332 <sup>a</sup>	440	384	405 <sup>a</sup>
Current Mill Average:							43.3			12.7			116			330			396
Cumulative Mill Average:							43.7			12.5			113			319			373
Mill Factor, %							99.1			101.6			102.7			103.4			106.2
Mill Index, %							99.3			100.0			104.5			99.7			105.9

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE VIII

MILL F -- 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.	Av.	Max.	Min.	Max.	Min.	Max.	Min.

No samples submitted.

TABLE IX

MILL G -- 42-LB. LINERBOARD

189150	W.F.	3/20/61	2/ 5/61	-	45.2	42.2	43.9	13.3	12.0	12.7	136	104	117	416	368	391 <sup>a</sup>	464	392	422 <sup>a</sup>	
189151	W.F.	3/20/61	2/20/61	-	44.4	43.2	43.8	13.4	12.2	12.9	122	94	109	392	328	365 <sup>a</sup>	432	376	399 <sup>a</sup>	
189152	W.F.	3/20/61	2/20/61	-	44.0	42.4	43.6	13.4	12.1	12.8	133	86	107	440	312	373 <sup>a</sup>	448	352	402 <sup>a</sup>	
189159	W.F.	3/22/61	2/27/61	-	44.8	43.6	44.1	13.6	12.2	13.0	136	85	109	448	336	397 <sup>a</sup>	464	352	411 <sup>a</sup>	
189160	W.F.	3/22/61	2/28/61	-	44.2	42.0	43.2	12.8	11.6	12.2	138	84	114	408	320	357 <sup>a</sup>	464	376	413 <sup>a</sup>	
189212	W.F.	3/27/61	3/14/61	-	45.0	42.8	43.8	13.0	12.1	12.6	127	81	111	384	336	363	448	392	411 <sup>a</sup>	
Current Mill Average:					43.7				12.7		111		374		410					
Cumulative Mill Average:					43.7				12.7		109		365		400					
Mill Factor, %					100.0				100.0		101.8		102.5		102.5					
Mill Index, %					100.2				100.0		100.0		113.0		109.6					

<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--MARCH 1 THROUGH MARCH 31, 1961 (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.	Max.	Min.					
188954	S.F.	3/1/61	2/20/61	7	44.4	41.8	43.3	13.9	12.8	13.0	141	71	106	400	280	351	464	352	399 <sup>a</sup>
189010	S.F.	3/7/61	2/27/61	7	42.2	40.8	41.6	12.2	11.4	11.9	134	76	110	360	272	325 <sup>a</sup>	400	328	371 <sup>a</sup>
189163	S.F.	3/22/61	3/13/61	7	42.4	41.2	41.9	12.2	11.2	11.8	134	90	109	400	288	325 <sup>a</sup>	424	312	377 <sup>a</sup>
Current Mill Average:																			
42.3																			
12.3																			
333																			
382																			
Cumulative Mill Average:																			
43.3																			
12.5																			
343																			
378																			
Mill Factor, %																			
97.7																			
98.4																			
102.9																			
97.1																			
101.1																			
Mill Index, %																			
97.0																			
96.9																			
97.3																			
100.6																			
102.1																			

No samples submitted.

TABLE XI

MILL I -- 42-LB. LINERBOARD

188954	S.F.	3/1/61	2/20/61	7	44.4	41.8	43.3	13.9	12.8	13.0	141	71	106	400	280	351	464	352	399 <sup>a</sup>
189010	S.F.	3/7/61	2/27/61	7	42.2	40.8	41.6	12.2	11.4	11.9	134	76	110	360	272	325 <sup>a</sup>	400	328	371 <sup>a</sup>
189163	S.F.	3/22/61	3/13/61	7	42.4	41.2	41.9	12.2	11.2	11.8	134	90	109	400	288	325 <sup>a</sup>	424	312	377 <sup>a</sup>
Current Mill Average:																			
42.3																			
12.3																			
333																			
382																			
Cumulative Mill Average:																			
43.3																			
12.5																			
343																			
378																			
Mill Factor, %																			
97.7																			
98.4																			
102.9																			
97.1																			
101.1																			
Mill Index, %																			
97.0																			
96.9																			
97.3																			
100.6																			
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--MARCH 1 THROUGH MARCH 31, 1961 (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.	Max.	Min.	Av.
188948	W.F.	3/1/61	2/16/61	-	45.0	43.4	43.9	13.6	12.1	12.9	134	97	114	408	320	352	432	328	376 <sup>a</sup>
188949	W.F.	3/1/61	2/16/61	-	44.2	42.4	43.7	13.2	12.2	12.7	132	95	112	448	304	385 <sup>a</sup>	464	336	385 <sup>a</sup>
189148	W.F.	3/20/61	3/3/61	-	44.4	42.2	43.4	12.5	11.2	12.1	133	86	114	400	320	355 <sup>a</sup>	408	320	350 <sup>a</sup>
189149	W.F.	3/20/61	3/3/61	-	44.0	42.4	43.6	13.4	11.9	12.7	132	80	109	448	344	384 <sup>a</sup>	384	320	359 <sup>a</sup>
Current Mill Average:					43.7			12.6			112			369			367		
Cumulative Mill Average:					43.7			12.5			111			351			363		
Mill Factor, %					100.0			100.8			100.9			105.1			101.1		
Mill Index, %					100.2			99.2			100.9			111.5			98.1		

