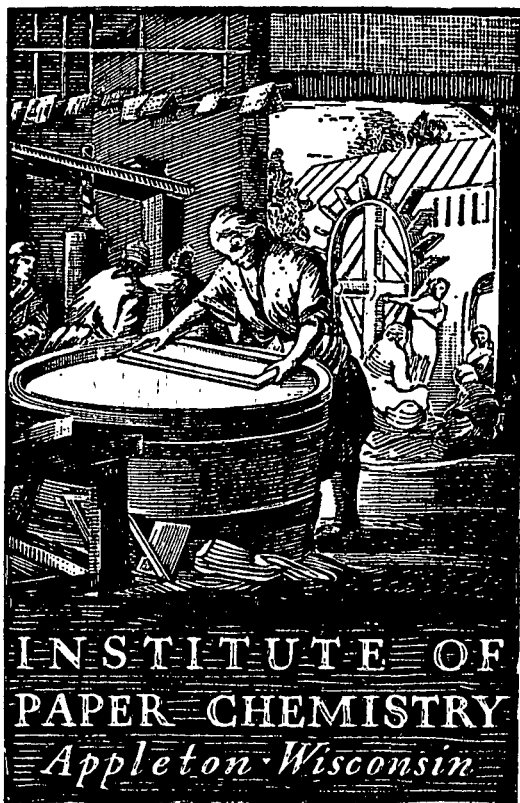




CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 190

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 1, 1964

Code Letters for Report 190:
Project 1108-13

	<u>Code Letter</u>
The Chesapeake Corporation of Virginia	T
Container Corporation of America - Fernandina Beach	C
Continental Can Company, Inc. - Hopewell	I
- Port Wentworth	P
Crown Zellerbach Corporation - Bogalusa	B
- Antioch	Q
Georgia Kraft Company - Macon	A
- Rome	E
International Paper Company - Panama City	M
- Springhill	L
- Georgetown	U
Olin Mathieson Chemical Corporation	X
Owens-Illinois Glass Company - Jacksonville	O
- Valdosta	W
St. Joe Paper Company	J
St. Regis Paper Company - Jacksonville	D
- Pensacola	S
Tennessee River Pulp and Paper Company	G
Union Bag-Camp Paper Corporation	N
Waldorf-Hoerner Paper Products Company	K
Western Kraft Corporation - Albany	V
West Virginia Pulp and Paper Company	F
Weyerhaeuser Company - N. C. Division	H

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 190

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 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 June and July, 1964.

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during June and July 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--JUNE AND JULY, 1964

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i.g.	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.5	12.4	112	320	377
B	42.8	12.4	98	365	382
C	43.6	12.6	115	385	423
D	42.4	12.7	112	330	393
E	42.0	12.9	116	330	377
F	42.0	12.6	109	319	380
G	42.2	12.8	115	264	336
H	43.1	13.4	106	322	378
I	42.1	12.7	111	308	351
J	43.1	12.6	113	343	391
K	42.0	13.4	111	361	377
L ^a					
M	42.8	12.1	113	342	370
N	42.3	12.7	113	315	359
O ^a					
P	42.6	12.8	114	281	350
Q	42.5	12.6	109	348	382
S	No samples submitted.				
T	42.9	13.1	113	369	391
U	42.9	12.5	111	348	393
V	No samples submitted.				
W	42.4	12.2	107	365	401
X	No samples submitted.				
Current FKl average:	42.6	12.7	111	334	378
Cumulative FKl average:	42.9	12.7	111	334	382
FKl index, %	99.3	100.0	100.0	100.0	99.0

^aCurrent 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 FKl averages.

