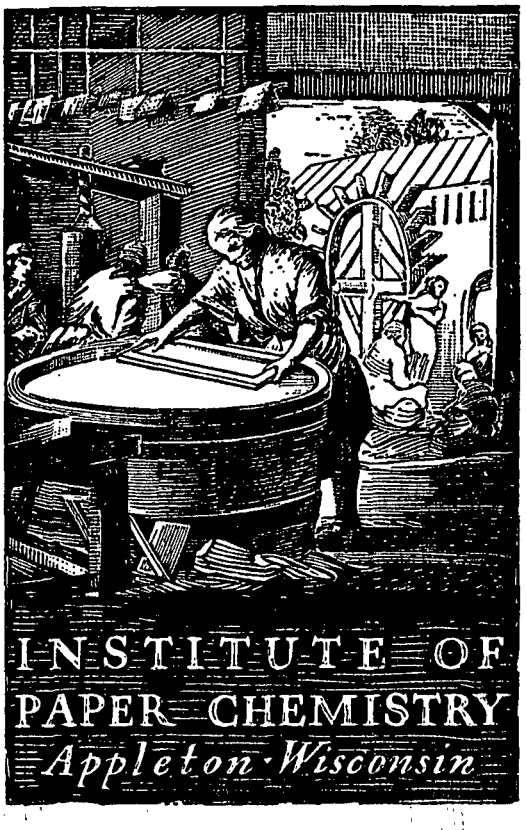

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 189

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1964

Your mills are identified by the following code letters in this report:

Mill	Code Letter
Jacksonville	M
Valdosta	T

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 189

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1964

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous base-line study on 42-lb. fourdrinier kraft linerboard have been prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis since August 1, 1961. The current report presents results obtained during the months of April and May, 1964.

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during April and May was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The average strength results for each mill may be seen in Table I and are graphically presented in Fig. 1 to 5. In addition to a comparison of the current mill averages for the various tests, Table I also shows the current F.K.I. averages, the cumulative F.K.I. averages, and F.K.I. indexes. For each test, the current mill average represents the average obtained on all sample lots evaluated from a given mill during the current period, the current F.K.I. average represents the average of the current mill averages, and 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. The F.K.I. index expressed in per cent is the ratio of the current F.K.I. average to the cumulative F.K.I. average.

In Table II, a tabulation of the number of sample lots submitted by each mill during the current period is shown.

Supplementary to the summary of basis weight data given in Table I, a tabulation is given in Table III of the amount by which the current basis weight average for each mill varies from the 42-lb. specification set forth in Rule 41.

Shown below from Table I are the maximum and minimum current mill averages and also the current and cumulative F.K.I. averages for each test.

TABLE I

SUMMARY OF COMPOSITE MILL AVERAGES--APRIL AND MAY, 1964

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i.g.	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.1	13.1	107	305	346
B	42.8	12.9	112	343	399
C	No samples submitted.				
D	42.8	12.9	110	319	370
E	42.5	12.9	111	339	392
F	42.8	12.3	112	311	380
G	42.9	12.9	117	412	428
H[a]					
I	43.0	12.1	116	297	370
J	No samples submitted.				
K	42.4	12.9	114	297	362
L	42.9	12.6	115	282	351
M	42.8	11.6	108	375	414
N	42.3	12.7	108	325	375
O	43.0	12.9	100	365	398
P	43.9	12.8	110	388	426
Q	No samples submitted.				
S	42.4	13.4	108	365	377
T	42.5	12.3	113	351	398
U	No samples submitted.				
V[a]					
W	42.5	13.1	114	338	388
X	42.4	12.3	111	309	364
Current FKI average:	42.7	12.7	111	336	385
Cumulative FKI average:	42.9	12.7	111	333	380
FKI Index, %	99.5	100.0	100.0	100.9	101.3

[a]Current mill averages have been omitted in compliance with Technical Committee's request that current mill averages based on evaluations of fewer than three sample lots of linerboard should be excluded from the summary table and from the calculation of the current FKI averages.