<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--MARCH 1 THROUGH MARCH 31, 1961 (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. gage			Elmendorf Tear, g./sheet					
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
189054	WF1S	3/ 9/61	2/28/61	1	43.8	42.2	42.9	13.3	12.1	12.9	131	88	113	384	264	323 <sup>a</sup>	432	336	384 <sup>a</sup>
189055	WF1S	3/ 9/61	3/ 2/61	1	43.8	42.0	42.7	13.5	12.0	12.8	132	97	111	408	288	341	400	352	375 <sup>a</sup>
189087	WF1S	3/13/61	3/ 7/61	1	44.0	42.2	43.0	13.3	12.1	12.7	127	95	109	400	272	341 <sup>a</sup>	448	368	403 <sup>a</sup>
189162	WF1S	3/22/61	3/13/61	1	44.0	42.2	43.2	13.8	12.8	13.3	141	88	108	384	288	331 <sup>a</sup>	392	328	356 <sup>a</sup>
189175	WF1S	3/24/61	3/16/61	1	43.6	42.2	42.7	13.5	12.1	12.9	129	84	110	400	288	333 <sup>a</sup>	480	352	403 <sup>a</sup>
Current Mill Average:					42.9			12.9			110			334			384		
Cumulative Mill Average:					43.5			12.9			112			320			397		
Mill Factor, %					98.6			100.0			98.2			104.4			96.7		
Mill Index, %					98.4			101.6			99.1			100.9			102.7		

<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--MARCH 1 THROUGH MARCH 31, 1961 (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.	Av.	Max.	Av.	Max.	Av.	Max.	Min.	Av.	Max.	Min.	Av.				
189106	WF1S	3/15/61	2/26/61	2	42.8	40.0	41.8	13.7	12.8	13.3	139	88	110	320	256	289 <sup>a</sup>	368	272	327 <sup>a</sup>	
189107	WF1S	3/15/61	2/28/61	2	44.0	42.0	42.8	15.2	14.0	14.6	126	78	103	368	256	301 <sup>a</sup>	416	336	373 <sup>a</sup>	
189108	WF1S	3/15/61	3/1/61	2	44.0	42.2	43.1	14.5	13.0	13.6	133	88	110	368	272	315 <sup>a</sup>	400	312	346 <sup>a</sup>	
189109	WF1S	3/15/61	3/2/61	2	42.2	40.8	41.8	14.3	13.2	13.8	135	82	108	352	248	295 <sup>a</sup>	384	328	350 <sup>a</sup>	
189139	WF1S	3/20/61	3/3/61	2	43.8	42.0	43.1	14.2	13.0	13.7	133	87	112	360	264	300 <sup>a</sup>	384	320	348 <sup>a</sup>	
189140	WF1S	3/20/61	3/9/61	2	43.0	41.0	42.0	14.2	12.5	13.3	135	85	109	344	240	279 <sup>a</sup>	416	288	331 <sup>a</sup>	
189141	WF1S	3/20/61	3/12/61	2	42.2	41.0	41.5	13.8	12.6	13.2	135	81	107	352	264	292 <sup>a</sup>	360	328	341 <sup>a</sup>	
189142	WF1S	3/20/61	3/13/61	2	43.0	40.8	41.6	13.6	12.6	13.1	130	84	106	336	264	300 <sup>a</sup>	368	296	333 <sup>a</sup>	
Current Mill Average:							42.2			13.6			108			296				
Cumulative Mill Average:							43.3			13.9			110			328				
Mill Factor, %							97.5			97.8			98.2			90.2				
Mill Index, %							96.8			107.1			97.3			89.4				

<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--MARCH 1 THROUGH MARCH 31, 1961 (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.	Max.	Min.	Av.
189060	W.B.	3/10/61	2/21/61	-	45.0	41.8	43.5	13.0	12.2	12.6	130	87	107	432	344	401	528	384	445 <sup>a</sup>
189061	W.B.	3/10/61	2/24/61	-	43.6	41.4	42.4	12.1	11.0	11.7	129	90	111	400	320	361	448	352	409 <sup>a</sup>
189088	W.B.	3/13/61	2/28/61	-	43.6	41.8	42.4	12.1	11.3	11.8	127	86	108	448	336	371 <sup>a</sup>	440	368	411 <sup>a</sup>
189089	W.B.	3/13/61	3/1/61	-	44.0	41.6	43.5	12.6	11.2	11.9	168	-88	111	472	336	382 <sup>a</sup>	448	368	415 <sup>a</sup>
189098	W.B.	3/14/61	3/5/61	-	44.0	42.0	42.9	12.3	11.0	11.8	131	87	115	416	336	368 <sup>a</sup>	464	384	425 <sup>a</sup>
189099	W.B.	3/14/61	3/6/61	-	44.2	42.0	43.2	12.0	11.0	11.4	125	98	113	472	328	386 <sup>a</sup>	464	360	412 <sup>a</sup>
189164	W.B.	3/22/61	3/6/61	-	43.8	42.0	43.0	12.0	11.0	11.6	125	102	112	424	320	375 <sup>a</sup>	440	400	417 <sup>a</sup>
189165	W.B.	3/22/61	3/7/61	-	43.4	41.8	42.5	12.1	11.0	11.7	123	85	106	392	320	357 <sup>a</sup>	432	368	397 <sup>a</sup>
189166	W.B.	3/22/61	3/11/61	-	44.0	42.0	42.8	12.0	11.0	11.5	128	89	110	448	320	375 <sup>a</sup>	480	368	405 <sup>a</sup>
Current Mill Average:					42.9			11.8			110			375			415		
Cumulative Mill Average:					43.6			12.0			111			362			407		
Mill Factor, %					98.4			98.3			99.1			103.6			102.0		
Mill Index, %					98.4			92.9			99.1			113.3			111.0		

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XVI

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Calliper, points			Bursting Strength, P.s.i. Gage			Elmendorf Tear, g./sheet					
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
188999	W.F.	3/6/61	2/23/61	3	44.0	43.0	43.6	12.0	11.2	11.5	127	90	107	368	256	326	416	352	378 <sup>a</sup>
189056	W.F.	3/10/61	2/28/61	3	44.0	42.2	43.3	11.3	10.5	11.1	129	82	110	384	288	333 <sup>a</sup>	400	312	375 <sup>a</sup>
Current Mill Average:							43.5			11.3		109			330			377	
Cumulative Mill Average:							44.0			12.0		112			337			379	
Mill Factor, %							98.9			94.2		97.3			97.9			99.5	
Mill Index, %							99.8			89.0		98.2			99.7			100.8	