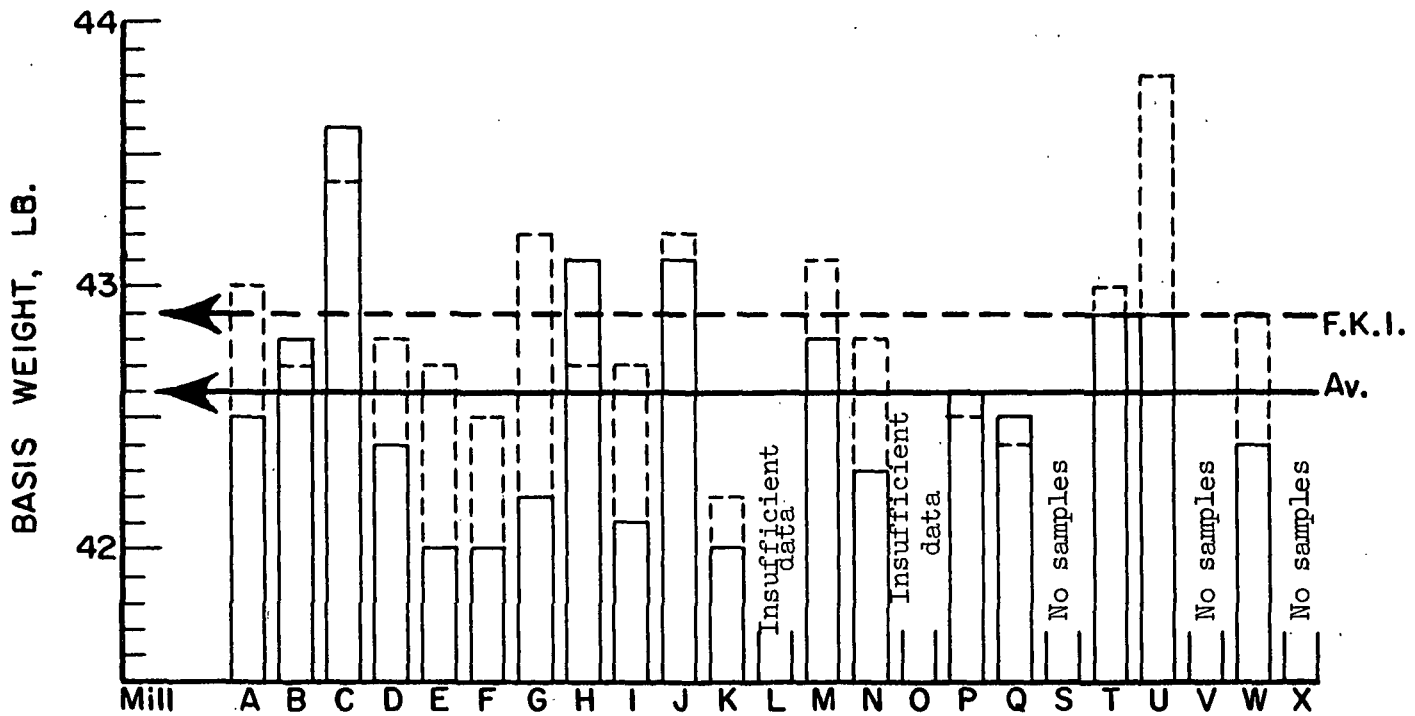


Figure 1. Comparison of Basis Weight Results

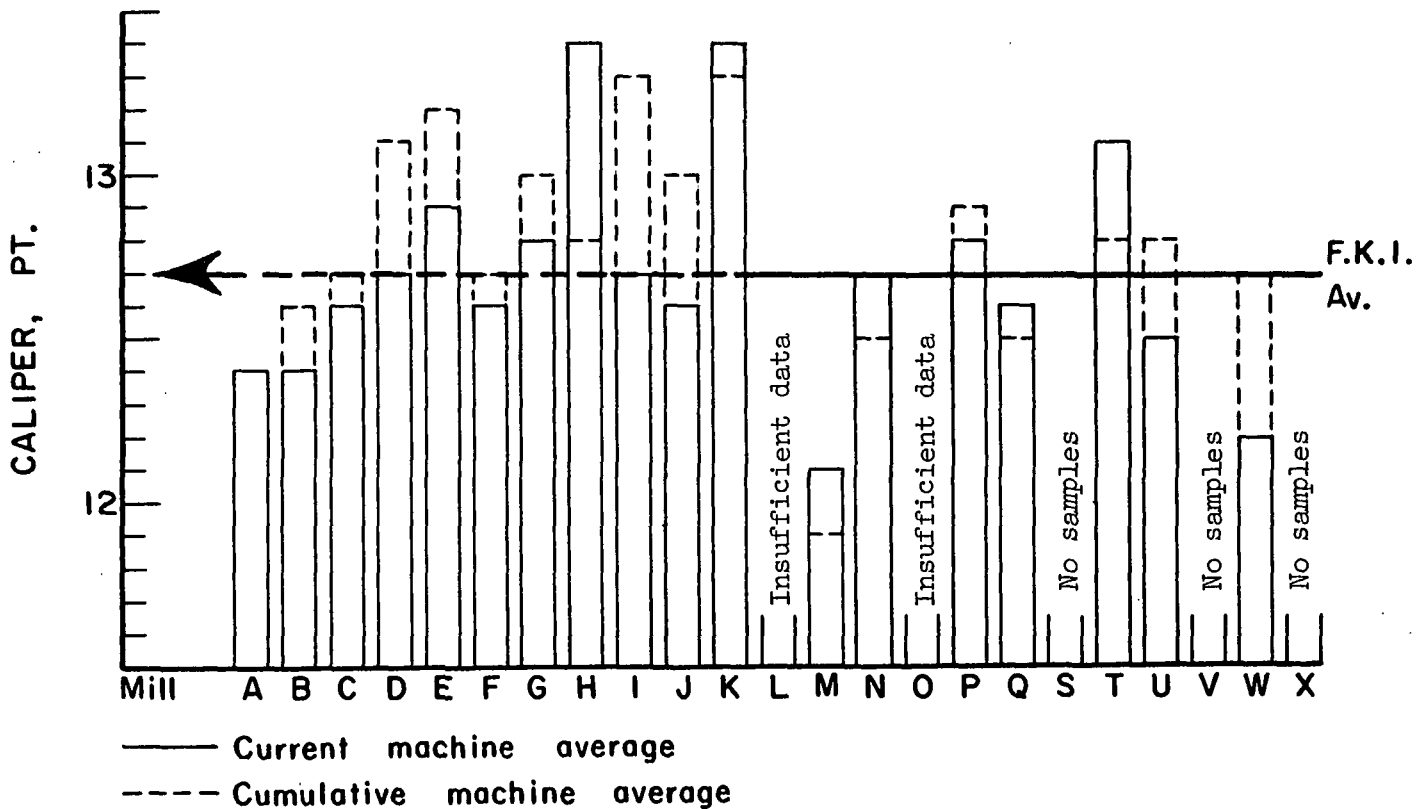


Figure 2. Comparison of Caliper Results

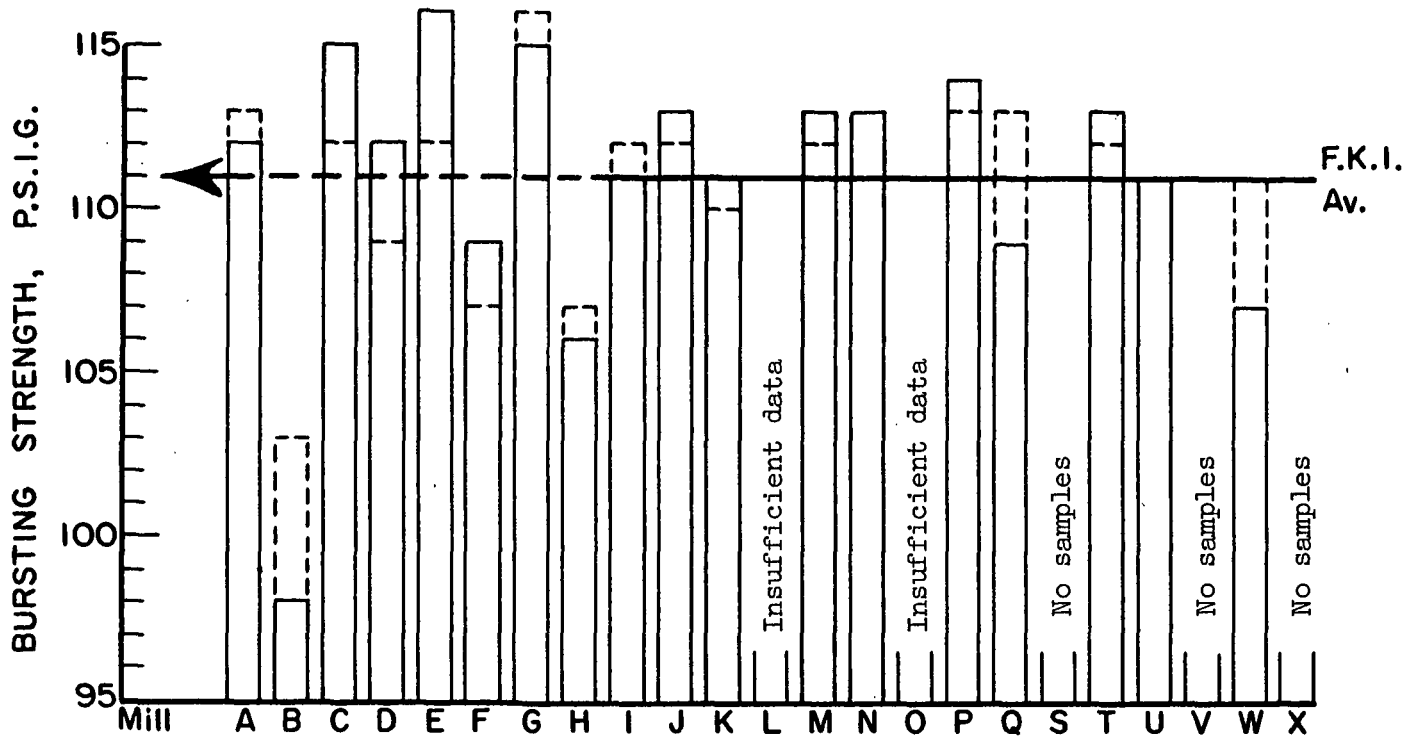


Figure 3. Comparison of Bursting Strength Results

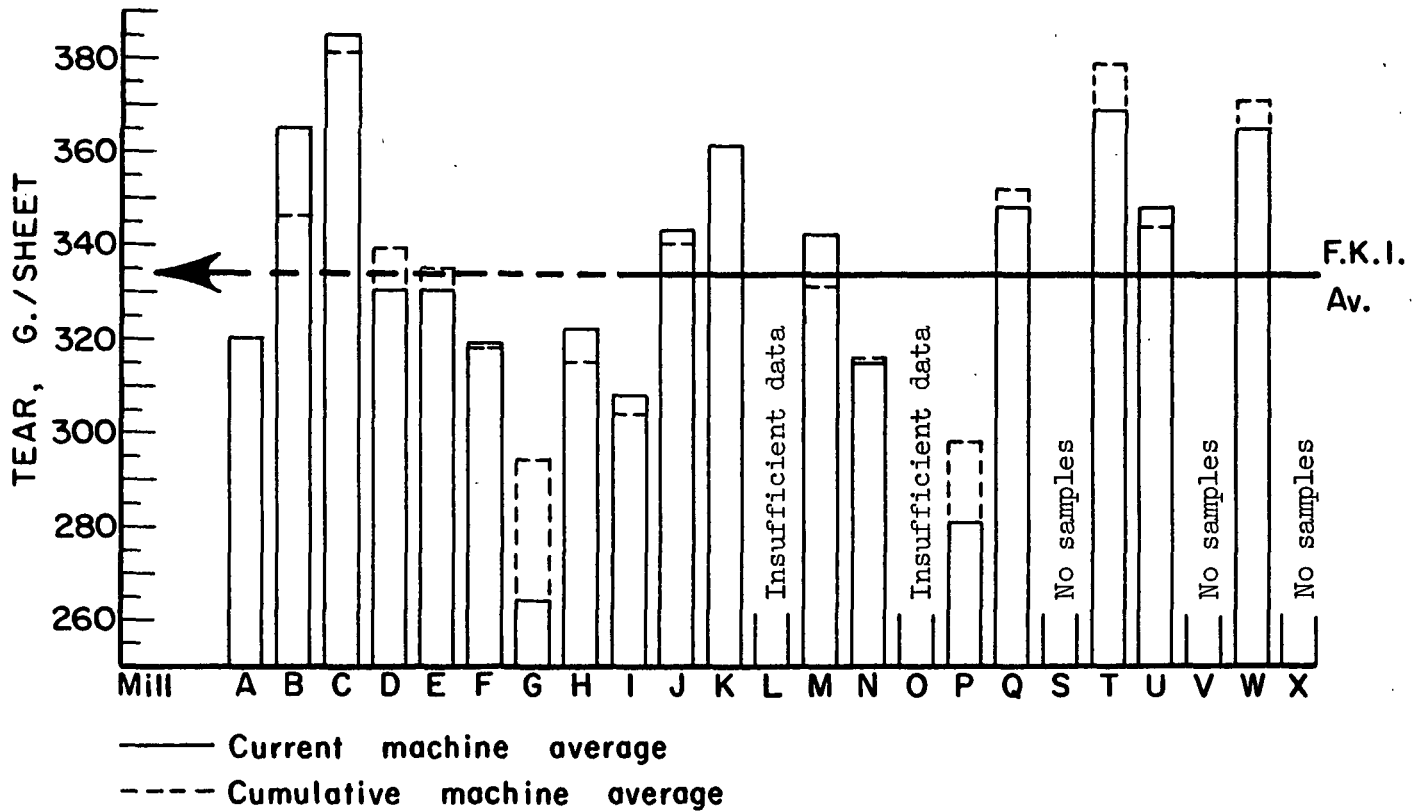


Figure 4. Comparison of Machine-Direction Tear Results

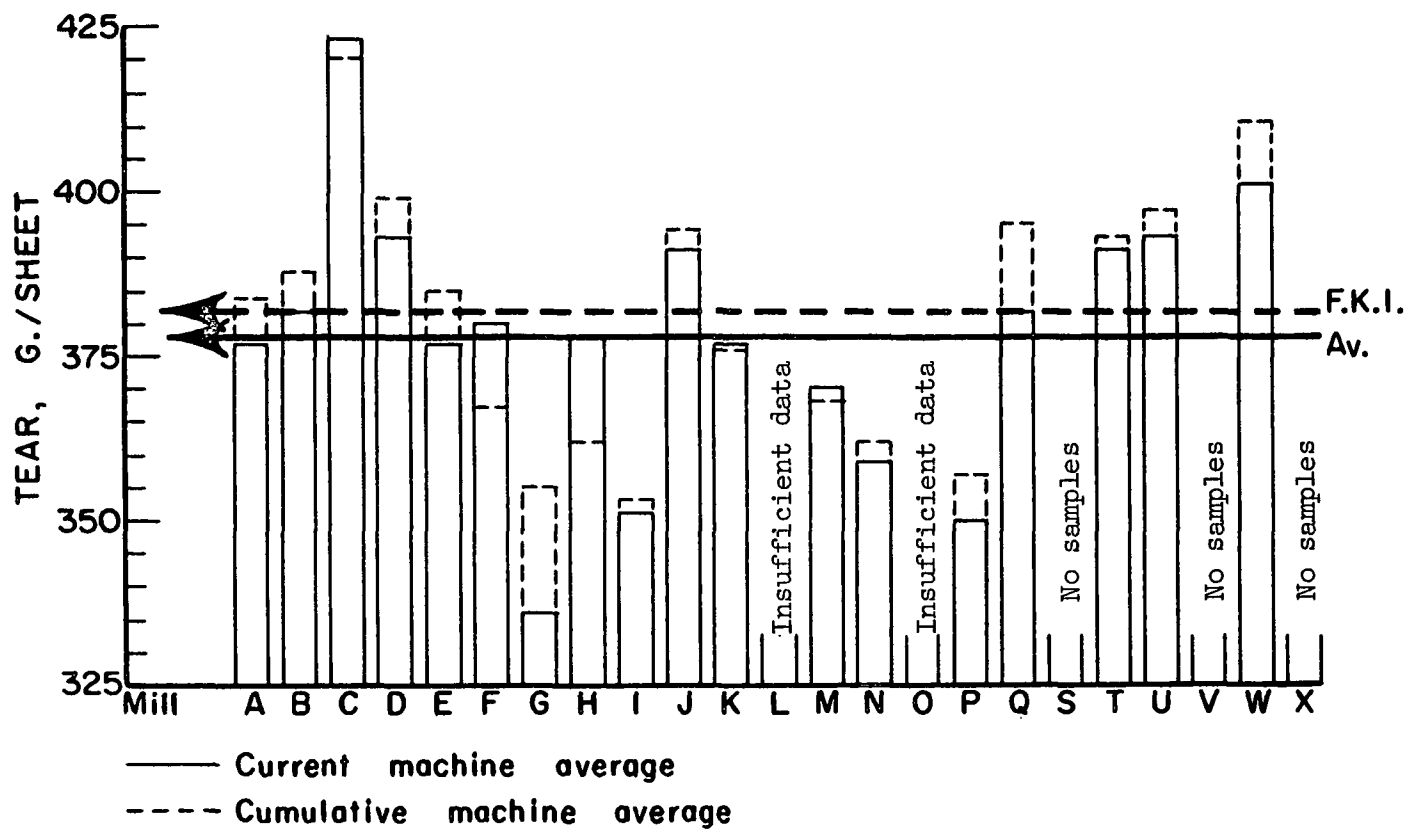


Figure 5. Comparison of Cross-Machine Direction Tear Results

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
DURING JUNE AND JULY, 1964

Mill Code	Number of Sample Lots
A	8
B	3
C	7
D	11
E	8
F	8
G	12
H	3
I	8
J	8
K	4
L	2
M	4
N	8
O	2
P	7
Q	7
S	0
T	4
U	7
V	0
W	8
X	0
Total	<u>129</u>

TABLE III

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

Mill Code	Percentage Deviation
A	+1.2
B	+1.9
C	+3.8
D	+1.0
E	0.0
F	0.0
G	+0.5
H	+2.6
I	+0.2
J	+2.6
K	0.0
L	+1.2
M	+1.9
N	+0.7
O	+1.4
P	+1.4
Q	+1.2
S	--
T	+2.1
U	+2.1
V	--
W	+1.0
X	--

Test	Current Mill Averages		F.K.I. Averages	
	Max.	Min.	Current	Cumulative
Basis weight, lb.	43.6	42.0	42.6	42.9
Caliper, points	13.4	11.5	12.7	12.7
Bursting strength, p.s.i.g.	116	98	111	111
Machine direction Elmendorf tear, g./sheet	385	264	334	334
Cross-machine direction Elmendorf tear, g./sheet	423	336	378	382

The test results obtained at the Institute and at the mill during June and July 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
June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet												
		Institute Max.	Institute Min.	Mill Av.	Diff.	Institute Max.	Institute Min.	Mill Av.	Diff.	Institute Max.	Institute Min.	Mill Av.	Diff.	Institute Max.	Institute Min.	Mill Av.	Diff.									
5-19-64	WFLS 1	43.8	41.8	42.8	42.9	+0.1	13.1	12.1	12.6	12.4	-0.2	128	88	109	105	-4	432	256	318	343	+25	416	344	371 ^a	412	+41
5-26-64	WFLS 1	43.8	41.8	42.7	43.1	+0.4	12.9	11.8	12.3	12.4	+0.1	130	85	112	109	-3	400	304	350	327	-23	448	344	390 ^a	404	+14
6-2-64	WFLS 1	43.4	41.4	42.3	43.4	+1.1	13.0	12.0	12.4	12.5	+0.1	133	89	110	109	-1	392	240	333	322	-11	416	368	387 ^a	419	+32
6-9-64	WFLS 1	44.0	42.0	43.0	42.7	-0.3	12.5	11.2	12.0	12.2	+0.2	135	110	121	107	-14	368	288	323 ^a	337	+14	432	320	384 ^a	418	+34
6-16-64	WFLS 1	43.4	40.6	42.3	42.3	0.0	13.4	11.8	12.7	12.3	-0.4	121	80	100	103	+3	336	256	303 ^a	346	+43	448	296	353 ^a	421	+68
6-23-64	WFLS 1	43.4	40.2	42.1	42.9	+0.8	13.2	12.0	12.6	12.6	0.0	136	90	116	112	-4	336	264	305 ^a	331	+26	416	352	379 ^a	409	+30
6-30-64	WFLS 1	42.8	41.8	42.2	42.8	+0.6	12.9	11.8	12.3	12.0	-0.3	132	101	115	111	-4	368	280	319	360	+41	416	336	371 ^a	415	+44
7-7-64	WFLS 1	43.4	42.0	42.3	42.5	+0.2	13.1	11.8	12.3	12.4	+0.1	139	100	115	107	-8	352	264	311 ^a	337	+26	416	352	381 ^a	406	+25