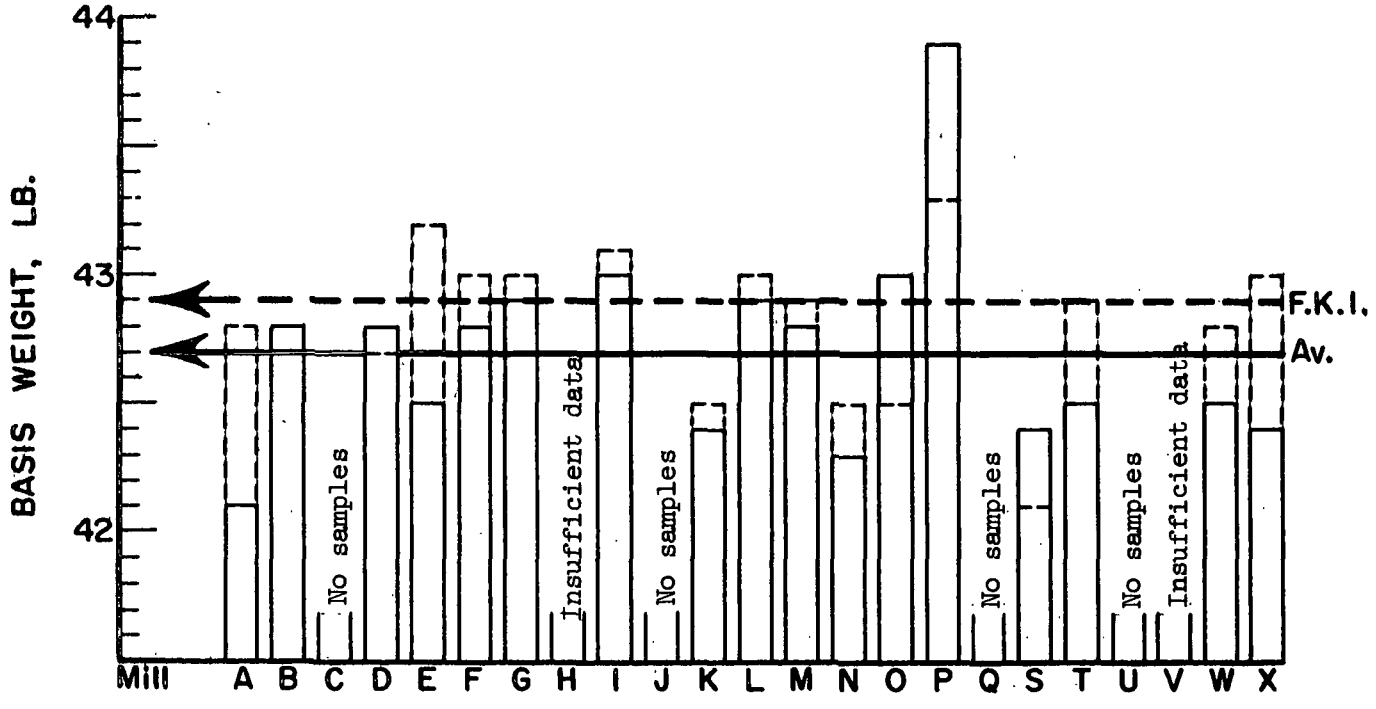

Figure 1. Comparison of Basis Weight Results

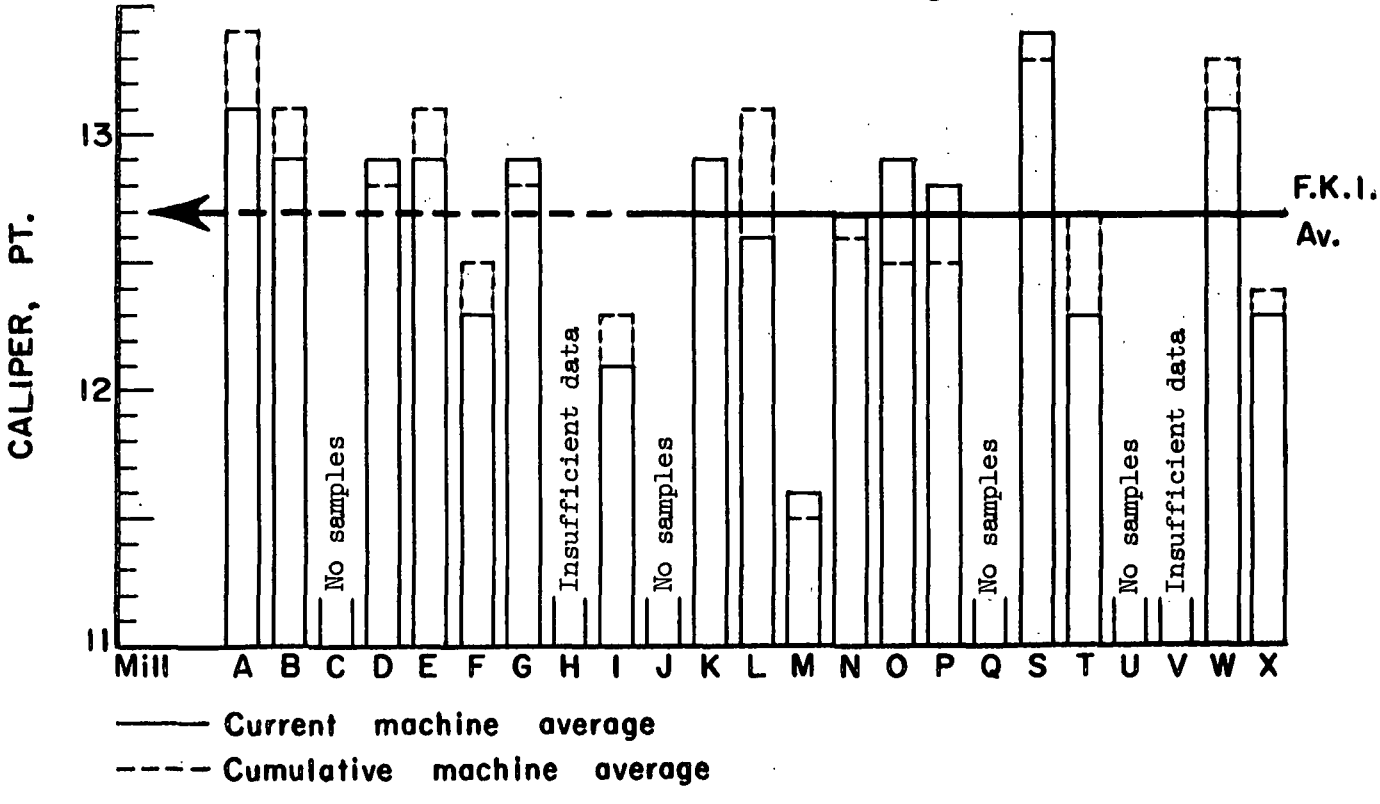

Figure 2. Comparison of Caliper Results

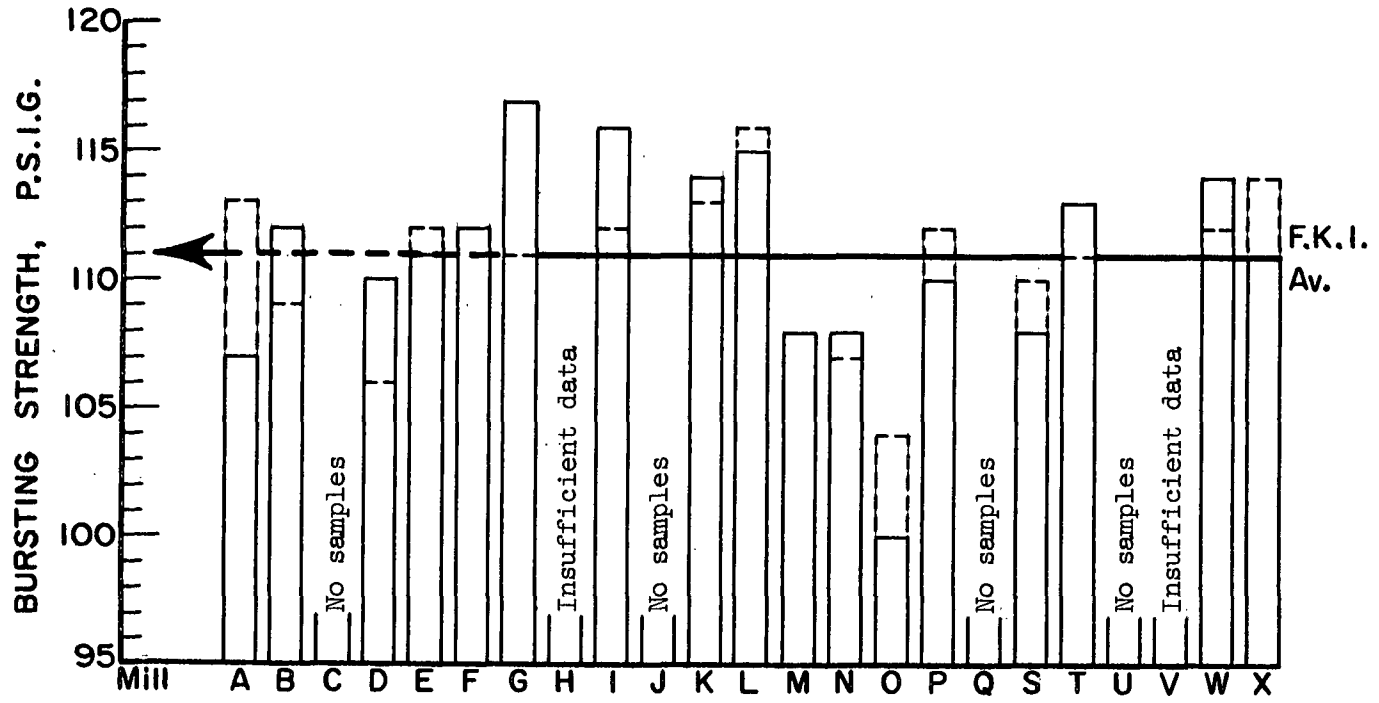

Figure 3. Comparison of Bursting Strength Results

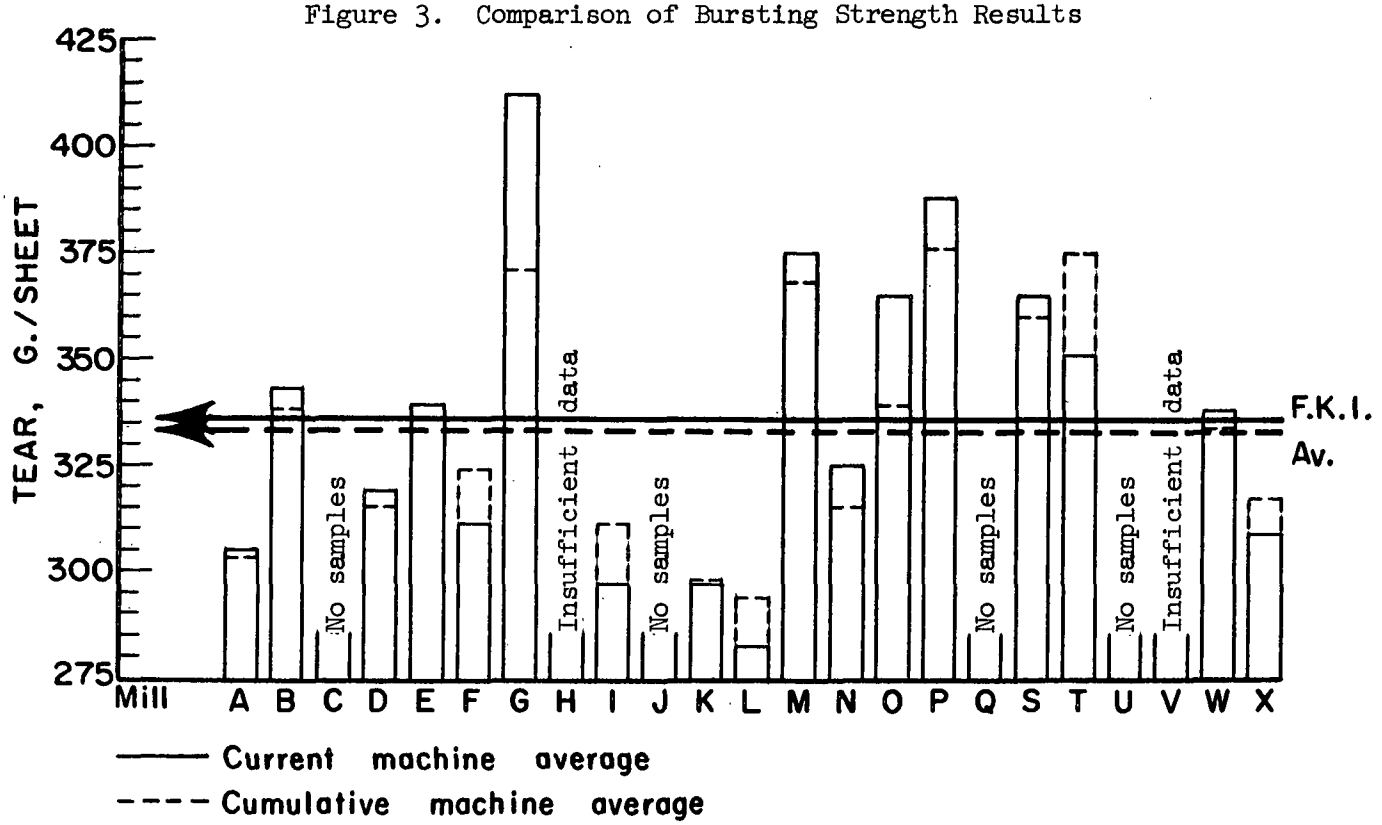

Figure 4. Comparison of Machine-Direction Tear Results

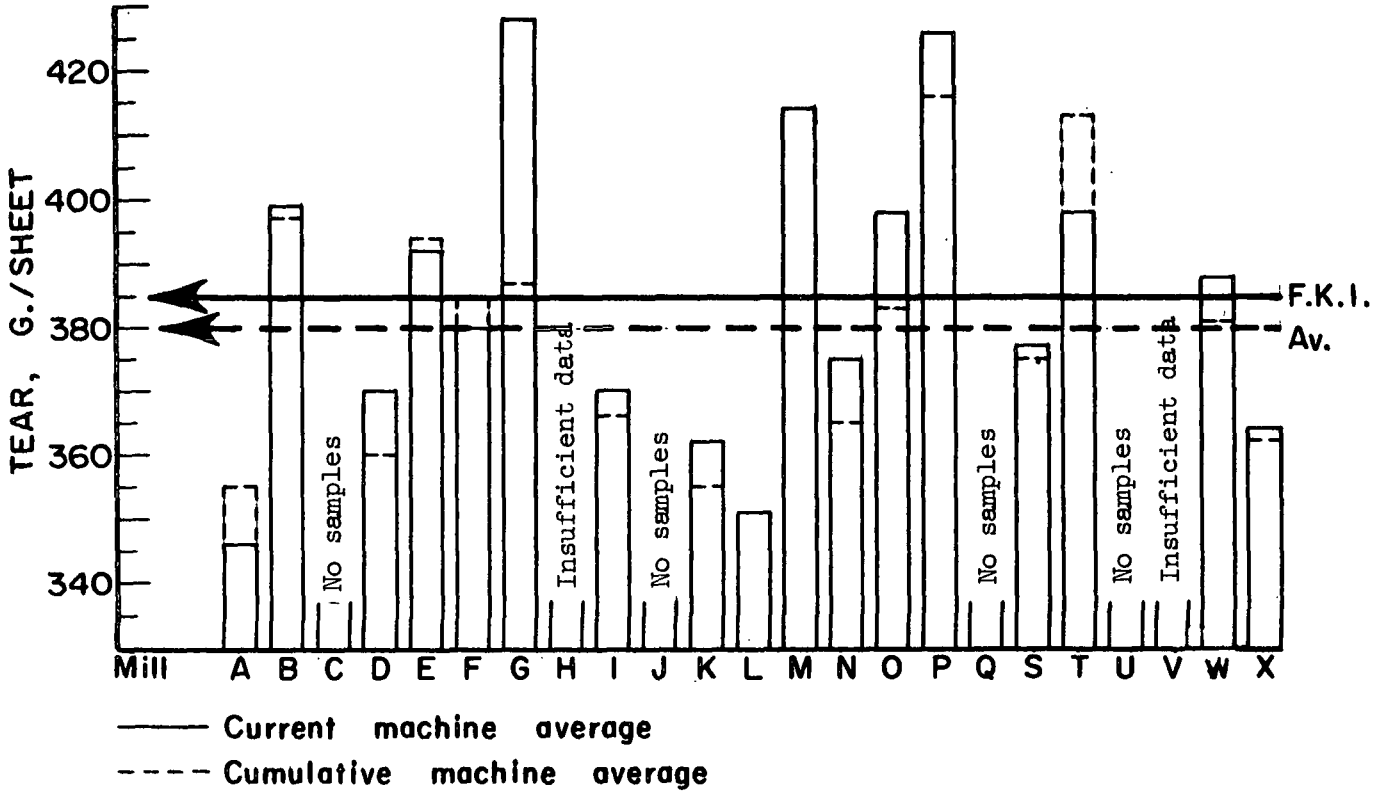

Figure 5. Comparison of Cross-Machine Direction Tear Results

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
DURING APRIL AND MAY, 1964

Mill Code	Number of Sample Lots
A	8
B	8
C	0
D	11
E	8
F	8
G	6
H	1
I	3
J	0
K	8
L	6
M	6
N	8
O	4
P	7
Q	0
S	4
T	7
U	0
V	1
W	4
X	8
Total	116

TABLE III

PERCENTAGE DEVIATION OF CURRENT MILL AVERAGES
FROM 42-LB. BASIS WEIGHT SPECIFICATION
FOR APRIL AND MAY, 1964

Mill Code	Percentage Deviation
A	+0.2
B	+1.9
C	--
D	+1.9
E	+1.2
F	+1.9
G	+2.1
H	+2.9
I	+2.4
J	--
K	+1.0
L	+2.1
M	+1.9
N	+0.7
O	+2.4
P	+4.5
Q	--
S	+1.0
T	+1.2
U	--
V	+5.2
W	+1.2
X	+1.0

Test	Current Mill Averages. Max.	Min.	F.K.I. Averages Current	Cumulative
Basis weight, lb.	43.9	42.1	42.7	42.9
Caliper, points	13.4	11.6	12.7	12.7
Bursting strength, p.s.i. gage	117	100	111	111
Machine direction Elmendorf tear, g./sheet	412	282	336	333
Cross-machine direction Elmendorf tear, g./sheet	428	346	385	380

The test results obtained at the Institute and at the mill during April and May are given alphabetically in Tables IV to XXVI for each mill. Included in each of these tables are the maximum, minimum, and average test data obtained at the Institute on each sample lot of linerboard. The data obtained at the Institute include also for each test the calculation of (1) a current mill average that represents the mean of the averages obtained on the individual sample lots of linerboard evaluated during the current period, (2) a cumulative mill average that represents the mean of the current mill averages for the previous twelve months excluding the current period, (3) a mill factor expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative F.K.I. average. The term "mean" in the preceding discussion is synonymous with the simple arithmetic average. As mentioned above, the results presented in Tables IV to XXVI also include data obtained at the mills. The mill data include for each test (1) the average result obtained on each sample lot of linerboard and (2) a current mill average (calculated at the Institute) that represents the mean of the averages obtained on the individual sample lots of linerboard. In addition to the presentations of Institute and mill data described above, Tables IV

TABLE IV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL A

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-26-64	WF1S	2	43.6	42.0	42.6	43.3	+0.7	14.1	13.0	13.6	13.2	-0.4	132	79	107	104	- 3	336	240	293[a]	292	- 1	384	296	333[a]	374	+41
4- 1-64	WF1S	2	42.8	41.8	42.2	42.8	+0.6	13.6	12.6	13.2	12.6	-0.6	119	80	102	102	0	352	288	321[a]	320	- 1	424	304	350[a]	356	+ 6
4- 7-64	WF1S	2	42.4	41.4	42.0	42.8	+0.8	13.8	12.6	13.2	13.0	-0.2	133	78	105	106	+ 1	352	240	295	304	+ 9	368	312	339[a]	365	+26
4-18-64	WF1S	2	42.2	40.4	41.2	42.0	+0.8	14.0	12.7	13.1	12.2	-0.9	134	90	111	120	+ 9	336	224	269[a]	282	+13	352	280	323[a]	365	+42
4-24-64	WF1S	2	43.4	41.0	41.9	42.8	+0.9	13.8	12.7	13.2	13.0	-0.2	129	84	106	117	+11	400	272	308[a]	293	-15	368	288	341[a]	388	+47
4-30-64	WF1S	2	44.2	41.8	43.0	43.0	0.0	13.9	12.4	13.2	12.8	-0.4	110	85	101	123	+22	368	256	306	307	+ 1	392	312	362[a]	422	+60
5- 4-64	WF1S	2	42.6	40.4	41.7	42.0	+0.3	13.7	12.3	12.9	12.5	-0.4	131	89	107	108	+ 1	368	280	343[a]	314	-29	424	320	354[a]	383	+29
5-11-64	WF1S	2	43.6	42.0	42.5	43.0	+0.5	13.5	12.0	12.7	12.4	-0.3	137	91	114	120	+ 6	360	272	305[a]	321	+16	416	336	369[a]	410	+41
Current mill average:					42.1	42.7	+0.6			13.1	12.7	-0.4			107	113	+ 6			305	304	- 1			346	383	+37
Cumulative mill average:					42.8					13.4					113					303					355		
Mill factor, %					98.4					97.8					94.7					100.7					97.5		
Mill index, %					98.1					103.1					96.4					91.6					91.1		