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XVII

MILL 0 -- 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.	Av.	Max.	Av.	Max.	Av.	In	Across	Max.	Min.	Av.				
189081	W.F.	3/13/61	3/7/61	-	44.0	43.4	43.7	13.2	12.3	12.9	129	91	116	352	272	320 <sup>a</sup>	400	312	362 <sup>a</sup>
189082	W.F.	3/13/61	3/8/61	-	43.8	42.2	43.0	13.7	12.8	13.0	135	99	114	368	256	321 <sup>a</sup>	408	328	353 <sup>a</sup>
189083	W.F.	3/13/61	3/9/61	-	42.8	41.0	41.9	12.9	12.1	12.5	129	93	111	320	272	301	384	320	341 <sup>a</sup>
189084	W.F.	3/13/61	3/10/61	-	44.0	42.8	43.6	13.0	12.0	12.6	132	101	119	368	304	332	400	336	359 <sup>a</sup>
189135	W.F.	3/20/61	3/14/61	-	44.0	43.4	43.8	13.4	12.8	13.1	140	96	115	352	280	313 <sup>a</sup>	384	336	362 <sup>a</sup>
189136	W.F.	3/20/61	3/15/61	-	43.8	42.2	43.0	13.6	12.7	13.1	130	77	108	384	272	317 <sup>a</sup>	400	312	361 <sup>a</sup>
189137	W.F.	3/20/61	3/16/61	-	44.0	43.0	43.6	14.6	13.1	14.0	124	93	112	368	280	321 <sup>a</sup>	400	328	361 <sup>a</sup>
189138	W.F.	3/20/61	3/17/61	-	44.4	43.6	44.0	13.6	12.8	13.1	130	105	116	352	256	310 <sup>a</sup>	408	328	375 <sup>a</sup>
Current Mill Average:							43.3			13.0			114			317			359
Cumulative Mill Average:							43.8			12.6			114			323			356
Mill Factor, %							98.9			103.2			100.0			98.1			100.8
Mill Index, %							99.3			102.4			102.7			95.8			96.0

<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--MARCH 1 THROUGH MARCH 31, 1961 (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.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
189006	W.F.	3/ 6/61	2/16/61	1	44.2	43.2	12.6	11.8	12.0	138	95	114	368	256	309	392	336	361 <sup>a</sup>
189007	W.F.	3/ 6/61	2/17/61	1	45.6	44.6	13.1	12.6	12.9	135	90	113	352	304	331	384	336	368 <sup>a</sup>
189008	W.F.	3/ 6/61	2/22/61	1	44.6	43.6	13.2	12.1	12.6	131	89	110	456	288	345	400	336	373 <sup>a</sup>
189009	W.F.	3/ 6/61	2/23/61	1	45.8	44.0	13.2	11.7	12.7	143	86	113	392	288	357 <sup>a</sup>	432	336	398 <sup>a</sup>
189213	W.F.	3/27/61	3/ 9/61	1	44.0	42.4	13.3	12.1	12.5	124	86	110	336	256	295	400	336	369 <sup>a</sup>
189214	W.F.	3/27/61	3/10/61	1	44.2	43.7	13.1	12.1	12.7	127	87	111	336	272	290	384	320	345 <sup>a</sup>
189215	W.F.	3/27/61	3/11/61	1	43.8	42.4	12.5	12.0	12.1	130	86	112	320	240	279	384	336	363 <sup>a</sup>
189216	W.F.	3/27/61	3/12/61	1	44.0	43.4	13.1	12.1	12.6	126	80	107	328	240	281	392	320	353 <sup>a</sup>
Current Mill Average:					43.4		12.5		12.5		111		311		366			
Cumulative Mill Average:					43.5		12.8		12.8		108		320		364			
Mill Factor, %					99.8		97.7		102.8		97.2		100.5					
Mill Index, %					99.5		98.4		100.0		94.0		97.9					

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XIX

MILL Q -- 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.	Max.	Min.	Av.		
189000	W.F.	3/ 6/61	2/19/61	1	44.0	41.0	43.1	13.2	11.9	12.4	133	91	112	320	272	289 <sup>a</sup>	368	304	341 <sup>a</sup>		
189053	W.F.	3/ 9/61	2/22/61	1	44.0	41.6	43.2	12.8	11.8	12.3	124	92	108	312	248	274	352	304	341 <sup>a</sup>		
189126	W.F.	3/16/61	2/27/61	1	45.6	43.0	44.1	12.7	11.8	12.1	139	89	113	304	224	261 <sup>a</sup>	368	320	343 <sup>a</sup>		
189168	W.F.	3/23/61	3/ 3/61	1	43.6	41.6	42.8	13.0	11.8	12.3	123	97	109	320	240	275	384	312	345 <sup>a</sup>		
Current Mill Average:							43.3			12.3		110			275				342		
Cumulative Mill Average:							43.9			12.4		109			289					347	
Mill Factor, %							98.6			99.2		100.9			95.2					98.6	
Mill Index, %							99.3			96.9		99.1			83.1						91.4

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XX

MILL S -- 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.	Av.	Max.	Av.	Max.	Av.	Max.	Av.	Max.	Av.					
189157	W.F.	3/22/61	3/12/61	2	44.0	42.2	43.4	12.6	12.0	12.3	139	103	122	384	304	335 <sup>a</sup>	400	344	389 <sup>a</sup>
189158	W.F.	3/22/61	3/12/61	2	42.2	41.6	42.0	12.1	11.2	11.8	132	87	117	424	280	339 <sup>a</sup>	400	336	362 <sup>a</sup>
189211	W.F.	3/27/61	3/15/61	2	42.8	41.8	42.1	12.0	11.2	11.7	135	106	118	368	272	309	400	336	370 <sup>a</sup>
Current Mill Average:						42.5		11.9		11.9		119		328		328		374	
Cumulative Mill Average:						43.6		12.0		12.0		116		324		324		364	
Mill Factor, %						97.5		99.2		99.2		102.6		101.2		101.2		102.7	
Mill Index, %						97.5		93.7		93.7		107.2		99.1		99.1		100.0	

TABLE XXI

MILL T -- 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.