Current mill average:		42.5			42.8	+0.3	12.4			12.3	-0.1	112			108	-4	320			338	+18	377			413	+36
Cumulative mill average:		43.0					12.4					113					320					384				
Mill factor, %		98.8					100.0					99.1					100.0					98.2				
Mill index, %		99.1					97.6					100.9					95.8					98.7				

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE V
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.s.i.g.			Elmendorf Tear, g./sheet In Machine			Elmendorf Tear, g./sheet Cross Machine													
		Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.								
5-20-64	----	-	44.2	42.0	43.2	43.0	-0.2	14.6	12.2	13.5	13.3	-0.2	116	78	97	101	44	416	336	373	361	-12	440	344	385 ^a	399	+14
6-15-64	----	-	44.0	41.4	42.6	43.1	+0.5	12.8	11.1	11.9	11.8	-0.1	126	88	105	106	+1	400	296	349 ^a	366	+17	432	328	387 ^a	405	+18
7-15-64	----	-	43.4	42.0	42.6	42.8	+0.2	12.9	11.2	12.0	11.7	-0.3	110	76	93	100	+7	464	320	372	364	-8	408	336	373 ^a	395	+22
Current mill average:			42.8	43.0	+0.2			12.4	12.3	-0.1			98	102	44			365	364	-1			382	400	+18		
Cumulative mill average:			42.7					12.6					103					346					388				
Mill factor, %			100.2					98.4					95.1					105.5								98.5	
Mill index, %			99.8					97.6					88.3					109.3								100.0	

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

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

TABLE VI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

June and July, 1964

Date Made	Mch. Finish 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 Max.	Institute Min.	Av.	Diff.	Institute Max.	Institute Min.	Av.	Diff.	Institute Max.	Institute Min.	Av.	Diff.	Institute Max.	Institute Min.	Av.	Diff.						
5-21-64	----	46.2	43.8	44.6	44.0	-0.6	14.0	13.1	13.6	13.3	-0.3	138	85	114	108	-6	472	384	414 ^a	---	---	---	---
5-21-64	----	43.6	41.8	42.7	42.4	-0.3	13.0	12.0	12.3	12.3	0.0	126	90	110	105	-5	432	336	391 ^a	---	---	---	---
6-3-64	----	44.2	42.2	43.3	43.0	-0.3	13.0	11.9	12.2	12.2	0.0	129	100	115	112	-3	448	304	393 ^a	---	---	---	---
6-3-64	----	46.0	44.0	45.5	45.1	-0.4	13.8	13.0	13.2	13.1	-0.1	138	84	113	113	0	440	336	395 ^a	---	---	---	---
6-10-64	----	43.8	41.6	42.7	42.3	-0.4	12.9	12.0	12.2	12.3	+0.1	136	88	114	107	-7	416	328	369 ^a	---	---	---	---
6-17-64	WFLS	44.8	42.8	44.0	44.0	0.0	13.1	12.2	12.8	12.5	-0.3	135	87	118	115	-3	448	328	369 ^a	---	---	---	---
7-16-64	----	43.6	42.0	42.4	42.0	-0.4	12.1	11.3	11.8	11.7	-0.1	139	104	124	115	-5	408	320	360 ^a	---	---	---	---
Current mill average:		43.6	43.3	-0.3			12.6		12.5	-0.1		115	111	4			385		423	---	---	---	---
Cumulative mill average:		43.4					12.7					112					381		420				
Mill factor, %		100.5					99.2					102.7					101.0		100.7				
Mill index, %		101.6					99.2					103.6					115.3		110.7				