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

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

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 2-64	WFlS	2	43.2	42.0	42.3	42.7	+0.4	13.3	12.7	13.0	12.5	-0.5	131	80	107	111	+4	392	304	344	333	-11	432	376	399[a]	448	+49
3- 6-64	WFlS	2	43.8	42.2	42.8	42.5	-0.3	13.1	12.0	12.7	12.6	-0.1	135	93	114	117	+3	400	272	339[a]	354	+15	448	352	407[a]	433	+26
3- 7-64	WFlS	2	43.4	42.2	42.6	43.1	+0.5	13.4	12.3	12.9	12.6	-0.3	135	86	109	114	+5	368	296	339	343	+ 4	432	360	395[a]	427	+32
3-16-64	WFlS	2	43.8	42.2	43.0	43.0	0.0	13.5	12.1	12.9	12.6	-0.3	126	89	107	108	+1	448	320	375[a]	350	-25	456	336	413[a]	455	+42
4- 6-64	WFlS	2	43.4	42.4	42.9	43.1	+0.2	13.1	12.1	12.8	12.3	-0.5	139	91	119	115	-4	368	272	320	316	- 4	432	368	389[a]	417	+28
4- 6-64	WFlS	2	43.6	42.4	42.8	43.1	+0.3	13.4	12.1	12.9	12.4	-0.5	130	92	109	112	+3	384	288	344	334	-10	464	352	393[a]	427	+34
4- 6-64	WFlS	2	44.6	42.4	43.6	42.7	-0.9	13.2	12.1	12.7	12.4	-0.3	137	100	117	114	-3	416	272	353	346	- 7	480	352	400[a]	443	+43
4- 6-64[b]	WFlS	2	43.6	41.6	42.5	42.9	+0.4	13.8	12.4	13.1	12.3	-0.8	137	92	115	117	+2	368	280	328	326	- 2	432	352	395[a]	421	+26
Current mill average:					42.8	42.9	+0.1			12.9	12.5	-0.4			112	114	+2			343	338	- 5			399	434	+35
Cumulative mill average:					42.8					13.1					109					338					397		
Mill factor, %					100.0					98.5					102.8					101.5					100.5		
Mill index, %					99.8					101.6					100.9					103.0					105.0		

TABLE VI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

No samples submitted.

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

[b]This date appeared on the sample wrapper. The mill data sheet gives the date of manufacture as April 8, 1964.

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

TABLE VII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-20-64	----	1	43.4	41.8	42.3	42.7	+0.4	13.2	12.1	12.7	12.3	-0.4	131	90	107	114	+7	352	288	317[a]	258	-59	408	320	356[a]	345	-11
3-13-64	----	1	43.8	40.6	42.0	42.0	0.0	12.9	11.6	12.3	12.2	-0.1	128	101	112	112	0	424	240	301	258	-43	400	320	354[a]	345	- 9
3-28-64	----	1	43.8	40.2	42.1	42.8	+0.7	12.9	11.1	11.9	11.8	-0.1	130	92	114	117	+3	352	288	312	266	-46	416	344	381[a]	365	-16
3-13-64	----	1	45.0	41.8	43.0	42.8	-0.2	12.9	11.3	12.2	12.0	-0.2	133	95	116	117	+1	368	272	318	265	-53	400	336	368[a]	364	- 2
4- 2-64	----	1	44.4	41.8	42.7	42.9	+0.2	13.5	11.8	12.5	12.5	0.0	130	82	108	110	+2	352	240	294[a]	251	-43	448	328	362[a]	342	-20
4- 6-64	----	1	44.0	42.0	42.8	42.6	-0.2	13.2	11.7	12.6	12.4	-0.2	125	95	110	111	+1	328	248	285[a]	250	-35	384	320	358[a]	353	- 5
4-20-64	----	1	44.0	42.0	43.4	43.7	+0.3	14.2	12.7	13.4	13.0	-0.4	134	97	115	113	-2	416	304	343	284	-59	448	368	402[a]	391	-11
4-20-64	----	1	45.3	42.2	43.6	43.6	0.0	14.0	12.9	13.5	13.0	-0.5	126	87	103	106	+3	376	272	326	290	-36	400	320	367[a]	343	-24
5- 1-64	----	1	44.2	42.6	43.6	43.7	+0.1	14.8	13.1	13.7	13.0	-0.7	131	92	109	109	0	392	272	333[a]	319	-14	472	344	380[a]	393	+13
5- 4-64	----	1	43.6	41.4	42.1	41.8	-0.3	14.3	12.4	13.5	12.9	-0.6	127	83	104	104	0	464	320	355[a]	280	-75	424	320	371[a]	365	- 6
5-10-64	----	1	44.0	42.0	42.9	42.4	-0.5	14.0	12.2	13.2	12.6	-0.6	133	80	109	108	-1	400	280	320[a]	291	-29	432	336	375[a]	368	- 7
Current mill average:					42.8	42.8	0.0			12.9	12.5	-0.4			110	111	+1			319	274	-45			370	361	- 9
Cumulative mill average:					42.7					12.8					106					315					360		
Mill factor, %					100.2					100.8					103.8					101.3					102.8		
Mill index, %					99.8					101.6					99.1					95.8					97.4		

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

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

TABLE VIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-23-64	W.F.	2	43.6	42.0	42.4	42.2	-0.2	13.8	13.0	13.5	13.2	-0.3	127	90	110	111	+1	408	248	323[a]	319	- 4	440	352	391[a]	384	- 7
3-23-64	W.F.	2	43.2	42.0	42.3	42.5	+0.2	13.8	13.0	13.4	13.3	-0.1	134	83	109	111	+2	368	272	329[a]	326	- 3	408	368	390[a]	393	+ 3
4- 7-64	W.F.	2	43.0	41.4	42.0	42.1	+0.1	13.5	12.7	13.0	12.9	-0.1	124	92	110	109	-1	384	280	343[a]	329	-14	472	360	399[a]	385	-14
4- 7-64	W.F.	2	43.4	41.4	42.0	42.2	+0.2	13.3	12.7	13.0	12.9	-0.1	133	84	108	109	+1	368	288	341	331	-10	432	352	401[a]	401	0
4- 9-64	W.F.	1	43.8	42.2	42.9	42.6	-0.3	12.8	11.9	12.3	12.2	-0.1	138	79	114	112	-2	384	312	340[a]	304	-36	432	352	386[a]	362	-24
4- 9-64	W.F.	1	43.6	42.2	42.8	42.6	-0.2	12.9	11.7	12.4	12.3	-0.1	125	97	113	112	-1	368	288	332[a]	312	-20	400	352	375[a]	373	- 2
4-13-64	W.F.	2	43.8	41.8	42.9	43.2	+0.3	13.5	12.0	12.9	12.7	-0.2	139	86	113	106	-7	408	288	349	359	+10	464	368	407[a]	406	- 1
4-13-64	W.F.	2	43.8	41.2	42.8	43.1	+0.3	13.4	12.1	12.7	12.6	-0.1	135	92	112	105	-7	416	320	357	356	- 1	424	352	386[a]	399	+13
Current mill average:					42.5	42.6	+0.1			12.9	12.8	-0.1			111	109	-2			339	329	-10			392	388	- 4
Cumulative mill average:					43.2					13.1					112					339					394		
Mill factor, %					98.4					98.5					99.1					100.0					99.5		
Mill index, %					99.1					101.6					100.0					101.8					103.2		