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  
PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

Mill Code	Preconditioning		Conditioning	
	Relative Humidity, %	Temperature, °F., Time, hr.	Relative Humidity, %	Temperature, °F., Time, hr.
A		None	50	73 24
B	50	70-73 48	50	70-73 3
C		No Samples Submitted.		
D	50	70-72 120	50	70-72 120-288
E	50	73 24	50	73 24
F		No Samples Submitted.		
G	51	72-74 48	50	73 --
H		No Samples Submitted.		
I	50	73 24		None 24
J		None	50	73 --
K		None	55-58	72-74 --
L	50	72 24		None
M		None	40-45	71-73 48
N		None	50	73 24
O	34	77 8	48-52	72-73 16
P	50	73 24	50	73 24
Q	36-48	68-69 0.5	50	73 24-48
S		None	50	73 24
T		No Samples Submitted.		

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

Mills <sup>a</sup>	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T
No. of Samples Compared	7	8	0	11	8	0	6	0	3	4	5	8	9	2	8	8	4	3	0
Institute	43.2	43.1	43.0	43.0	43.3	43.7	42.3	42.3	42.3	43.7	42.9	42.2	42.9	43.5	43.3	43.4	43.3	42.5	42.5
Mill	42.9	43.1	43.0	43.0	43.2	43.4	42.4	42.4	42.4	43.9	43.0	42.9	42.6	43.3	43.0	43.9	43.2	42.4	42.4
Av. Diff. b	-0.3	0.0	0.0	0.0	-0.1	-0.3	+0.1	+0.1	+0.1	+0.2	+0.1	+0.7	-0.3	-0.2	-0.3	+0.5	-0.1	-0.1	-0.1
Max. Diff. c	-0.7	+0.3	-0.3	-0.3	-0.4	-0.5	+0.3	+0.3	+0.3	+0.6	+0.8	+1.3	-0.6	-0.5	-1.0	+0.7	-0.3	-0.5	-0.5
Institute	12.9	13.0	13.2	12.7	12.7	12.7	12.3	12.3	12.3	12.6	12.9	13.6	11.8	11.3	13.0	12.5	12.3	11.9	11.9
Mill	12.3	12.6	12.9	12.4	12.4	12.2	12.1	12.1	12.1	12.5	12.6	13.4	11.5	11.0	12.9	12.4	12.0	11.8	11.8
Av. Diff. b	-0.6	-0.4	-0.3	-0.3	-0.5	-0.5	-0.2	-0.2	-0.2	-0.1	-0.3	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	-0.1	-0.1
Max. Diff. c	-1.1	-0.5	-0.5	-0.4	-0.6	-0.6	-0.3	-0.3	-0.3	-0.2	-0.7	-0.8	-0.4	-0.4	-0.4	-0.3	-0.4	-0.3	-0.3
Institute	105	109	109	109	116	111	108	108	108	112	110	108	110	109	114	111	110	119	119
Mill	111	113	107	107	112	109	113	107	113	107	108	110	110	107	113	114	109	113	113
Av. Diff. b	+6	+4	-2	-2	-4	-2	+5	-5	+5	-5	-2	+2	0	-2	-1	+3	-1	-6	-6
Max. Diff. c	+12	+6	-8	-8	-8	-6	+5	+5	+5	-7	-4	+9	-6	-3	+6	+6	-3	-7	-7
Institute	372	315	310	310	330	374	333	333	333	369	334	296	375	330	317	311	275	328	328
Mill	--	288	315	289	289	377	311	311	311	351	327	291	328	339	274	326	277	348	348
Av. Diff. b	--	-27	+5	-41	-41	+3	-22	-22	-22	-18	-7	-5	-47	+9	-43	+15	+2	+20	+20
Max. Diff. c	--	-47	+23	-55	-55	+18	-29	-29	-29	-51	-16	+28	-71	+11	-63	+33	-16	+30	+30
Institute	412	367	359	359	396	410	382	382	382	367	384	344	415	377	359	366	342	374	374
Mill	--	374	389	362	362	412	374	374	374	380	396	384	391	401	330	409	357	381	381
Av. Diff. b	--	+7	+30	-34	-34	+2	-8	-8	-8	+13	+12	+40	-24	+24	-29	+43	+15	+7	+7
Max. Diff. c	--	+28	+59	-66	-66	+37	-24	-24	-24	+32	+30	+58	-42	+30	-43	+67	+26	+30	+30

a Comparison based on averages involved only those samples on which mill test data were submitted.  
 b Average difference is the difference between the Institute mill average and the mill average based on mill test data.  
 c Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