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

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

TABLE VII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D
June and July, 1964

Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet													
		Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill											
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.											
4-19-64	----	2	43.6	41.8	42.4	42.8	+0.4	13.0	12.2	12.7	12.5	-0.2	138	98	118	111	-7	432	272	329 ^a	365	+36	448	368	406 ^a	431	+25
4-20-64	WFLS	2	43.8	41.8	42.8	43.0	+0.2	13.6	12.6	13.0	12.9	-0.1	131	85	112	108	-4	408	304	347	395	+48	456	368	407 ^a	438	+31
5-2-64	WFLS	2	42.6	41.2	42.0	42.4	+0.4	13.1	11.8	12.6	12.5	-0.1	135	96	114	109	-5	368	288	331 ^a	344	+13	456	352	398 ^a	432	+34
5-3-64	WFLS	-	43.8	41.2	42.2	42.8	+0.6	13.0	12.0	12.4	12.2	-0.2	134	93	111	111	0	384	272	336 ^a	348	+12	432	360	385 ^a	425	+40
5-3-64	WFLS	2	42.8	41.8	42.2	42.5	+0.3	13.0	12.0	12.4	12.2	-0.2	133	89	111	112	+1	368	312	335	337	+2	408	336	371 ^a	426	+55
5-13-64	WFLS	2	43.6	41.6	42.6	42.9	+0.3	13.2	13.0	13.1	13.0	-0.1	128	88	110	109	-1	376	320	345 ^a	340	-5	456	360	413 ^a	409	-4
5-29-64	WFLS	2	42.8	41.8	42.3	42.8	+0.5	13.0	12.0	12.6	12.2	-0.4	133	99	113	113	0	368	272	317 ^a	334	+17	416	352	382 ^a	386	+4
5-29-64	WFLS	2	43.2	41.0	42.3	42.9	+0.6	13.0	12.0	12.6	12.1	-0.5	133	97	114	112	-2	344	256	311	329	+18	416	336	373 ^a	403	+30
5-31-64	WFLS	2	43.2	42.0	42.5	43.1	+0.6	13.1	12.1	12.8	12.8	0.0	129	94	112	113	+1	376	296	337 ^a	352	+15	464	368	411 ^a	441	+30
6-22-64	WFLS	2	42.8	41.8	42.2	43.0	+0.8	13.1	12.1	12.8	12.6	-0.2	125	87	109	107	-2	376	272	324 ^a	354	+30	440	352	394 ^a	418	+24
6-22-64	WFLS	2	43.8	42.0	42.5	43.0	+0.5	13.2	12.5	13.0	12.8	-0.2	132	89	110	109	-1	368	280	321	363	+42	416	320	381 ^a	406	+25
Current mill average:			42.4	42.8	42.8	42.8	+0.4		12.7	12.5	12.5	-0.2		112	110	110	-2	330	351	339	351	+21	393	419	426	419	+26
Cumulative mill average:			42.8						13.1					109				339					399				
Mill factor, %			99.1						96.9					102.8				97.3					98.5				
Mill index, %			98.8						100.0					100.9				98.8					102.9				

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E
June and July, 1964

Date Made	Mch. Finish 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.	Diff.	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Diff.						
5- 9-64	WFLS	1	43.4	41.8	42.5	42.2	-0.3	13.8	12.2	13.1	12.5	-0.6	140	92	116	112	4	376	312	341	345	+ 4	432	344	381 ^a	405	+24
5-14-64	WFLS	1	42.4	41.2	42.0	42.0	0.0	14.8	12.1	13.1	12.6	-0.5	128	91	116	112	4	360	288	319 ^a	348	+29	392	328	363 ^a	396	+33
5-21-64	WFLS	1	42.0	41.8	42.0	41.9	-0.1	13.2	12.1	12.9	12.5	-0.4	134	95	115	113	-2	368	256	326 ^a	349	+23	400	336	372 ^a	397	+25
5-25-64	WFLS	1	42.0	40.4	41.8	42.1	+0.3	14.0	12.0	13.1	12.4	-0.7	132	100	117	112	-5	392	288	343 ^a	373	+30	448	336	397 ^a	413	+16
6- 5-64	WFLS	1	42.4	41.6	42.0	42.4	+0.4	13.3	12.0	12.8	12.7	-0.1	134	99	117	112	-5	352	304	332 ^a	358	+26	424	328	379 ^a	399	+20
6-14-64	WFLS	1	42.2	41.8	42.0	42.2	+0.2	13.4	12.0	12.9	12.6	-0.3	135	94	116	112	4	328	264	315	362	+47	416	344	378 ^a	407	+29
6-23-64	WFLS	1	43.0	41.4	42.0	42.3	+0.3	13.4	12.0	12.8	12.8	0.0	135	94	117	115	-2	400	272	333 ^a	356	+23	416	328	372 ^a	412	+40
7- 3-64	WFLS	1	42.2	41.8	42.0	42.4	+0.4	13.4	12.0	12.9	12.7	-0.2	143	92	117	115	-2	368	296	327 ^a	357	+30	424	344	371 ^a	396	+25
Current mill average:			42.0 42.2 +0.2				12.9 12.6 -0.3				116 113 -3				330 356 +26				377 403 +26								
Cumulative mill average:			42.7				13.2				112				335				385								
Mill factor, %			98.4				97.7				103.6				98.5				97.9								
Mill index, %			97.9				101.6				104.5				98.8				98.7								

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

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

TABLE IX
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F
June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I. ^a			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.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.										
Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.											
5-20-64	W.F. 1	43.8	41.8	42.4	43.0	+0.6	13.4	12.2	12.8	12.9	+0.1	127	89	111	110	-1	384	272	322 ^a	300	-22	456	352	403 ^a	370	-33
5-31-64	W.F. 1	43.0	41.4	42.1	42.8	+0.7	13.0	12.0	12.7	12.5	-0.2	129	106	117	111	-6	384	272	326 ^a	297	-29	464	328	376 ^a	357	-19
5-16-64	W.F. 1	42.2	41.0	41.6	42.3	+0.7	13.1	12.0	12.6	12.4	-0.2	114	92	104	104	0	416	280	347	289	-58	400	336	371 ^a	349	-22
5-17-64	W.F. 1	42.6	41.0	41.6	42.3	+0.7	13.1	12.1	12.6	12.6	0.0	132	87	108	108	0	352	256	315	292	-23	448	336	372 ^a	359	-13
6-10-64	W.F. 1	42.6	41.4	42.1	42.5	+0.4	12.9	11.5	12.1	12.1	0.0	123	88	110	112	+2	344	272	299 ^a	299	0	432	368	394 ^a	370	-24
6- 5-64	W.F. 1	42.4	41.4	41.8	42.1	+0.3	12.9	12.0	12.3	12.4	+0.1	125	94	107	111	+4	312	256	286	276	-10	400	336	362 ^a	352	-10
6- 7-64	W.F. 1	42.4	40.2	41.5	42.3	+0.8	14.0	12.0	12.9	12.9	0.0	128	92	108	107	-1	352	264	315 ^a	289	-26	400	320	365 ^a	358	- 7
6-11-64	W.F. 2	44.4	41.6	43.1	43.6	+0.5	13.3	12.1	12.8	12.7	-0.1	142	80	107	110	+3	392	272	341 ^a	329	-12	432	368	401 ^a	402	+ 1
Current mill average:		42.0	42.6	+0.6			12.6	12.6	0.0			109	109	0					319	296	-23			380	365	-15
Cumulative mill average:		42.5					12.7					107							318					103.5		
Mill factor, %		98.8					99.2					101.9							100.3					99.5		
Mill index, %		97.9					99.2					98.2							95.5							