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

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

TABLE IX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-24-64	WFlS	1	43.4	42.2	42.7	42.6	-0.1	13.5	11.8	12.5	12.0	-0.5	137	88	119	109	-10	376	288	323	309	-14	424	336	387[a]	389	+ 2
3-31-64	WFlS	1	43.8	42.0	42.6	42.9	+0.3	12.8	11.2	12.1	12.2	+0.1	131	95	113	110	- 3	320	264	293[a]	306	+13	440	320	376[a]	398	+22
4- 7-64	WFlS	1	43.8	42.0	42.4	42.5	+0.1	12.8	11.6	12.0	12.0	0.0	130	95	114	111	- 3	368	256	299[a]	325	+26	400	312	360[a]	375	+15
4-14-64	WFlS	1	43.8	41.8	42.8	42.4	-0.4	13.1	11.9	12.4	12.4	0.0	132	85	107	106	- 1	352	240	311	336	+25	472	352	395[a]	421	+26
4-21-64	WFlS	1	44.0	41.8	42.8	42.7	-0.1	13.2	11.9	12.4	12.5	+0.1	128	88	107	107	0	352	256	310	320	+10	448	336	380[a]	398	+18
4-28-64	WFlS	1	43.8	42.0	43.0	43.1	+0.1	13.1	12.0	12.6	12.5	-0.1	140	84	110	108	- 2	384	280	341[a]	305	-36	432	352	390[a]	401	+11
5- 5-64	WFlS	1	43.8	42.2	42.8	43.0	+0.2	12.9	11.3	12.2	12.0	-0.2	131	97	114	108	- 6	312	256	287	330	+43	376	320	350[a]	381	+31
5-12-64	WFlS	1	43.8	42.2	43.3	42.7	-0.6	12.9	11.7	12.4	12.3	-0.1	134	98	113	103	-10	352	272	319	351	+32	448	352	400[a]	421	+21
Current mill average:					42.8	42.7	-0.1			12.3	12.2	-0.1			112	108	- 4			311	323	+12			380	398	+18
Cumulative mill average:					43.0					12.5					112					324					385		
Mill factor, %					99.5					98.4					100.0					96.0					98.7		
Mill index, %					99.8					96.9					100.9					93.4					100.0		

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

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

TABLE X

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-15-64	W.F.	-	43.6	42.2	42.8	42.9	+0.1	13.8	12.1	13.1	13.0	-0.1	132	92	112	109	- 3	456	368	415[a]	415	0	480	384	433[a]	495	+62
3-15-64	W.F.	-	43.0	42.0	42.3	43.4	+1.1	13.1	12.1	12.9	12.8	-0.1	137	89	115	109	- 6	432	352	399[a]	412	+13	488	360	431[a]	471	+40
4- 9-64	W.F.	-	44.0	41.8	42.4	43.3	+0.9	13.1	12.0	12.6	13.0	+0.4	140	103	119	107	-12	464	352	411[a]	415	+ 4	512	384	431[a]	445	+14
4- 9-64	W.F.	-	43.6	41.8	42.6	42.0	-0.6	13.1	12.0	12.6	11.9	-0.7	159	110	126	107	-19	432	336	384[a]	405	+21	480	352	399[a]	424	+25
5- 9-64	W.F.	-	44.0	42.8	43.5	43.2	-0.3	13.8	12.3	13.2	13.0	-0.2	134	91	117	111	- 6	464	368	417[a]	381	-36	512	384	434[a]	419	-15
5- 9-64	W.F.	-	44.6	43.4	43.8	43.1	-0.7	14.1	12.0	13.0	12.7	-0.3	133	90	116	108	- 8	512	400	448	397	-51	480	416	439[a]	405	-34
Current mill average:					42.9	43.0	+0.1			12.9	12.7	-0.2			117	109	- 8			412	404	- 8			428	443	+15
Cumulative mill average:					43.0					12.8					111					371					387		
Mill factor, %					99.8					100.8					105.4					111.1					110.6		
Mill index, %					100.0					101.6					105.4					123.7					112.6		

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

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

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
4-23-64	NFlS	1	43.8	42.4	43.2	42.5	-0.7	13.3	11.9	12.7	12.2	-0.5	138	77	110	112	+2	464	312	369	290	-79	416	352	395[a]	343	-52
Current mill average:					43.2	42.5	-0.7			12.7	12.2	-0.5			110	112	+2			369	290	-79			395	343	-52
Cumulative mill average:					42.2					12.5					112					353					395		
Mill factor, %					102.4					101.6					98.2					104.5					100.0		
Mill index, %					100.7					100.0					99.1					110.8					103.9		

TABLE XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I

3-20-64	W.F.	1	43.6	42.0	42.7	42.2	-0.5	12.2	11.0	11.8	11.6	-0.2	137	82	112	115	+3	328	224	281	288	+ 7	424	336	367[a]	376	+ 9
4- 4-64	W.F.	1	43.8	42.0	42.9	42.6	-0.3	12.8	11.8	12.2	12.0	-0.2	150	99	115	119	+4	352	272	314	292	-22	416	328	373[a]	376	+ 3
4- 5-64	W.F.	1	44.0	42.8	43.4	43.3	-0.1	12.8	11.9	12.3	12.0	-0.3	133	109	121	121	0	320	240	297	305	+ 8	432	336	369[a]	396	+27
Current mill average:					43.0	42.7	-0.3			12.1	11.9	-0.2			116	118	+2			297	295	- 2			370	383	+13
Cumulative mill average:					43.1					12.3					112					311					366		
Mill factor, %					99.8					98.4					103.6					95.5					101.1		
Mill index, %					100.2					95.3					104.5					89.2					97.4		

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

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

TABLE XIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
No samples submitted.																										

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

3-14-64	W.F.	1	42.8	42.2	42.3	42.1	-0.2	13.1	12.2	12.8	13.0	+0.2	133	97	121	124	+3	368	280	320[a]	295	-25	416	352	381[a]	359	-22
3-21-64	W.F.	1	43.6	42.4	42.9	43.0	+0.1	13.0	12.4	12.8	13.1	+0.3	128	88	112	113	+1	320	256	288	268	-20	416	312	358[a]	351	- 7
3-26-64	W.F.	1	42.2	41.6	41.9	42.4	+0.5	13.7	12.8	13.2	13.2	0.0	130	71	106	109	+3	344	256	289	273	-16	384	328	354[a]	346	- 8
4- 4-64	W.F.	1	43.8	42.6	43.4	42.7	-0.7	13.4	13.0	13.1	13.2	+0.1	140	102	121	118	-3	344	264	299[a]	263	-36	384	344	365[a]	366	+ 1
4-10-64	W.F.	1	42.8	42.0	42.2	42.2	0.0	13.2	12.8	13.0	13.0	0.0	127	87	110	115	+5	376	272	321	258	-63	408	344	375[a]	354	-21
4-20-64	W.F.	1	43.8	42.6	43.4	42.4	-1.0	13.2	12.9	13.0	13.1	+0.1	143	93	119	120	+1	320	272	300[a]	284	-16	384	336	363[a]	356	- 7
4-27-64	W.F.	1	42.0	41.4	41.6	43.0	+1.4	13.2	12.1	12.8	13.0	+0.2	135	84	110	113	+3	352	240	285	253	-32	384	320	356[a]	340	-16
5- 8-64	W.F.	1	42.0	41.4	41.7	42.2	+0.5	12.8	12.1	12.5	13.1	+0.6	132	87	113	114	+1	328	240	276[a]	268	- 8	368	320	346[a]	355	+ 9
Current mill average:					42.4	42.5	+0.1			12.9	13.1	+0.2			114	116	+2			297	270	-27			362	353	- 9
Cumulative mill average:					42.5					12.9					113					298					355		
Mill factor, %					99.8					100.0					100.9					99.7					102.0		
Mill index, %					98.8					101.6					102.7					89.2					95.3		

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

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

TABLE XV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
2- 9-64	WF1S	1	44.0	42.0	43.0	43.1	+0.1	13.0	12.0	12.4	12.2	-0.2	128	102	115	119	+4	320	240	268[a]	268	0	368	304	344[a]	363	+19
2-28-64	WF1S	1	44.0	42.2	42.9	42.9	0.0	13.7	12.3	13.0	12.6	-0.4	138	101	115	118	+3	304	224	269	264	- 5	400	352	373[a]	358	-15
3- 9-64	WF1S	1	44.4	43.6	43.9	43.8	-0.1	13.4	12.3	12.9	12.5	-0.4	135	95	116	119	+3	352	264	314	298	-16	400	336	371[a]	369	- 2
3-17-64	WF1S	1	43.8	42.0	43.1	43.5	+0.4	12.9	11.7	12.3	12.0	-0.3	136	102	119	124	+5	336	272	301	272	-29	384	336	361[a]	372	+11
3-23-64	WF1S	1	43.0	41.8	42.2	42.9	+0.7	13.1	11.7	12.6	12.4	-0.2	125	85	109	116	+7	336	240	275	272	- 3	368	304	336[a]	339	+ 3
4- 3-64	WF1S	1	42.8	42.0	42.2	43.1	+0.9	12.9	11.4	12.2	11.8	-0.4	144	107	118	122	+4	320	240	261	276	+15	368	272	321[a]	348	+27
Current mill average:					42.9	43.2	+0.3			12.6	12.2	-0.4			115	120	+5			282	275	- 7			351	358	+ 7
Cumulative mill average:					43.0					13.1					116					294					351		
Mill factor, %					99.8					96.2					99.1					95.9					100.0		
Mill index, %					100.0					99.2					103.6					84.7					92.4		