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

Mill	Period	Basis Weight	Cali-per	Bursting Strength	Tear, in	Tear, across	Mill	Period	Basis Weight	Cali-per	Bursting Strength	Tear, in	Tear, across
A	Current	-0.7	-5	+6	--	--	K	Current	+0.2	-2	-2	-2	+3
	167th	-2	-5	+2	--	--		167th	-0.9	-2	-4	-0.6	0
	166th	-1	-6	+4	--	--		166th	-1	-2	-3	+2	-0.8
B	Current	0	-3	+4	-9	+2	L	Current	+2	-1	+2	-2	+12
	167th	-0.9	-3	+5	+14	0		167th	0	-2	-5	-2	+6
	166th	-0.5	-3	+6	-9	+1		166th	-0.9	-2	-3	-6	+3
C	Current	--	--	--	--	--	M	Current	-0.7	-3	0	-13	-6
	167th	--	--	--	--	--		167th	-0.7	-3	+2	-11	-4
	166th	--	--	--	--	--		166th	-1	-3	+0.9	-9	-9
D	Current	0	-2	-2	+2	+8	N	Current	-0.5	-3	-2	+3	+6
	167th	-0.5	0	-4	+3	+9		167th	-0.7	-3	+4	+3	+8
	166th	-1	-0.8	+0.9	-4	-0.3		166th	0	-3	-2	-4	+1
E	Current	-0.2	-2	-3	-12	-9	O	Current	-0.7	-0.8	-0.9	-14	-8
	167th	-0.9	-2	0	-8	+2		167th	-0.9	-2	-0.9	-13	-7
	166th	-1	-2	-3	-11	-3		166th	-0.9	-2	+0.9	-12	-3
F	Current	--	--	--	--	--	P	Current	+1	-0.8	+3	+5	+12
	167th	--	--	--	--	--		167th	+0.5	-0.8	+3	+6	+13
	166th	--	--	--	--	--		166th	0	-0.8	+2	+6	+9
G	Current	-0.7	-4	-2	+0.8	+0.5	Q	Current	-0.2	-2	-0.9	+0.7	+4
	167th	-1	-3	-2	+3	+0.5		167th	-0.9	-3	-3	-0.7	+3
	166th	-2	-2	-0.9	-5	-0.3		166th	-1	-3	0	-2	+3
H	Current	--	--	--	--	--	S	Current	-0.2	-0.8	-5	+6	+2
	167th	-1	-2	-0.9	-17	0		167th	0	0	-2	+6	+14
	166th	--	--	--	--	--		166th	-0.5	-0.8	-7	+7	+9
I	Current	+0.2	-2	+5	-7	-2	T	Current	--	--	--	--	--
	167th	-0.7	-2	+11	-6	+1		167th	--	--	--	--	--
	166th	-0.7	-3	+8	-10	-13		166th	--	--	--	--	--
J	Current	+0.5	-0.8	-4	-5	+4		Current	--	--	--	--	--
	167th	+0.9	0	-8	+0.9	+9		167th	--	--	--	--	--
	166th	-0.5	-0.8	-2	-9	+4		166th	--	--	--	--	--

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 two per cent. By comparison, the largest average percentage difference noted for the previous two periods was also two per cent. Further, it may be noted that the average basis weight results for Mills I, J, K, L, and P were higher than those for the Institute, whereas the average basis weight results for Mills B and D were the same as the corresponding results for the Institute, and the results for the other mills were lower. In general, agreement between Institute and mill basis weight results was good.

The maximum variation in caliper for the current period was five per cent. This was slightly lower than the maximum variation of six per cent for the previous two periods. Compared with the Institute's results, the average test results for all mills were lower. Agreement was very good for the majority of comparisons of Institute and mill caliper results. Only the variation for Mill A appeared to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of six per cent for the current period. The maximum variation for the two preceding periods was eleven per cent. The average bursting strength results for Mills A, B, I, L, and P were higher than those for the Institute, the average result for Mill M was the same as that 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 variation noted for Mill A.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills D, G, N, P, 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 fourteen 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 E, M, and O appeared to be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills E, I, M, and O were lower, and the average results for the other mills were higher. The maximum variation for the current period was twelve 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 with the exception of the variations for Mills L and P which 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 March fall within designated percentages from the average test results obtained at the Institute.

COMPARISON OF INSTITUTE AND MILL DATA--MARCH 1 THROUGH MARCH 31, 1961

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		Elmendorf Tear, g./sheet			
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In	Across	IPC Mill	Diff.
188950	WFIS	1/17/61	2	44.1	-0.7	12.7	12.3	-0.4	105	108	+ 3	393	418a
189001	WFIS	2/27/61	1	43.2	0.0	12.6	11.9	-0.7	102	114	+12	361	404a
189002	WFIS	2/28/61	1	42.3	-0.2	12.8	12.9	+0.1	99	103	+ 4	358a	371a
189086	WFIS	3/ 7/61	2	42.9	-0.5	13.2	12.1	-1.1	111	117	+ 6	399a	424a
189096	WFIS	3/ 8/61	2	43.3	-0.6	12.8	12.0	-0.8	110	113	+ 3	363a	407a
189161	WFIS	3/13/61	2	43.4	-0.5	13.2	12.5	-0.7	106	114	+ 8	349a	435a
189156	WFIS	3/15/61	2	43.6	+0.2	13.2	12.5	-0.7	102	104	+ 2	384a	426a
Current Mill Average:				43.2	-0.3	12.9	12.3	-0.6	105	111	+ 6	372	412

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--MARCH 1 THROUGH MARCH 31, 1961 (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. edge		Elmendorf Tear, g./sheet			
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In Mill	Diff.	IPC Mill	Diff.
188955	----	2/ 2/61	1	42.2	+0.1	12.6	-0.4	109	+2	279	-28	341 <sup>a</sup>	+ 8
188956	----	2/ 5/61	1	43.4	-0.3	12.4	-0.4	107	+4	298	-28	379 <sup>a</sup>	- 3
189003	----	2/ 6/61	1	42.0	+0.2	13.6	-0.4	108	+2	264	-35	353 <sup>a</sup>	+ 7
189004	----	2/14/61	1	42.5	+0.3	13.2	-0.5	109	+3	276	-29	359 <sup>a</sup>	+19
189005	----	2/17/61	1	43.2	-0.2	12.5	-0.3	112	+5	295	-13	380 <sup>a</sup>	+28
189058	----	2/14/61	1	43.7	-0.2	13.0	-0.5	112	+1	279	-47	387 <sup>a</sup>	-13
189059	----	2/15/61	1	43.9	+0.1	13.1	-0.4	107	+2	284	-30	361 <sup>a</sup>	+13
189097	----	2/12/61	1	43.9	-0.1	13.4	-0.3	112	+6	330	- 7	378 <sup>a</sup>	- 4
Current Mill Average:				43.1	0.0	13.0	-0.4	109	+4	288	-27	367	+ 7