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE I

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

June and July, 1964

Date Made	Moh. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet													
		Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.										
4-13-64	WFLS	1	43.8	42.4	43.0	44.1	+1.1	13.5	12.8	13.1	12.7	-0.4	123	94	113	114	+1	320	232	282 ^a	296	+14	376	312	345 ^a	367	+22
4-13-64	----	1	44.2	43.4	43.8	43.8	0.0	14.0	12.1	13.1	12.7	-0.4	136	101	116	119	+3	288	192	233	279	+46	384	312	333 ^a	350	+17
4-24-64	----	1	42.2	42.0	42.2	43.0	+0.8	13.1	12.0	12.6	12.4	-0.2	128	94	113	117	+4	304	256	274 ^a	295	+21	400	320	349 ^a	357	+8
5-8-64	----	1	41.6	40.2	40.7	41.6	+0.9	13.8	12.0	12.6	12.3	-0.3	130	94	110	110	0	328	224	253 ^a	257	+4	336	288	307 ^a	321	+14
5-8-64	----	1	43.6	42.2	42.7	43.4	+0.7	13.0	12.1	12.6	12.3	-0.3	142	99	118	117	-1	320	224	271 ^a	280	+9	360	312	333 ^a	341	+8
5-20-64	----	1	43.0	41.8	42.2	42.6	+0.4	13.2	12.1	12.7	12.3	-0.4	126	95	116	120	+4	304	208	265	300	+35	368	328	351 ^a	350	-1
5-26-64	----	1	41.8	40.2	40.9	41.9	+1.0	13.3	12.0	12.7	12.2	-0.5	133	100	114	118	+4	296	232	254	279	+25	368	288	333 ^a	354	+21
6-4-64	----	1	42.8	42.0	42.2	42.4	+0.2	13.7	12.7	13.2	12.7	-0.5	129	92	116	119	+3	312	200	265	302	+37	368	304	333 ^a	379	+46
6-4-64	----	1	43.0	41.6	42.1	42.6	+0.5	13.5	12.5	13.1	12.5	-0.6	141	99	117	121	+4	304	240	267 ^a	294	+27	448	304	367 ^a	370	+3
6-16-64	----	1	42.4	41.4	41.8	42.1	+0.3	13.0	11.3	12.3	12.1	-0.2	132	93	111	120	+9	304	224	267 ^a	288	+21	360	280	323 ^a	377	+54
6-17-64	----	1	43.0	42.0	42.4	42.4	0.0	13.2	11.9	12.4	12.0	-0.4	141	104	120	114	-6	304	216	259	297	+38	360	296	330 ^a	370	+40
6-18-64	----	1	43.2	41.8	42.2	42.2	0.0	13.4	12.2	12.8	12.6	-0.2	130	90	112	115	+3	328	232	272 ^a	301	+29	360	312	336 ^a	385	+49
Current mill average:			42.2	42.7	42.7	42.7	+0.5	12.8	12.4	12.4	12.4	-0.4	115	117	117	+2	264	289	289	289	+25	336	360	360	360	+24	
Cumulative mill average:			43.2					13.0					116				294					355					
Mill factor, %			97.7					98.5					99.1				89.8					94.6					
Mill index, %			98.4					100.8					103.6				79.0					88.0					

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

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

TABLE XI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H
June and July, 1964

Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet												
		Institute	Max.	Min.	Institute	Max.	Min.	Institute	Max.	Min.	Institute	Max.	Min.	Institute	Max.	Min.										
Finish	No.	Av.	Diff.	Av.	Av.	Diff.	Av.	Av.	Diff.	Av.	Av.	Diff.	Av.	Av.	Diff.											
5-27-64	----	42.6	41.4	41.9	43.3	+1.4	13.7	12.1	13.0	12.9	-0.1	127	86	109	113	+4	352	264	306 ^a	311	+5	416	352	383 ^a	387	+4
6-16-64	----	44.8	42.4	43.4	45.3	+1.9	14.0	12.8	13.3	13.5	+0.2	127	86	103	105	+2	432	304	345 ^a	388	+43	400	320	382 ^a	430	+48
6-23-64	----	45.2	42.2	44.0	44.7	+0.7	14.3	13.3	13.9	13.7	-0.2	124	89	107	108	+1	384	264	314 ^a	347	+33	448	328	370 ^a	415	+45
Current mill average:		43.1	44.4	+1.3	13.4	13.4	0.0	106	109	+3	322	348	+26	378	410	+32										
Cumulative mill average:		42.7			12.8			107			315			362												
Mill factor, %		100.9			104.7			99.1			102.2			104.4												
Mill index, %		100.5			105.5			95.5			96.4			99.0												

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I

June and July, 1964

Date Made	Mch. No.	Finish	Basis Weight, lb.				Caliper, points				Bursting Strength, P.s.i.g.				Elmendorf Tear, g./sheet				Elmendorf Tear, g./sheet								
			Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.					
5-25-64	2	WFIS	42.0	40.2	41.5	42.2	+0.7	13.4	11.8	12.5	12.4	-0.1	130	94	113	120	+7	384	224	321 ^a	303	-18	432	328	367 ^a	381	+14
6-1-64	2	WFIS	42.8	40.0	41.6	42.8	+1.2	13.3	12.3	12.9	12.9	0.0	142	88	112	119	+7	336	240	283 ^a	281	-2	384	304	347 ^a	379	+32
6-9-64	2	WFIS	42.0	41.0	41.6	42.2	+0.6	13.3	12.2	12.8	12.7	-0.1	127	95	106	112	+6	368	280	341	326	-15	400	312	357 ^a	377	+20
6-15-64	2	WFIS	43.0	42.0	42.4	43.0	+0.6	13.9	12.3	12.9	12.8	-0.1	149	100	118	117	-1	384	264	321	290	-31	384	328	346 ^a	395	+47
6-25-64	2	WFIS	43.2	42.0	42.4	43.0	+0.6	12.8	12.0	12.2	12.3	+0.1	138	95	115	122	+7	344	240	305 ^a	294	-11	400	312	355 ^a	404	+49
7-1-64	2	WFIS	43.6	41.0	42.1	42.7	+0.6	13.9	12.5	13.1	13.2	+0.1	127	90	111	112	+1	368	224	291 ^a	304	+13	360	328	339 ^a	368	+29
7-7-64	2	WFIS	43.2	42.2	42.8	43.3	+0.5	13.0	12.0	12.3	12.5	+0.2	136	93	112	118	+6	368	264	318 ^a	292	-26	416	312	357 ^a	401	+44
7-15-64	2	WFIS	43.8	42.0	42.3	42.7	+0.4	13.5	13.0	13.1	13.2	+0.1	125	85	104	108	+4	328	248	286 ^a	298	+12	360	320	341 ^a	377	+36
Current mill average:			42.1	42.7	+0.6			12.7	12.8	+0.1			111	116	+5			308	298	-10			351	385	+34		
Cumulative mill average:			42.7					13.3					112					304					353				
Mill factor, %			98.6					95.5					99.1					101.3					99.4				
Mill index, %			98.1					100.0					100.0					92.2					91.9				

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

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

TABLE XIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J
June and July, 1964

Date Made	Mch. Finish 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	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.						
5-27-64	W.F.	2	44.2	43.6	43.8	44.2	+0.4	13.1	12.0	12.7	12.7	0.0	131	98	115	117	+2	432	312	357 ^a	343	-14	426	360	387 ^a	399	+12
5-27-64	W.F.	2	44.2	40.0	43.6	44.3	+0.7	13.0	12.3	12.8	12.8	0.0	144	97	118	116	-2	424	296	341 ^a	342	+1	480	352	401 ^a	417	+16
6-8-64	W.F.	2	43.2	42.0	42.3	42.8	+0.5	13.0	12.3	12.7	12.7	0.0	137	82	114	112	-2	416	288	336 ^a	320	-16	464	336	407 ^a	391	-16
6-8-64	W.F.	2	43.0	42.0	42.5	42.6	+0.1	13.2	12.2	12.7	12.8	+0.1	130	88	110	108	-2	472	304	371 ^a	330	-41	496	352	410 ^a	375	-35
6-12-64	W.F.	1	44.0	42.8	43.4	43.6	+0.2	12.9	12.1	12.5	12.3	-0.2	136	98	116	116	0	384	296	344 ^a	347	+3	432	360	382 ^a	386	+4
6-12-64	W.F.	1	44.2	43.0	43.5	43.5	0.0	12.8	11.8	12.4	12.3	-0.1	137	100	116	115	-1	392	296	353 ^a	354	+1	440	344	378 ^a	382	+4
7-7-64	W.F.	2	44.4	42.2	42.9	43.0	+0.1	13.0	12.1	12.4	12.6	+0.2	129	82	107	109	+2	392	288	335 ^a	315	-20	464	344	389 ^a	383	-6
7-7-64	----	2	44.0	42.0	43.0	43.2	+0.2	13.0	11.5	12.5	12.5	0.0	140	89	109	109	0	352	264	309 ^a	332	+23	408	336	371 ^a	390	+19
Current mill average:			43.1	43.4	+0.3				12.6	12.6	12.6	0.0		113	113	0		343	335	-8			391	390	-1		
Cumulative mill average:			43.2						13.0					112				340					394				
Mill factor, %			99.8						96.9					100.9				100.9					99.2				
Mill index, %			100.5						99.2					101.8				102.7					102.4				