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

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

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-17-64	W.B.	-	43.0	41.2	42.0	41.8	-0.2	11.9	11.0	11.2	11.0	-0.2	133	99	116	114	-2	464	336	381	325	-56	464	384	426[a]	377	-49
4-10-64	W.B.	-	43.8	41.8	42.6	42.2	-0.4	12.5	11.3	11.9	11.3	-0.6	127	83	107	110	+3	416	336	369[a]	323	-46	448	360	414[a]	377	-37
4-24-64	W.B.	-	44.2	41.2	42.4	42.0	-0.4	12.0	11.2	11.6	11.1	-0.5	131	81	109	110	+1	400	304	356	325	-31	464	368	396[a]	353	-43
5- 4-64	W.B.	-	44.0	41.8	42.6	42.0	-0.6	11.9	11.0	11.6	11.2	-0.4	122	84	105	105	0	416	304	352	335	-17	416	352	390[a]	377	-13
5- 8-64	W.B.	-	45.8	42.4	44.1	41.9	-2.2	12.0	10.9	11.5	11.0	-0.5	123	79	106	108	+2	448	352	395	349	-46	464	400	432[a]	404	-28
5-11-64	W.B.	-	43.8	41.8	42.8	43.0	+0.2	12.0	10.6	11.5	11.0	-0.5	119	95	107	110	+3	464	352	397	329	-68	512	392	424[a]	363	-61
Current mill average:					42.8	42.2	-0.6			11.6	11.1	-0.5			108	110	+2			375	331	-44			414	375	-39
Cumulative mill average:					42.9					11.5					108					368					414		
Mill factor, %					99.8					100.9					100.0					101.9					100.0		
Mill index, %					99.8					91.3					97.3					112.6					108.9		

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

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

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 6-64	W.F.	1	43.8	42.0	42.5	43.2	+0.7	13.4	12.4	12.9	12.9	0.0	122	82	102	109	+7	352	240	305[a]	297	- 8	400	336	364[a]	347	-17
3- 5-64	W.F.	1	42.0	40.6	41.7	42.1	+0.4	13.0	12.0	12.6	12.5	-0.1	123	85	107	109	+2	336	272	311	277	-34	400	320	355[a]	333	-22
3-18-64	W.F.	1	43.8	42.2	43.2	43.6	+0.4	13.2	12.0	12.7	12.8	+0.1	118	93	104	107	+3	424	224	333[a]	306	-27	464	360	394[a]	366	-28
3-22-64	W.F.	1	43.6	41.8	42.3	42.9	+0.6	13.5	12.3	12.8	12.8	0.0	124	86	108	108	0	384	256	322[a]	301	-21	456	336	395[a]	373	-22
4-15-64	W.F.	1	42.4	41.8	42.1	42.5	+0.4	13.2	12.0	12.7	12.6	-0.1	128	91	113	109	-4	432	288	344[a]	321	-23	416	344	377[a]	366	-11
4-16-64	W.F.	1	43.6	40.8	42.1	42.4	+0.3	12.9	11.9	12.3	12.3	0.0	120	97	106	106	0	328	288	311[a]	297	-14	400	312	359[a]	346	-13
4-17-64	W.F.	1	43.0	41.4	42.1	42.4	+0.3	13.1	12.0	12.5	12.6	+0.1	128	89	108	105	-3	384	272	324[a]	291	-33	368	304	347[a]	337	-10
4-18-64	W.F.	1	43.4	41.4	42.4	42.8	+0.4	13.2	11.8	12.7	12.5	-0.2	126	87	113	107	-6	400	304	347	323	-24	448	368	407[a]	396	-11
Current mill average:					42.3	42.7	+0.4			12.7	12.6	-0.1			108	107	-1			325	302	-23			375	358	-17
Cumulative mill average:					42.5					12.6					107					315					365		
Mill factor, %					99.5					100.8					100.9					103.2					102.7		
Mill index, %					98.6					100.0					97.3					97.6					98.7		

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

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

TABLE XVIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-30-64	----	-	43.0	41.6	42.2	42.1	-0.1	12.4	11.0	11.6	11.3	-0.3	122	82	100	106	+6	408	320	347	343	- 4	424	360	381[a]	389	+ 8
4- 9-64	----	-	43.4	42.2	42.7	42.3	-0.4	14.0	13.0	13.7	13.1	-0.6	119	69	97	102	+5	456	296	368	356	-12	416	336	377[a]	380	+ 3
4-28-64	----	-	44.0	42.2	43.0	42.9	-0.1	12.8	11.8	12.2	12.2	0.0	123	80	101	104	+3	400	320	363	343	-20	472	368	413[a]	384	-29
5-11-64	----	-	45.2	42.6	44.2	44.3	+0.1	15.2	13.2	14.1	14.0	-0.1	113	83	100	103	+3	408	320	381[a]	375	- 6	480	320	423[a]	406	-17
Current mill average:					43.0	42.9	-0.1			12.9	12.6	-0.3			100	104	+4			365	354	-11			398	390	- 8
Cumulative mill average:					42.5					12.5					104					339					383		
Mill factor, %					101.2					103.2					96.2					107.7					103.9		
Mill index, %					100.2					101.6					90.1					109.6					104.7		

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

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

TABLE XIX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-13-64	----	1	44.2	43.0	43.9	43.2	-0.7	13.1	12.2	12.8	12.5	-0.3	136	94	111	105	-6	448	320	384	---	---	480	392	437[a]	---	---
3-31-64	----	2	46.0	43.0	44.6	43.7	-0.9	13.7	12.3	13.0	12.8	-0.2	123	79	101	101	0	528	368	421[a]	---	---	480	352	438[a]	---	---
4- 1-64	----	2	43.8	41.6	42.9	42.4	-0.5	12.8	11.5	12.2	12.1	-0.1	132	88	109	109	0	424	320	375	---	---	464	384	421[a]	---	---
4- 3-64	----	2	44.2	42.8	43.7	42.6	-1.1	13.0	11.7	12.6	12.3	-0.3	130	76	112	110	-2	448	336	389[a]	---	---	480	368	425[a]	---	---
4- 9-64	----	1	45.8	42.8	44.2	43.5	-0.7	13.5	12.6	13.0	12.7	-0.3	137	92	115	113	-2	496	336	389[a]	---	---	464	384	423[a]	---	---
5- 5-64	----	2	44.8	42.2	43.4	42.7	-0.7	13.1	12.1	12.8	12.4	-0.4	126	92	109	102	-7	384	320	354	---	---	480	368	415[a]	---	---
5- 8-64	----	1	45.8	43.4	44.4	43.2	-1.2	13.7	12.1	12.9	12.5	-0.4	134	80	110	106	-4	512	336	407[a]	---	---	480	384	420[a]	---	---
Current mill average:					43.9	43.0	-0.9			12.8	12.5	-0.3			110	107	-3			388					426		
Cumulative mill average:					43.3					12.5					112					376					416		
Mill factor, %					101.4					102.4					98.2					103.2					102.4		
Mill index, %					102.3					100.8					99.1					116.5					112.1		

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

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

TABLE XX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.

No samples submitted.

TABLE XXI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S

4- 2-64	----	-	44.0	42.0	43.0	42.9	-0.1	14.2	12.4	13.6	13.3	-0.3	134	88	112	118	+6	448	360	405[a]	---	---	432	352	396[a]	---	---
4-14-64	----	-	43.2	40.4	41.9	41.8	-0.1	14.1	12.6	13.5	12.9	-0.6	132	90	109	114	+5	416	304	371[a]	---	---	400	336	359[a]	---	---
4-24-64	----	-	43.8	42.0	42.4	42.2	-0.2	14.1	12.2	13.1	12.4	-0.7	131	82	109	113	+4	432	272	329[a]	---	---	376	312	349[a]	---	---
5-18-64	----	-	43.0	41.6	42.3	42.1	-0.2	14.0	12.1	13.3	12.8	-0.5	135	67	103	111	+8	384	320	355[a]	---	---	448	352	402[a]	---	---
Current mill average:					42.4	42.3	-0.1			13.4	12.8	-0.6			108	114	+6			365					377		
Cumulative mill average:					42.1					13.3					110					360					375		
Mill factor, %					100.7					100.8					98.2					101.4					100.5		
Mill index, %					98.8					105.5					97.3					109.6					99.2		