<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--MARCH 1 THROUGH MARCH 31, 1961 (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. gage		Elmendorf Tear, g./sheet								
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In	Across	IPC Mill	Diff.					
189057	WFIS	2/13/61	2	42.8	+0.1	13.1	13.0	-0.1	111	109	-2	308 <sup>a</sup>	322	+14	355 <sup>a</sup>	390	+35	
188952	WFIS	2/14/61	2	43.2	-0.1	13.2	12.7	-0.5	114	106	-8	309 <sup>a</sup>	316	+7	361 <sup>a</sup>	374	+13	
188951	WFIS	2/15/61	2	43.2	+0.2	13.5	13.1	-0.4	109	104	-5	337	318	-19	356 <sup>a</sup>	401	+45	
188953	WFIS	2/18/61	2	43.4	-0.2	13.4	13.0	-0.4	111	105	-6	317 <sup>a</sup>	326	+9	361 <sup>a</sup>	420	+59	
189143	WFIS	2/26/61	2	43.1	-0.3	13.1	12.9	-0.2	103	106	+3	298 <sup>a</sup>	308	+10	369 <sup>a</sup>	406	+37	
189085	WFIS	2/27/61	2	43.9	-0.2	13.4	13.0	-0.4	109	107	-2	331 <sup>a</sup>	337	+6	365 <sup>a</sup>	386	+21	
189144	WFIS	3/ 1/61	2	43.0	-0.2	13.0	12.7	-0.3	114	111	-3	290 <sup>a</sup>	298	+8	357 <sup>a</sup>	405	+48	
189145	WFIS	3/ 2/61	2	42.1	0.0	13.2	12.8	-0.4	107	104	-3	303	322	+19	351 <sup>a</sup>	396	+45	
189146	WFIS	3/ 5/61	2	42.7	+0.1	13.0	12.7	-0.3	109	106	-3	313 <sup>a</sup>	290	-23	361 <sup>a</sup>	354	-7	
189147	WFIS	3/ 6/61	2	42.4	+0.1	13.1	12.9	-0.2	109	109	0	297 <sup>a</sup>	306	+9	343 <sup>a</sup>	369	+26	
189176	WFIS	3/12/61	2	43.5	0.0	13.5	13.2	-0.3	107	109	+2	303	326	+23	365 <sup>a</sup>	379	+14	
Current Mill Average:				43.0	43.0	0.0	13.2	12.9	-0.3	109	107	-2	310	315	+5	359	389	+30

No samples submitted

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

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 individuals readings.

COMPARISON OF INSTITUTE AND MILL DATA--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. case		Elmendorf Tear, g./sheet								
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.			
189127	W.F.	2/ 9/61	2	43.2	43.3	+0.1	12.8	12.5	-0.3	114	112	-2	325 <sup>a</sup>	305	-20	385 <sup>a</sup>	349	-36
189128	W.F.	2/23/61	2	43.1	42.9	-0.2	12.5	12.2	-0.3	114	112	-2	327	276	-51	381 <sup>a</sup>	377	-4
189129	W.F.	2/23/61	2	43.2	43.3	+0.1	12.8	12.5	-0.3	118	111	-7	350 <sup>a</sup>	295	-55	412 <sup>a</sup>	346	-66
189130	W.F.	2/27/61	2	43.2	43.0	-0.2	12.5	12.3	-0.2	115	111	-4	321 <sup>a</sup>	280	-41	410 <sup>a</sup>	354	-56
189131	W.F.	2/27/61	2	43.0	43.0	0.0	12.6	12.2	-0.4	114	112	-2	309 <sup>a</sup>	274	-35	384 <sup>a</sup>	348	-36
189132	W.F.	3/ 2/61	2	43.2	43.1	-0.1	12.8	12.6	-0.2	118	111	-7	344 <sup>a</sup>	297	-47	391 <sup>a</sup>	369	-22
189133	W.F.	3/ 2/61	2	43.7	43.3	-0.4	12.6	12.3	-0.3	120	112	-8	329 <sup>a</sup>	289	-40	401 <sup>a</sup>	388	-13
189134	W.F.	3/ 6/61	2	43.6	43.3	-0.3	12.7	12.4	-0.3	116	115	-1	332 <sup>a</sup>	299	-33	405 <sup>a</sup>	363	-42
Current Mill Average:				43.3	43.2	-0.1	12.7	12.4	-0.3	116	112	-4	330	289	-41	396	362	-34

<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--MARCH 1 THROUGH MARCH 31, 1961 (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	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In	Across

No samples submitted

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

189150	W.F.	2/5/61	-	43.9	43.5	-0.4	12.7	12.4	-0.3	117	116	-1	391 <sup>a</sup>	397	+6	422 <sup>a</sup>	459	+37
189151	W.F.	2/20/61	-	43.8	43.5	-0.3	12.9	12.4	-0.5	109	109	0	365 <sup>a</sup>	372	+7	399 <sup>a</sup>	403	+4
189152	W.F.	2/20/61	-	43.6	43.2	-0.4	12.8	12.3	-0.5	107	105	-2	373 <sup>a</sup>	368	-5	402 <sup>a</sup>	396	-6
189159	W.F.	2/27/61	-	44.1	43.6	-0.5	13.0	12.6	-0.4	109	108	-1	397 <sup>a</sup>	383	-14	411 <sup>a</sup>	424	+13
189160	W.F.	2/28/61	-	43.2	43.0	-0.2	12.2	11.6	-0.6	114	108	-6	357 <sup>a</sup>	361	+4	413 <sup>a</sup>	401	-12
189212	W.F.	3/14/61	-	43.8	43.3	-0.5	12.6	12.1	-0.5	111	110	-1	363	381	+18	411 <sup>a</sup>	389	-22
Current Mill Average:				43.7	43.4	-0.3	12.7	12.2	-0.5	111	109	-2	374	377	+3	410	412	+2

<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--MARCH 1 THROUGH MARCH 31, 1961 (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		Elmendorf Tear, g./sheet	
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In	IPC Mill

No samples submitted

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

188954	S.F.	2/20/61	7	43.3	43.2	-0.1	13.0	12.9	-0.1	106	110	+4	351	324	-27	399 <sup>a</sup>	396	-3
189010	S.F.	2/27/61	7	41.6	41.9	+0.3	11.9	11.6	-0.3	110	115	+5	325 <sup>a</sup>	296	-29	371 <sup>a</sup>	347	-24
189163	S.F.	3/13/61	7	41.9	42.1	+0.2	11.8	11.9	+0.1	109	113	+4	325 <sup>a</sup>	314	-11	377 <sup>a</sup>	378	+1
Current Mill Average:				42.3	42.4	+0.1	12.3	12.1	-0.2	108	113	+5	333	311	-22	382	374	-8