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

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

TABLE XIV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.			Elmendorf Tear, g./sheet In Machine			Elmendorf Tear, g./sheet Cross Machine																	
		Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.												
6-11-64	----	43.6	40.8	42.7	43.5	+0.8	13.8	12.2	13.0	12.5	-0.5	134	102	119	117	-2	440	328	381 ^a	---	---	---	---	---	---	---	---	---	---		
6-15-64	----	43.0	40.2	41.5	42.2	+0.7	14.2	12.3	13.0	12.7	-0.3	131	90	110	117	+7	480	312	384 ^a	---	---	---	---	---	---	---	---	---	---		
7-15-64	----	42.0	41.0	41.8	42.6	+0.8	14.3	13.1	13.8	13.7	-0.1	131	94	110	110	0	392	288	335	---	---	---	---	---	---	---	---	---	---	---	
7-21-64	----	43.8	40.2	42.2	42.9	+0.7	14.3	13.0	13.6	13.3	-0.3	120	84	105	112	+7	408	272	344 ^a	---	---	---	---	---	---	---	---	---	---	---	
Current mill average:				42.0	42.8	+0.8		13.4	13.0	-0.4			111	114	+3			361	---	---	---	---	---	---	---	---	---	---	---	---	
Cumulative mill average:				42.2				13.3					110					361													
Mill factor, %				99.5				100.8					100.9					100.0													
Mill index, %				97.9				105.5					100.0					108.1													

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

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

TABLE IV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L

June and July, 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												
			Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.							
4-21-64	W.F.	1	43.8	42.2	42.8	42.9	+0.1	13.3	11.7	12.2	12.0	-0.2	138	101	121	118	-3	328	248	295	287	-8	392	344	368 ^a	379	+11
5-25-64	W.F.	1	43.0	41.6	42.3	42.2	-0.1	12.7	11.5	12.1	12.0	-0.1	127	90	110	108	-2	336	272	301 ^a	285	-16	432	352	380 ^a	378	-2
Current mill average:			42.5			42.5	0.0	12.2			12.0	-0.2	116			113	-3	298			286	-12	374			378	+4
Cumulative mill average:			43.1			43.1			12.3			114			310			369			101.4			97.9			
Mill factor, %			98.6			98.6			99.2			101.8			96.1			89.2			97.9						
Mill index, %			99.1			99.1			96.1			104.5			89.2			97.9									

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

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

TABLE XVI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M
June and July, 1964

Date Made	Mch. Finish 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 Max.	Institute Min.	Mill Av.	Institute Max.	Institute Min.	Mill Av.	Institute Max.	Institute Min.	Mill Av.	Institute Max.	Institute Min.	Mill Av.	Institute Max.	Institute Min.	Mill Av.											
6-11-64	W.F.	1	43.6	42.0	42.8	43.3	+0.5	12.8	11.3	12.1	11.8	-0.3	126	94	112	115	+3	448	304	363 ^a	291	-72	384	344	369 ^a	326	-43
6-11-64	W.F.	1	43.0	41.8	42.6	42.8	+0.2	12.8	11.7	12.2	11.8	-0.4	127	85	114	114	0	384	288	329	289	-40	424	336	381 ^a	332	-49
7-7-64	W.F.	1	43.8	42.0	42.7	42.7	0.0	13.0	11.6	12.1	11.9	-0.2	128	94	113	116	+3	408	304	342 ^a	305	-37	392	328	365 ^a	343	-22
7-7-64	W.F.	1	43.6	42.0	42.9	42.8	-0.1	12.2	11.4	12.0	11.9	-0.1	133	94	113	115	+2	392	280	335 ^a	301	-34	400	344	365 ^a	345	-20
Current mill average:			42.8	42.9	+0.1	12.1	11.9	-0.2	113	115	+2	342	297	-45	370	337	-33										
Cumulative mill average:			43.1			11.9			112			331			368												
Mill factor, %			99.3			101.7			100.9			103.3			100.5												
Mill index, %			99.8			95.3			101.8			102.4			96.9												

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

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

TABLE XVII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N
June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet												
		Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.	Institute	Max.	Min.	Av.	Diff.					
6-4-64	W.F.	42.4	44.0	42.4	43.4	+0.6	13.3	12.2	13.0	12.8	-0.2	132	97	116	118	+2	336	272	309 ^a	300	-9	392	328	359 ^a	364	+5
6-5-64	W.F.	42.0	43.6	42.0	42.4	+0.7	13.0	12.0	12.5	12.2	-0.3	135	93	115	117	+2	368	288	327	317	-10	456	328	382 ^a	381	-1
6-12-64	W.F.	40.2	43.0	40.2	41.3	+1.2	12.9	12.0	12.3	12.2	-0.1	151	100	121	116	-5	416	304	343 ^a	339	-4	384	320	357 ^a	371	+14
6-19-64	W.F.	42.0	44.0	42.0	43.4	+0.6	14.3	13.0	13.7	13.1	-0.6	129	97	113	108	-5	384	272	338	316	-22	400	336	369 ^a	353	-16
7-1-64	W.F.	40.8	43.6	40.8	42.1	+0.5	13.3	12.1	12.7	12.6	-0.1	121	94	109	108	-1	352	264	308 ^a	316	+8	400	320	363 ^a	369	+6
7-2-64	W.F.	41.6	42.6	41.6	42.1	+0.5	12.1	11.9	12.0	12.1	+0.1	135	100	115	112	-3	344	272	301	312	+11	408	336	360 ^a	368	+8
7-10-64	W.F.	41.0	41.6	41.0	41.4	+0.4	12.2	11.5	12.0	11.9	-0.1	122	103	111	111	0	360	248	297 ^a	298	+1	416	312	349 ^a	363	+14
7-17-64	W.F.	41.6	42.2	41.6	42.0	+0.4	14.0	13.1	13.4	13.1	-0.3	116	87	102	105	+3	344	264	297 ^a	307	+10	360	296	335 ^a	338	+3
Current mill average:		42.3	42.9	42.3	42.8	+0.6	12.7	12.5	12.5	12.5	-0.2	113	112	112	112	-1	315	313	313	313	-2	359	363	363	363	+4
Cumulative mill average:		42.8			42.8		12.5			12.5		113			113		316			316						
Mill factor, %		98.8			98.8		101.6			101.6		100.0			100.0		99.7			99.7						99.2
Mill index, %		98.6			98.6		100.0			100.0		101.8			101.8		94.3			94.3						94.0

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

June and July, 1964

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet		
		Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.
5-22-64	W.B. -	43.6	41.8	42.5	42.8	+0.3		12.1	11.2	11.8	11.3	-0.5		432	320	363 ^a
6-30-64	W.B. -	43.4	42.0	42.8	43.2	+0.4		11.8	11.0	11.2	11.0	-0.2		432	344	389 ^a
Current mill average:		42.6	43.0	+0.4				11.5	11.2	-0.3				376	336	-40
Cumulative mill average:		42.9						109						369		
Mill factor, %		99.3						100.9						101.9		
Mill index, %		99.3						99.1						112.6		
														402	417	+15
														415		
														96.9		
														105.2		

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

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

TABLE XIX
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P
June and July, 1964

Date Made	Finish	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet												
			Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill										
			Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.										
5-16-64	W.F.	1	44.0	42.4	43.2	42.7	-0.5	13.0	12.2	12.6	12.9	+0.3	137	87	114	114	0	312	216	277 ^a	242	-35	384	320	357 ^a	335	-22
5-22-64	W.F.	1	42.2	41.8	42.0	42.2	+0.2	13.8	12.9	13.2	13.2	0.0	139	78	110	109	-1	344	248	286 ^a	271	-15	376	288	346 ^a	345	-1
5-31-64	----	1	42.6	41.6	42.0	42.2	+0.2	13.2	12.4	12.9	12.9	0.0	136	100	120	121	+1	320	264	300 ^a	290	-10	392	344	371 ^a	360	-11
6-4-64	----	1	42.6	42.0	42.3	42.2	-0.1	13.0	12.2	12.7	12.8	+0.1	125	98	116	113	-3	304	240	269 ^a	232	-37	384	320	342 ^a	333	-9
6-8-64	----	1	42.6	42.2	42.4	42.3	-0.1	13.1	12.3	12.8	13.0	+0.2	121	87	109	111	+2	304	232	271 ^a	237	-34	368	304	337 ^a	338	+1
6-17-64	----	1	43.8	42.6	43.4	42.9	-0.5	13.0	12.1	12.5	13.1	+0.6	133	87	112	114	+2	312	256	284 ^a	269	-15	368	304	344 ^a	352	+8
6-23-64	----	1	43.4	42.2	42.9	42.7	-0.2	13.3	12.8	13.0	13.1	+0.1	142	85	118	116	-2	312	248	278 ^a	264	-14	392	320	353 ^a	361	+8
Current mill average:			42.6	42.4	-0.2			12.8	13.0	+0.2			114	114	0			281	258	-23			350	346	-4		
Cumulative mill average:			42.5					12.9					113					298					357				
Mill factor, %			100.2					99.2					100.9					94.3					98.0				
Mill index, %			99.3					100.8					102.7					84.1					91.6				