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

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

TABLE XXII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 3-64	W.B.	-	44.4	42.4	43.7	42.9	-0.8	13.3	12.1	12.7	12.3	-0.4	133	84	114	116	+2	448	320	387[a]	348	-39	488	352	431[a]	429	- 2
3-20-64	W.B.	-	42.2	39.8	41.4	41.4	0.0	12.8	11.8	12.4	12.0	-0.4	124	91	110	111	+1	400	288	331[a]	325	- 6	440	344	386[a]	400	+14
4- 1-64	W.B.	-	43.6	41.6	42.5	41.9	-0.6	12.1	11.0	11.6	11.4	-0.2	134	96	113	115	+2	392	320	353[a]	371	+18	448	360	391[a]	434	+43
4- 8-64	W.B.	-	44.2	42.0	43.3	42.6	-0.7	13.3	12.5	13.0	12.5	-0.5	141	93	113	112	-1	376	320	346[a]	331	-15	456	384	419[a]	401	-18
4-11-64	W.B.	-	43.8	41.8	42.7	42.2	-0.5	12.0	11.2	11.7	11.5	-0.2	130	94	112	111	-1	384	288	326[a]	329	+ 3	432	328	379[a]	397	+18
4-22-64	W.B.	-	42.2	40.4	41.7	41.8	+0.1	13.0	11.8	12.4	12.2	-0.2	128	98	113	109	-4	384	320	358	339	-19	416	336	379[a]	400	+21
4-21-64	W.B.	-	42.4	41.8	42.2	42.2	0.0	13.2	12.0	12.5	12.5	0.0	130	100	116	113	-3	392	296	356[a]	352	- 4	464	368	403[a]	407	+ 4
Current mill average:					42.5	42.1	-0.4			12.3	12.1	-0.2			113	112	-1			351	342	- 9			398	410	+12
Cumulative mill average:					42.9					12.7					111					375					413		
Mill factor, %					99.1					96.9					101.8					93.6					96.4		
Mill index, %					99.1					96.9					101.8					105.4					104.7		

TABLE XXIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U

No samples submitted.

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

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

TABLE XXIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
2-21-64	W.F.	3	44.6	43.8	44.2	44.0	-0.2	12.9	11.8	12.4	12.0	-0.4	124	93	113	116	+3	408	304	343	353	+10	424	352	397[a]	411	+14
Current mill average:					44.2	44.0	-0.2			12.4	12.0	-0.4			113	116	+3			343	353	+10			397	411	+14
Cumulative mill average:					43.7					12.8					111					345					397		
Mill factor, %					101.1					96.9					101.8					99.4					100.0		
Mill index, %					103.0					97.6					101.8					103.0					104.5		

TABLE XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL W

4-20-64	WFlS	1	44.4	42.0	43.2	42.9	-0.4	14.0	13.1	13.5	13.1	-0.4	130	90	111	106	-5	368	272	323	355	+32	432	320	371[a]	395	+24
4-25-64	WFlS	1	43.6	41.8	42.4	42.4	0.0	14.0	12.8	13.2	12.6	-0.6	131	92	114	107	-7	400	320	365	351	-14	464	368	403[a]	416	+13
5- 3-64	WFlS	1	43.0	42.0	42.4	42.7	+0.3	13.8	12.8	13.0	12.6	-0.4	137	90	114	111	-3	368	288	332	377	+45	496	352	402[a]	432	+30
5- 6-64	WFlS	1	42.4	41.6	42.1	42.2	+0.1	13.7	12.1	12.9	12.3	-0.6	135	85	115	119	+4	368	272	331[a]	365	+34	416	328	376[a]	400	+24
Current mill average:					42.5	42.5	0.0			13.1	12.6	-0.5			114	111	-3			338	362	+24			388	411	+23
Cumulative mill average:					42.8					13.3					112					334					381		
Mill factor, %					99.3					98.5					101.8					101.2					101.8		
Mill index, %					99.1					103.1					102.7					101.5					102.1		

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

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

TABLE XXVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL X

April and May, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
4- 2-64	W.F.	-	43.8	42.0	42.3	42.6	+0.3	12.8	12.0	12.4	12.1	-0.3	123	77	101	102	+1	360	280	319[a]	299	-20	400	296	359[a]	325	-34
4- 3-64	W.F.	-	42.4	42.0	42.1	42.3	+0.2	12.9	12.0	12.3	12.0	-0.3	129	79	106	109	+3	360	256	304[a]	275	-29	408	320	357[a]	347	-10
4-10-64	W.F.	-	44.0	42.2	43.4	43.4	0.0	12.7	12.0	12.3	12.1	-0.2	132	97	114	115	+1	400	272	320[a]	297	-23	416	336	374[a]	355	-19
4-17-64	W.F.	-	43.8	42.2	43.3	43.5	+0.2	13.1	11.9	12.3	12.1	-0.2	132	103	119	120	+1	328	288	313	315	+ 2	416	360	385[a]	372	-13
4-30-64	W.F.	-	41.6	40.0	40.7	41.0	+0.3	12.3	11.0	11.8	11.6	-0.2	125	90	109	108	-1	304	256	280[a]	289	+ 9	408	320	356[a]	349	- 7
5- 1-64	W.F.	-	42.6	40.2	42.0	42.8	+0.8	12.7	11.8	12.2	12.1	-0.1	122	94	110	107	-3	336	272	309[a]	313	+ 4	416	320	359[a]	349	-10
5- 8-64	W.F.	-	42.2	41.6	41.8	42.4	+0.6	12.8	12.0	12.4	12.2	-0.2	135	101	118	118	0	368	272	309	317	+ 8	400	320	357[a]	377	+20
5-15-64	W.F.	-	44.2	42.2	43.2	43.5	+0.3	13.3	12.0	13.0	12.9	-0.1	138	88	112	115	+3	352	288	317	327	+10	384	336	368[a]	365	- 3
Current mill average:					42.4	42.7	+0.3			12.3	12.1	-0.2			111	112	+1			309	304	- 5			364	355	- 9
Cumulative mill average:					43.0					12.4					114					317					362		
Mill factor, %					98.6					99.2					97.4					97.5					100.6		
Mill index, %					98.8					96.9					100.0					92.8					95.8		

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

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

through XXVI also include under each test heading a column labeled "Diff." This column shows the differences between averages obtained at the Institute and those obtained at the mills. The data obtained at the Institute are used as the reference in calculating these differences.

The average test results obtained at the Institute and at the mills are summarized in Table XXVII for the current period. Shown in this table for each mill is the difference for each test between the current mill average based on Institute data and the current mill average based on mill data. In addition, for each test the maximum difference encountered in comparing Institute and mill averages for individual sample lots is shown. In Table XXVIII, the differences for each test between the current mill averages based on Institute data and those based on mill data shown in Table XXVII have been converted to per cent (based on Institute data as a reference). In addition, for purposes of comparison, the percentage differences from the previous bimonthly report are shown in Table XXVIII.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXIX. This summary is based on the results given in Table XXVIII. The tabulated data show the number of mills, and the percentage of all mills which this number represents, whose average test results for the current period fall within designated percentages from the average test results obtained at the Institute. It may be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally very good.

Preconditioning and conditioning data pertinent to the test results obtained at the mills during the current period are given in Table XXX.