<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--MARCH 1 THROUGH MARCH 31, 1961 (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. page		Elmendorf Tear, g./sheet			
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across	IPC	Mill Diff.
188948	W.F.	2/16/61	-	43.9	44.0 +0.1	12.9	12.7 -0.2	114	109 -5	352	358 +6	376 <sup>a</sup>	408 +32
188949	W.F.	2/16/61	-	43.7	43.6 -0.1	12.7	12.5 -0.2	112	108 -4	385 <sup>a</sup>	334 -51	385 <sup>a</sup>	388 +3
189148	W.F.	3/3/61	-	43.4	44.0 +0.6	12.1	12.1 0.0	114	107 -7	355 <sup>a</sup>	351 -4	350 <sup>a</sup>	361 +11
189149	W.F.	3/3/61	-	43.6	44.0 +0.4	12.7	12.6 -0.1	109	106 -3	384 <sup>a</sup>	362 -22	359 <sup>a</sup>	362 +3
Current Mill Average:				43.7	43.9 +0.2	12.6	12.5 -0.1	112	107 -5	369	351 -18	367	380 +13

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

189054	WFIS	2/28/61	1	42.9	42.2 -0.7	12.9	12.5 -0.4	113	109 -4	323 <sup>a</sup>	313 -10	384 <sup>a</sup>	389 +5
189055	WFIS	3/2/61	1	42.7	42.8 +0.1	12.8	12.4 -0.4	111	109 -2	341	325 -16	375 <sup>a</sup>	405 +30
189087	WFIS	3/7/61	1	43.0	43.6 +0.6	12.7	12.8 +0.1	109	111 +2	341 <sup>a</sup>	338 -3	403 <sup>a</sup>	415 +12
189162	WFIS	3/13/61	1	43.2	42.9 -0.3	13.3	12.6 -0.7	108	104 -4	331 <sup>a</sup>	331 0	356 <sup>a</sup>	384 +28
189175	WFIS	3/16/61	1	42.7	43.5 +0.8	12.9	12.8 -0.1	110	107 -3	333 <sup>a</sup>	327 -6	403 <sup>a</sup>	387 -16
Current Mill Average:				42.9	43.0 +0.1	12.9	12.6 -0.3	110	108 -2	334	327 -7	384	396 +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--MARCH 1 THROUGH MARCH 31, 1961 (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		Elmendorf Tear, g./sheet							
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In Mill	Diff.	IPC Mill	Diff.	Across Mill	Diff.		
189106	WFIS	2/26/61	2	41.8	+0.2	13.3	12.8	-0.5	110	112	+2	289 <sup>a</sup>	283	-6	327 <sup>a</sup>	371	+44
189107	WFIS	2/28/61	2	42.8	+0.2	14.6	13.8	-0.8	103	112	+9	301 <sup>a</sup>	288	-13	373 <sup>a</sup>	416	+43
189108	WFIS	3/1/61	2	43.1	+0.6	13.6	13.8	+0.2	110	104	-6	315 <sup>a</sup>	290	-25	346 <sup>a</sup>	404	+58
189109	WFIS	3/2/61	2	41.8	+1.0	13.8	14.0	+0.2	108	104	-4	295 <sup>a</sup>	316	+21	350 <sup>a</sup>	380	+30
189139	WFIS	3/3/61	2	43.1	+0.6	13.7	13.5	-0.2	112	108	-4	300 <sup>a</sup>	328	+28	348 <sup>a</sup>	379	+31
189140	WFIS	3/9/61	2	42.0	+1.0	13.3	13.3	0.0	109	116	+7	279 <sup>a</sup>	261	-18	331 <sup>a</sup>	372	+41
189141	WFIS	3/12/61	2	41.5	+1.3	13.2	13.0	-0.2	107	114	+7	292 <sup>a</sup>	288	-4	341 <sup>a</sup>	373	+32
189142	WFIS	3/13/61	2	41.6	+0.7	13.1	12.9	-0.2	106	113	+7	300 <sup>a</sup>	274	-26	333 <sup>a</sup>	373	+40
Current Mill Average:				42.2	+0.7	13.6	13.4	-0.2	108	110	+2	296	291	-5	344	384	+40

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XXXVII

MILL M -- 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 Mill	Diff.	IPC Mill	Diff.	Across Mill	Diff.		
189060	W.B.	2/21/61	-	43.5	-0.4	12.6	12.2	-0.4	107	107	0	401	345	-56	445a	405	-40
189061	W.B.	2/24/61	-	42.4	+0.2	11.7	11.4	-0.3	111	114	+3	361	315	-46	409a	395	-14
189088	W.B.	2/28/61	-	42.4	-0.2	11.8	11.4	-0.4	108	108	0	371a	333	-38	411a	376	-35
189089	W.B.	3/ 1/61	-	42.5	-0.5	11.9	11.8	-0.1	111	111	0	382a	317	-65	415a	417	+ 2
189098	W.B.	3/ 5/61	-	42.9	-0.3	11.8	11.6	-0.2	115	112	-3	368a	337	-31	425a	383	-42
189099	W.B.	3/ 6/61	-	43.2	-0.6	11.4	11.2	-0.2	113	115	+2	386a	315	-71	412a	373	-39
189164	W.B.	3/ 6/61	-	43.0	-0.4	11.6	11.4	-0.2	112	106	-6	375a	331	-44	417a	403	-14
189165	W.B.	3/ 7/61	-	42.5	-0.3	11.7	11.4	-0.3	106	108	+2	357a	327	-30	397a	379	-18
189166	W.B.	3/11/61	-	42.8	-0.2	11.5	11.2	-0.3	110	108	-2	375a	332	-43	405a	385	-20
Current Mill Average:				42.9	-0.3	11.8	11.5	-0.3	110	110	0	375	328	-47	415	391	-24