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

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

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

June and July, 1964

Date Made	Mch. No.	Finish	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet														
			Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill												
			Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
5-18-64	WFLS	1	44.0	42.4	43.5	42.8	-0.7	13.3	12.0	12.8	12.3	-0.5	130	95	110	110	0	424	288	360 ^a	297	-63	424	360	389 ^a	352	-37		
5-29-64	WFLS	1	42.4	41.8	42.1	42.6	+0.5	13.0	12.0	12.6	12.5	-0.1	139	86	113	111	-2	440	320	364 ^a	341	-23	448	352	405 ^a	379	-26		
7-1-64	WFLS	1	43.6	42.0	43.0	42.7	-0.3	13.2	12.1	12.6	12.4	-0.2	135	88	110	113	+3	432	304	384 ^a	314	-70	456	376	413 ^a	352	-61		
7-1-64	WFLS	1	42.8	41.4	42.0	42.1	+0.1	13.1	11.8	12.4	12.2	-0.2	132	85	103	103	0	416	264	357 ^a	316	-41	424	344	377 ^a	359	-18		
6-28-64	WFLS	1	42.6	41.2	42.1	42.5	+0.4	13.2	12.0	12.6	12.6	0.0	128	85	105	101	-4	360	264	304 ^a	288	-16	400	264	337 ^a	316	-21		
6-29-64	WFLS	1	42.6	41.0	42.0	42.4	+0.4	13.4	12.4	13.0	12.6	-0.4	129	85	107	101	-6	376	264	327 ^a	285	-42	392	328	353 ^a	332	-21		
6-30-64	WFLS	1	43.6	42.2	43.0	42.8	-0.2	13.0	12.0	12.5	12.7	+0.2	143	82	113	107	-6	392	296	341 ^a	365	+24	440	336	400 ^a	403	+3		
Current mill average:			42.5	42.6	+0.1			12.6	12.5	-0.1			109	107	-2			348	315	-33				382	356	-26			
Cumulative mill average:			42.4					12.5					113					352						392					
Mill factor, %			100.2					100.8					96.5					98.9						96.7					
Mill index, %			99.1					99.2					98.2					104.2						100.0					

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

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

TABLE XXI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S
June and July, 1964

Date Made	Mch. Finish 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	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.												
				Diff.			Diff.			Diff.			Diff.			Diff.												
No samples submitted.																												
TABLE XIII																												
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T																												
6-1-64	W.F.	-	44.0	42.0	43.4	43.3	-0.1	13.8	12.7	13.3	12.9	-0.4	130	98	112	108	-4	448	320	379 ^a	339	-40	424	336	381 ^a	395	+14	
6-1-64	W.F.	-	44.0	41.8	42.7	43.5	+0.8	13.8	12.5	13.1	12.7	-0.4	139	102	122	112	-10	416	296	354 ^a	343	-11	432	368	399 ^a	394	-5	
6-29-64	W.F.	-	43.6	42.0	42.4	43.1	+0.7	13.5	12.7	13.1	13.1	0.0	125	93	109	110	+1	432	328	360 ^a	357	-3	448	336	386 ^a	414	+28	
6-30-64	W.F.	-	43.8	42.0	43.0	43.4	+0.4	13.1	12.0	12.9	12.6	-0.3	126	95	110	115	+5	480	312	381 ^a	375	-6	432	352	397 ^a	435	+38	
Current mill average:			42.9	43.4	43.5					13.1	12.9	-0.2			113	111	-2		369	354			-15		391	409	+18	
Cumulative mill average:			43.0							12.8					112				379						393			
Mill factor, %			99.8							102.3					100.9				97.4							99.5		
Mill index, %			100.0							103.1					101.8				110.5							102.4		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U
June and July, 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.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Diff.					
3-6-64	W.F.	3	43.0	42.4	42.5	42.8	12.2	12.5	12.5	0.0	121	96	110	109	-1	416	304	358 ^a	355	-3	456	352	405 ^a	387	-18	
3-12-64	W.F.	3	43.0	42.2	42.6	42.8	12.9	12.0	12.4	12.4	0.0	126	87	111	109	-2	464	336	384 ^a	358	-26	448	352	399 ^a	385	-14
4-13-64	W.F.	3	43.2	42.2	42.7	43.1	13.0	12.2	12.6	12.6	0.0	126	104	113	109	-4	368	320	347 ^a	351	+4	448	352	395 ^a	386	-9
4-27-64	W.F.	3	43.4	42.2	42.7	43.3	13.0	12.2	12.6	12.6	0.0	121	90	110	110	0	448	304	347 ^a	373	+26	464	352	398 ^a	403	+5
5-10-64	W.F.	3	44.0	42.0	42.8	43.8	12.3	12.0	12.1	12.9	+0.8	125	98	113	109	-4	416	312	362 ^a	390	+28	448	368	393 ^a	399	+6
5-30-64	W.F.	3	44.4	43.6	44.0	44.0	13.1	12.3	12.9	13.1	+0.2	122	95	109	114	+5	408	280	341 ^a	335	-6	424	352	392 ^a	417	+25
5-31-64	W.F.	3	43.2	42.4	42.9	43.2	12.9	11.9	12.3	12.4	+0.1	121	94	109	116	+7	344	240	298 ^a	311	+13	424	328	367 ^a	368	+1
Current mill average:			42.9			43.3	12.5	12.6	12.6	+0.1	111	111	111	0	0	348	353	353	+5	0	393	392	392	-1		
Cumulative mill average:			43.8			43.8	12.8	12.8	12.8	0	111	111	111	0	0	344	344	344	0	0	397	397	397	0		
Mill factor, %			97.9			97.9	97.7	97.7	97.7	100.0	100.0	101.2	101.2	101.2	101.2	101.2	101.2	101.2	101.2	101.2	99.0	99.0	99.0	99.0	99.0	
Mill index, %			100.0			100.0	98.4	98.4	98.4	100.0	100.0	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	102.9	102.9	102.9	102.9	102.9	

TABLE XXIV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V

No samples submitted.

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

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

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL W

June and July, 1964

Date Made	Finish No.	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet												
			Max.	Min.	Av.	Institute	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Diff.	
5-29-64	W.B.	-	43.2	41.6	42.0	41.6	-0.4	13.2	12.1	12.6	12.5	-0.1	127	85	107	106	-1	392	312	351 ^a	303	-48	464	352	397 ^a	363	-34
6-11-64	W.B.	-	43.2	41.4	42.1	41.8	-0.3	12.2	11.5	12.0	11.9	-0.1	122	90	107	109	+2	408	288	352 ^a	337	-15	440	344	391 ^a	386	-5
6-11-64	W.B.	-	42.8	41.0	41.8	41.9	+0.1	12.8	11.9	12.2	12.0	-0.2	123	90	105	107	+2	384	296	351 ^a	323	-28	448	352	410 ^a	387	-23
6-14-64	W.B.	-	43.2	40.6	42.0	41.9	-0.1	12.5	11.6	12.0	11.9	-0.1	133	94	108	106	-2	384	304	359 ^a	327	-32	440	352	387 ^a	380	-7
6-17-64	W.B.	-	43.6	42.0	42.6	42.4	-0.2	12.5	11.2	11.9	11.9	0.0	124	89	108	114	+6	424	320	365 ^a	340	-25	448	376	403 ^a	383	-20
6-23-64	W.B.	-	44.4	42.0	43.2	43.1	-0.1	12.8	11.3	12.1	12.0	-0.1	133	89	105	108	+3	464	328	398 ^a	349	-49	440	344	398 ^a	363	-35
7-13-64	W.B.	-	43.8	42.0	42.9	42.6	-0.3	13.0	11.9	12.4	12.2	-0.2	127	86	108	111	+3	472	336	377 ^a	327	-50	472	360	406 ^a	376	-30
7-14-64	W.B.	-	43.0	42.0	42.2	42.5	+0.3	12.9	12.0	12.2	12.1	-0.1	135	98	112	113	+1	400	328	367 ^a	333	-34	456	368	417 ^a	388	-29
Current mill average:			42.4	42.2	42.3	42.3	-0.2	12.2	12.1	12.1	12.1	-0.1	107	109	109	109	+2	365	330	330	330	-35	401	378	378	378	-23
Cumulative mill average:			42.9					12.7					111					371					411				
Mill factor, %			98.8					96.1					96.4					98.4					97.6				
Mill index, %			98.8					96.1					96.4					109.3					105.0				

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL X

No samples submitted.