TABLE XXVII

SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS) FOR APRIL AND MAY, 1964

Mills[a]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V	W	X
No. of samples compared	8	8	0	11	8	8	6	1	3	0	8	6	6	8	4	7	0	4	7	0	1	4	8
Basis Weight																							
Institute	42.1	42.8		42.8	42.5	42.8	42.9	43.2	43.0		42.4	42.9	42.8	42.3	43.0	43.9		42.4	42.5		44.2	42.5	42.4
Mill	42.7	42.9		42.8	42.6	42.7	43.0	42.5	42.7		42.5	43.2	42.2	42.7	42.9	43.0		42.3	42.1		44.0	42.5	42.7
Av. diff.[b]	+0.6	+0.1		0.0	+0.1	-0.1	+0.1	-0.7	-0.3		+0.1	+0.3	-0.6	+0.4	-0.1	-0.9		-0.1	-0.4		-0.2	0.0	+0.3
Max. diff.[c]	+0.9	-0.9		+0.7	±0.3	-0.6	+1.1	-0.7	-0.5		+1.4	+0.9	-2.2	+0.7	-0.4	-1.2		-0.2	-0.8		-0.2	-0.4	+0.8
Caliper																							
Institute	13.1	12.9		12.9	12.9	12.3	12.9	12.7	12.1		12.9	12.6	11.6	12.7	12.9	12.8		13.4	12.3		12.4	13.1	12.3
Mill	12.7	12.5		12.5	12.8	12.2	12.7	12.2	11.9		13.1	12.2	11.1	12.6	12.6	12.5		12.8	12.1		12.0	12.6	12.1
Av. diff.[b]	-0.4	-0.4		-0.4	-0.1	-0.1	-0.2	-0.5	-0.2		+0.2	-0.4	-0.5	-0.1	-0.3	-0.3		-0.6	-0.2		-0.4	-0.5	-0.2
Max. diff.[c]	-0.9	-0.8		-0.7	-0.3	-0.5	-0.7	-0.5	-0.3		+0.6	-0.4	-0.6	-0.2	-0.6	-0.4		-0.7	-0.5		-0.4	-0.6	-0.3
Bursting Strength																							
Institute	107	112		110	111	112	117	110	116		114	115	108	108	100	110		108	113		113	114	111
Mill	113	114		111	109	108	109	112	118		116	120	110	107	104	107		114	112		116	111	112
Av. diff.[b]	+6	+2		+1	-2	-4	-8	+2	+2		+2	+5	+2	-1	+4	-3		+6	-1		+3	-3	+1
Max. diff.[c]	+22	+5		+7	-7	-10	-19	+2	+4		+5	+7	+3	+7	+6	-7		+8	-4		+3	-7	±3
Tearing Strength, in																							
Institute	305	343		319	339	311	412	369	297		297	282	375	325	365	388		365	351		343	338	309
Mill	304	338		274	329	323	404	290	295		270	275	331	302	354	--		--	342		353	362	304
Av. diff.[b]	-1	-5		-45	-10	+12	-8	-79	-2		-27	-7	-44	-23	-11	--		--	-9		+10	+24	-5
Max. diff.[c]	-29	-25		-75	-36	+43	-51	-79	-22		-63	-29	-68	-34	-20	--		--	-39		+10	+45	-29
Tearing Strength, cross																							
Institute	346	399		370	392	380	428	395	370		362	351	414	375	398	426		377	398		397	388	364
Mill	383	434		361	388	398	443	343	383		353	358	375	358	390	--		--	410		411	411	355
Av. diff.[b]	+37	+35		-9	-4	+18	+15	-52	+13		-9	+7	-39	-17	-8	--		--	+12		+14	+23	-9
Max. diff.[c]	+60	+49		-24	-24	+31	+62	-52	+27		-22	+27	-61	-28	-29	--		--	+43		+14	+30	-34

[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 averages for any sample submitted by that particular mill.

TABLE XXVIII

COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR APRIL AND MAY, 1964
(Average difference, per cent)

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
A	Dec.-Jan.	+0.2	-4	-4	-4	+10
	Feb.-March	+0.7	-4	+0.9	-4	+5
	Current	+1	-3	+6	-0.3	+11
B	Dec.-Jan.	-1	-2	-2	+0.3	+2
	Feb.-March	+0.2	-2	-0.9	-3	+6
	Current	+0.2	-3	+2	-1	+9
C	Dec.-Jan.	-3	-4	+4	-16	-4
	Feb.-March	-1	-2	+5	-4	-2
	Current	--	--	--	--	--
D	Dec.-Jan.	+0.7	-2	+0.9	-8	-2
	Feb.-March	+0.7	-2	+0.9	-8	-0.5
	Current	0	-3	+0.9	-14	-2
E	Dec.-Jan.	0	-2	-2	-2	+0.3
	Feb.-March	+0.2	-1	-0.9	-4	-3
	Current	+0.2	-0.8	-2	-3	-1
F	Dec.-Jan.	-0.7	-0.8	-6	-0.3	+3
	Feb.-March	0	-2	-6	+2	+6
	Current	-0.2	-0.8	-4	+4	+5
G	Dec.-Jan.	+0.5	+0.8	-3	-9	-6
	Feb.-March	+2	0	-2	-3	+8
	Current	+0.2	-2	-7	-2	+4
H	Dec.-Jan.	+0.5	-2	-12	-2	-6
	Feb.-March	0	-2	-2	-12	-11
	Current	-2	-4	+2	-21	-13
I	Dec.-Jan.	-0.7	-2	0	-2	-2
	Feb.-March	-0.5	-2	+0.9	-5	-2
	Current	-0.7	-2	+2	-0.7	+4
J	Dec.-Jan.	--	--	--	--	--
	Feb.-March	--	--	--	--	--
	Current	--	--	--	--	--
K	Dec.-Jan.	0	+2	-0.9	-11	-1
	Feb.-March	+0.2	+2	+0.9	-11	-3
	Current	+0.2	+2	+2	-9	-2
L	Dec.-Jan.	-2	-4	-3	-6	-1
	Feb.-March	-0.9	-5	-0.8	-11	-1
	Current	+0.7	-3	+4	-2	+2
M	Dec.-Jan.	-1	-3	-0.9	-9	-4
	Feb.-March	-0.7	-4	+0.9	-10	-6
	Current	-1	-4	+2	-12	-9
N	Dec.-Jan.	+0.5	-2	+4	-6	+3
	Feb.-March	+0.9	-2	0	-8	-5
	Current	+0.9	-0.8	-0.9	-7	-5
O	Dec.-Jan.	--	--	--	--	--
	Feb.-March	-0.2	-2	0	+0.3	-0.8
	Current	-0.2	-2	+4	-3	-2
P	Dec.-Jan.	-0.9	-2	-5	--	--
	Feb.-March	-1	-2	-3	--	--
	Current	-2	-2	-3	--	--
Q	Dec.-Jan.	--	--	--	--	--
	Feb.-March	--	--	--	--	--
	Current	--	--	--	--	--
S	Dec.-Jan.	-0.7	-3	-2	--	--
	Feb.-March	0	-3	+3	--	--
	Current	-0.2	-4	+6	--	--
T	Dec.-Jan.	-0.2	-2	-2	+5	+1
	Feb.-March	-1	-2	-3	-7	+0.2
	Current	-0.9	-2	-0.9	-3	+3
U	Dec.-Jan.	--	--	--	--	--
	Feb.-March	--	--	--	--	--
	Current	--	--	--	--	--
V	Dec.-Jan.	+0.7	-2	-0.9	-0.3	+2
	Feb.-March	-0.2	-2	+0.9	-1	+0.3
	Current	-0.5	-3	+3	+3	+4
W	Dec.-Jan.	-0.7	-2	+0.9	0	+0.5
	Feb.-March	+0.7	-4	-2	-4	+1
	Current	0	-4	-3	+7	+6
X	Dec.-Jan.	-0.5	-2	-2	-5	-3
	Feb.-March	+0.7	-2	+0.9	0	-1
	Current	+0.7	-2	+0.9	-2	-2

TABLE XXIX

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS FOR APRIL AND MAY, 1964[a]

	Average Percentage Difference Between Institute and Mill Test Results								
	±0.5	±1	±2	±3	±4	±5	±7.5	±10	±21
Basis weight									
Number of mills	10	17	19						
Percentage of mills	52.6	89.5	100.0						
Caliper									
Number of mills	0	3	10	15	19				
Percentage of mills	0.0	15.8	52.6	78.9	100.0				
Bursting strength									
Number of mills	0	4	10	13	16	16	19		
Percentage of mills	0.0	21.1	52.6	68.4	84.2	84.2	100.0		
Tearing strength, in									
Number of mills	1	3	6	10	11	11	13	14	17
Percentage of mills	5.9	17.6	35.3	58.8	64.7	64.7	76.5	82.4	100.0
Tearing strength, cross									
Number of mills	0	1	6	7	10	12	13	15	17
Percentage of mills	0.0	5.9	35.3	41.2	58.8	70.6	76.5	88.2	100.0

[a] Based on the average percentage differences between Institute and mill data given in Table XXVIII.

TABLE XXX

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

APRIL AND MAY, 1964

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A	50	72	24	--	--	--
B	50	70-72	120	50	70-73	120
C[a]						
D	44-47	73-75	48-168	44-47	73-76	3-3.5
E	50	73	24	50	73	24
F	--	--	--	55	71-72	--
G	50	73	24	50	73	24
H	50	72	24	--	--	--
I	34-42	62-68	0.5	50	73	24
J[a]						
K	--	--	--	42-76	65-82	--
L	50	73	96	50	73	96
M	--	--	--	46-51	74-76	48
N	35	73	48	50	73	48
O[b]						
P	--	--	--	50	73	24-408
Q[a]						
S	54	73	1	52-54	73-76	1-1.5
T	49.5-53	72-74	48-48+	50	73	48-48+
U[a]						
V	--	--	--	50	73	24
W	50	73	24	50	73	24
X	34-35	77-78	8	48-52	71-73	16

[a] No samples were submitted for evaluation during the current period.

[b] No data were submitted relative to preconditioning and conditioning.

THE INSTITUTE OF PAPER CHEMISTRY

W. N. Hubert, Research Aide

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Container Section