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--MARCH 1 THROUGH MARCH 31, 1961 (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		Elmendorf Tear, g./sheet							
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In Mill	Diff.	IPC Mill	Diff.	Across Mill	Diff.		
188999	W.F.	2/23/61	3	43.6	-0.5	11.5	11.1	-0.4	107	106	-1	326	337	+11	378 <sup>a</sup>	397	+19
189056	W.F.	2/28/61	3	43.3	+0.1	11.1	11.0	-0.1	110	107	-3	333 <sup>a</sup>	340	+7	375 <sup>a</sup>	405	+30
Current Mill Average:				43.5	-0.2	11.3	11.0	-0.3	109	107	-2	330	339	+9	377	401	+24

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

189081	W.F.	3/7/61	-	43.7	-1.0	12.9	12.7	-0.2	116	115	-1	320 <sup>a</sup>	261	-59	362 <sup>a</sup>	319	-43
189082	W.F.	3/8/61	-	43.0	-0.3	13.0	13.0	0.0	114	113	-1	321 <sup>a</sup>	263	-58	353 <sup>a</sup>	331	-22
189083	W.F.	3/9/61	-	41.9	-0.2	12.5	12.3	-0.2	111	109	-2	301	257	-44	341 <sup>a</sup>	313	-28
189084	W.F.	3/10/61	-	43.6	-0.4	12.6	12.6	0.0	119	116	-3	332	269	-63	359 <sup>a</sup>	345	-14
189135	W.F.	3/14/61	-	43.8	-0.8	13.1	12.7	-0.4	115	114	-1	313 <sup>a</sup>	268	-45	362 <sup>a</sup>	331	-31
189136	W.F.	3/15/61	-	43.0	+0.1	13.1	12.9	-0.2	108	111	+3	317 <sup>a</sup>	272	-45	361 <sup>a</sup>	321	-40
189137	W.F.	3/16/61	-	43.6	-0.2	14.0	13.7	-0.3	112	109	-3	321 <sup>a</sup>	299	-22	361 <sup>a</sup>	336	-25
189138	W.F.	3/17/61	-	44.0	+0.1	13.1	13.0	-0.1	116	118	+2	310 <sup>a</sup>	307	-3	375 <sup>a</sup>	344	-31
Current Mill Average:				43.3	-0.3	13.0	12.9	-0.1	114	113	-1	317	274	-43	359	330	-29

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XL

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, D.S.I. Range		Elmendorf Tear, g./sheet						
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In	Across	IPC Mill	Diff.			
189006	W.F.	2/16/61	1	43.2	+0.4	12.0	12.0	114	118	+4	309	334	361 <sup>a</sup>	414	+53	
189007	W.F.	2/17/61	1	44.6	0.0	12.9	12.6	-0.3	113	115	+2	331	349	368 <sup>a</sup>	412	+44
189008	W.F.	2/22/61	1	43.6	+0.4	12.6	12.5	-0.1	110	113	+3	345	343	373 <sup>a</sup>	420	+47
189009	W.F.	2/23/61	1	44.0	+0.5	12.7	12.7	0.0	113	117	+4	357 <sup>a</sup>	354	398 <sup>a</sup>	413	+15
189213	W.F.	3/9/61	1	42.4	+0.7	12.5	12.5	0.0	110	111	+1	295	319	369 <sup>a</sup>	406	+37
189214	W.F.	3/10/61	1	43.7	+0.7	12.7	12.5	-0.2	111	110	-1	290	299	345 <sup>a</sup>	412	+67
189215	W.F.	3/11/61	1	42.4	+0.6	12.1	12.2	+0.1	112	115	+3	279	295	363 <sup>a</sup>	386	+23
189216	W.F.	3/12/61	1	43.4	+0.4	12.6	12.6	0.0	107	113	+6	281	314	353 <sup>a</sup>	411	+58
Current Mill Average:				43.4	+0.5	12.5	12.4	-0.1	111	114	+3	311	326	366	409	+43

TABLE XLI

MILL Q -- 42-LB. LINERBOARD

189000	W.F.	2/19/61	1	43.1	-0.3	12.4	12.0	-0.4	112	109	-3	289 <sup>a</sup>	273	341 <sup>a</sup>	348	+7
189053	W.F.	2/22/61	1	43.2	-0.2	12.3	12.0	-0.3	108	107	-1	274	279	341 <sup>a</sup>	355	+14
189126	W.F.	2/27/61	1	44.1	-0.2	12.1	12.0	-0.1	113	111	-2	261 <sup>a</sup>	271	343 <sup>a</sup>	355	+12
189168	W.F.	3/3/61	1	42.8	+0.2	12.3	12.0	-0.3	109	110	+1	275	286	345 <sup>a</sup>	371	+26
Current Mill Average:				43.3	-0.1	12.3	12.0	-0.3	110	109	-1	275	277	342	357	+15

<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--MARCH 1 THROUGH MARCH 31, 1961 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. safe		Elmendorf Tear, g./sheet							
				IPC Mill	Diff.	IPC Mill	Diff.	IPC Mill	Diff.	In Mill	Diff.	IPC Mill	Diff.	Across Mill	Diff.		
189157	W.F.	3/12/61	2	43.4	-0.5	12.3	12.0	-0.3	122	116	-6	335 <sup>a</sup>	361	+26	389 <sup>a</sup>	393	+4
189158	W.F.	3/12/61	2	42.0	+0.2	11.8	11.9	+0.1	117	114	-3	339 <sup>a</sup>	369	+30	362 <sup>a</sup>	392	+30
189211	W.F.	3/15/61	2	42.1	-0.1	11.7	11.5	-0.2	118	111	-7	309	314	+5	370 <sup>a</sup>	356	-14
Current Mill Average:				42.5	-0.1	11.9	11.8	-0.1	119	113	-6	328	348	+20	374	381	+7

TABLE XLIII

MILL T -- 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.

THE INSTITUTE OF PAPER CHEMISTRY

*W. N. Hubert*

---

W. N. Hubert, Research Aide  
Container Section

*R. C. McKee*

---

R. C. McKee, Chief  
Container Section

IPST HASELTON LIBRARY



5 0602 01053178 0