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

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

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

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	3	7	11	8	8	12	3	8	8	4	2	4	8	2	7	7	0	4	7	0	8	0	
		Basis Weight																							
		Caliber																							
		Bursting Strength																							
		Tearing Strength, in																							
		Tearing Strength, cross																							
Institute Mill ^b	Institute	42.5	42.8	43.6	42.4	42.0	42.0	42.2	43.1	42.1	43.1	42.0	42.5	42.8	42.3	42.6	42.6	42.5	42.9	42.9	42.9	42.9	42.4	42.4	
	Mill	42.8	43.0	43.3	42.8	42.2	42.6	42.7	44.4	42.7	43.4	42.8	42.5	42.9	42.9	43.0	42.4	42.6	42.6	43.4	43.3	43.3	42.2	42.2	
	Av. diff. ^c	+0.3	+0.2	-0.3	+0.4	+0.2	+0.6	+0.5	+1.3	+0.6	+0.3	+0.8	0.0	+0.1	+0.6	+0.4	-0.2	+0.1	+0.5	+0.5	+0.4	+0.4	-0.2	-0.2	
	Max. diff. ^c	+1.1	+0.5	-0.6	+0.8	+0.4	+0.8	+1.1	+1.9	+1.2	+0.7	+0.8	+0.1	+0.5	+1.2	+0.4	-0.5	-0.7	+0.8	+1.0	+0.8	+1.0	-0.4	-0.4	
Institute Mill ^b	Institute	12.4	12.4	12.9	12.7	1.29	12.6	12.8	13.4	12.7	12.6	13.4	12.2	12.1	12.7	11.5	12.8	12.6	13.1	13.1	12.5	12.5	12.2	12.2	
	Mill	12.3	12.3	12.5	12.5	12.6	12.6	12.4	13.4	12.8	12.6	13.0	12.0	11.9	12.5	11.2	13.0	12.5	12.9	12.9	12.6	12.1	12.1		
	Av. diff. ^c	-0.1	-0.1	-0.1	-0.2	-0.3	0.0	-0.4	0.0	0.0	0.0	-0.4	-0.2	-0.2	-0.2	-0.3	+0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1		
	Max. diff. ^c	-0.4	-0.3	-0.3	-0.5	-0.7	-0.2	-0.6	+0.2	+0.2	+0.2	-0.5	-0.2	-0.4	-0.6	-0.5	+0.6	-0.5	-0.4	-0.4	+0.8	-0.2	-0.2		
Institute Mill ^b	Institute	112	98	115	112	116	109	115	106	111	113	111	116	113	113	110	114	109	113	113	111	111	107	107	
	Mill	108	102	111	110	113	109	117	109	116	113	114	113	113	112	109	114	107	111	111	111	109	109		
	Av. diff. ^c	-4	+4	-4	-2	-3	0	+2	+3	+5	0	+3	-3	-3	-1	-1	0	-2	-2	-2	0	+2	+2		
	Max. diff. ^c	-14	+7	-9	-7	-5	-6	+9	+4	+7	+2	+7	-3	-3	-5	-3	-3	-6	-10	-10	+7	+6	+6		
Institute Mill ^b	Institute	320	365	395	330	330	319	264	322	308	343	361	298	342	315	376	281	348	369	348	348	365	365	365	
	Mill	338	364	--	351	356	296	289	348	298	335	--	286	297	315	336	258	315	354	353	353	330	330		
	Av. diff. ^c	+18	-1	--	+21	+26	-23	+25	+26	-10	-8	--	-12	-45	-2	-40	-23	-33	-15	-15	+5	-35	-35		
	Max. diff. ^c	+43	+17	--	+48	+47	-58	+46	+43	+31	+41	--	-16	-72	-22	-46	-37	-70	-40	-40	+28	-50	-50		
Institute Mill ^b	Institute	377	382	423	393	377	380	336	378	351	391	377	374	370	359	402	350	382	391	393	393	401	401	401	
	Mill	413	400	--	419	403	365	360	410	365	390	--	378	337	363	417	346	356	409	392	392	378	378		
	Av. diff. ^c	+36	+18	--	+26	+26	-15	+24	+32	+34	-1	--	+4	-33	+16	+15	-4	-26	+18	-1	-1	-23	-23		
	Max. diff. ^c	+68	+22	--	+55	+40	-33	+54	+48	+49	-35	--	+11	-49	-16	+17	-22	-61	+38	+38	+25	-35	-35		

^aComparison based on averages involved only those samples on which mill test data were submitted.

^b Comparison based on averages involved only those samples on which mill test data were submitted. Average difference is the difference between the Institute mill average and the mill average based on mill test data.

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

TABLE XXVIII
COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR JUNE AND JULY, 1964
Average Difference, %

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross	Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
A	Feb.-March	0	-2	-6	+2	+6	M	Feb.-March	-1	-2	+5	-4	-2
	April-May	-0.2	-0.8	-4	+4	+5		April-May	--	--	--	--	--
	Current	+0.7	-0.8	-4	+6	+10		Current	+0.2	-2	+2	-13	-9
B	Feb.-March	-0.2	-2	0	+0.3	-0.8	N	Feb.-March	+0.7	-2	+0.9	0	-1
	April-May	-0.2	-2	+4	-3	-2		April-May	+0.7	-2	+0.9	-2	-2
	Current	+0.5	-0.8	+4	-0.3	+5		Current	+1	-2	-0.9	-0.6	+1
C	Feb.-March	-1	-2	-3	--	--	O	Feb.-March	-0.7	-4	+0.9	-10	-6
	April-May	-2	-2	-3	--	--		April-May	-1	-4	+2	-12	-9
	Current	-0.7	-0.8	-3	--	--		Current	+0.9	-3	-0.9	-11	+4
D	Feb.-March	+0.2	-2	-0.9	-3	+6	P	Feb.-March	+0.2	+2	+0.9	-11	-3
	April-May	+0.2	-3	+2	-1	+9		April-May	+0.2	+2	+2	-9	-2
	Current	+0.9	-2	-2	+6	+7		Current	-0.5	+2	0	-8	-1
E	Feb.-March	+0.7	-4	-2	-4	+1	Q	Feb.-March	0	-2	-2	-12	-11
	April-May	0	-4	-3	+7	+6		April-May	-2	-4	+2	-21	-13
	Current	+0.5	-2	-3	+8	+7		Current	+0.2	-0.8	-2	-9	-7
F	Feb.-March	+0.9	-2	0	-8	-5	S	Feb.-March	--	--	--	--	--
	April-May	+0.9	-0.8	-0.9	-7	-5		April-May	--	--	--	--	--
	Current	+1	0	0	-7	-4		Current	--	--	--	--	--
G	Feb.-March	-0.9	-5	-0.8	-11	-1	T	Feb.-March	+2	0	-2	-3	+8
	April-May	+0.7	-3	+4	-2	+2		April-May	+0.2	-2	-7	-2	+4
	Current	+1	-3	+2	+9	+7		Current	+1	-2	-2	-4	+5
H	Feb.-March	+0.7	-2	+0.9	-8	-0.5	U	Feb.-March	-0.2	-2	+0.9	-1	+0.3
	April-May	0	-3	+0.9	-14	-2		April-May	-0.5	-3	+3	+3	+4
	Current	+3	0	+3	+8	+8		Current	+0.9	+0.8	0	+1	-0.3
I	Feb.-March	+0.7	-4	+0.9	-4	+5	V	Feb.-March	--	--	--	--	--
	April-May	+1	-3	+6	-0.3	+11		April-May	--	--	--	--	--
	Current	+1	+0.8	+5	-3	+10		Current	--	--	--	--	--
J	Feb.-March	+0.2	-1	-0.9	-4	-3	W	Feb.-March	-1	-2	-3	-7	+0.2
	April-May	+0.2	-0.8	-2	-3	-1		April-May	-0.9	-2	-0.9	-3	+3
	Current	+0.7	0	0	-2	-0.3		Current	-0.5	-0.8	+2	-10	-6
K	Feb.-March	0	-3	+3	--	--	X	Feb.-March	--	--	--	--	--
	April-May	-0.2	-4	+6	--	--		April-May	--	--	--	--	--
	Current	+2	-3	+3	--	--		Current	--	--	--	--	--
L	Feb.-March	-0.5	-2	+0.9	-5	-2		Feb.-March	-2	-2	-2	-2	-2
	April-May	-0.7	-2	+2	-0.7	+4		April-May	-0.7	-2	-2	-2	-2
	Current	0	-2	-5	-4	+1		Current	0	-2	-2	-2	-2

TABLE XXIX

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS FOR JUNE AND JULY, 1964

		Average Percentage Difference Between Institute and Mill Test Results ^a									
		+0.5	+1	+2	+3	+4	+5	+7.5	+10	+13	
Basis weight											
Number of mills	7	18	19	20							
Percentage of mills	35.0	90.0	95.0	100.0							
Caliper											
Number of mills	3	10	17	20							
Percentage of mills	15.0	50.0	85.0	100.0							
Bursting strength											
Number of mills	4	6	12	17	19	20					
Percentage of mills	20.0	30.0	60.0	85.0	95.0	100.0					
Tearing strength, in											
Number of mills	1	3	4	5	7	7	7	10	16	18	
Percentage of mills	5.6	16.7	22.2	27.8	38.9	38.9	38.9	55.6	88.9	100.0	
Tearing strength, cross											
Number of mills	2	5	5	5	7	9	9	14	18		
Percentage of mills	11.1	27.8	27.8	27.8	38.9	50.0	50.0	77.8	100.0		

^aBased on the average percentage differences between Institute and mill data given in Table XXVIII.

TABLE XXX

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

JUNE AND JULY, 1964

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A	--	--	--	55	72-73	--
B ^a	--	--	--	--	--	--
C	50	73	24-192	50	73	24
D	50	70-72	120	50	70-72	120-240
E	50	73	24	50	73	24
F	35	73	48	50	73	48
G	50	70-73	72-96	50	70-73	72-96
H	49-50	72-74	24-50	49-50	72-74	3.5
I	50	72	24	--	--	--
J	50	73	24	50	73	24
K	--	--	--	62-66	70-72	1-1.5
L	38-62	78-79	0.5	50	73	24-48
M	--	--	--	49-51	72	24
N	33-35	77-78	8	48-52	71-73	16
O	--	--	--	51-52	74-75	48
P	50	80	--	45-56	83-88	--
Q ^b	50	72-73	48-240	--	--	--
S ^b	--	--	--	--	--	--
T	--	--	--	45-50	73	24
U	--	--	--	50	73-75	24
V ^b	--	--	--	--	--	--
W ^b	49-51	71-74	--	50	73	48
X ^b	--	--	--	--	--	--

^aNo data were submitted relative to preconditioning and conditioning.

^bNo samples were submitted for evaluation during the current period.

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