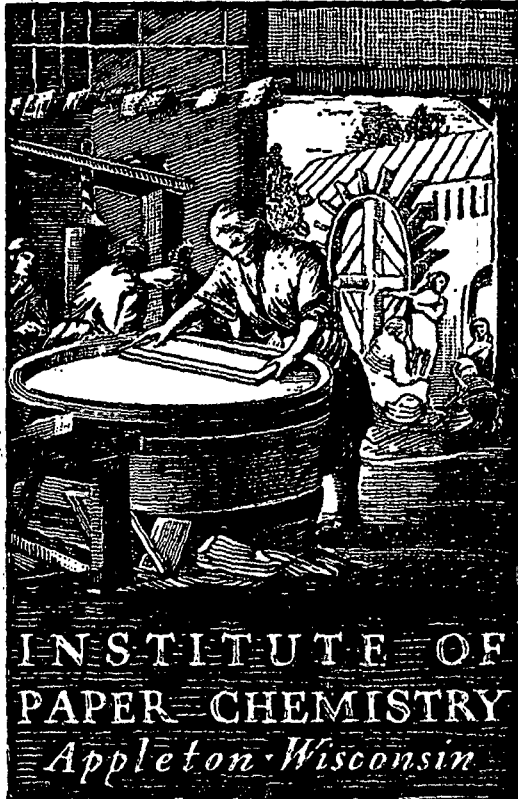


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CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 199

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1966

Your mill is identified by the
following code letter in this
report: L

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 199

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1966

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

INTRODUCTION

As requested by the Technical Division 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 December, 1965, and January, 1966.

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during December and January 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 percent 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--DECEMBER, 1965, AND JANUARY, 1966

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i.g.	Elmendorf Tear, g./sheet	In Machine Cross Machine
A	43.1	12.2	114	346	375
B	42.5	12.7	106	322	369
C	42.7	12.8	102	357	356
D	No samples submitted.				
E	43.6	12.8	112	362	378
F	No samples submitted.				
G	42.8	12.8	106	308	370
H	43.4	13.3	107	384	403
I	42.0	12.9	110	323	385
J	42.6	12.3	114	293	358
K	43.6	12.7	115	331	378
L	42.4	12.3	107	346	397
M	42.8	13.6	107	315	375
N	42.8	12.4	106	362	416
O ^a	No samples submitted.				
P	42.7	12.2	108	307	369
Q	42.8	13.4	98	294	352
S	42.4	12.2	108	398	380
T	42.1	12.6	111	336	388
U	42.5	12.6	105	275	325
V	42.3	12.4	112	300	367
W					
X ^a	42.6	12.0	115	298	364
Y	43.1	12.8	109	311	376
Z					
Current FKl average:	42.7	12.6	109	328	374
Cumulative FKl average:	42.5	12.7	111	332	378
FKl index, %	100.5	99.2	98.2	98.8	98.9

^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.

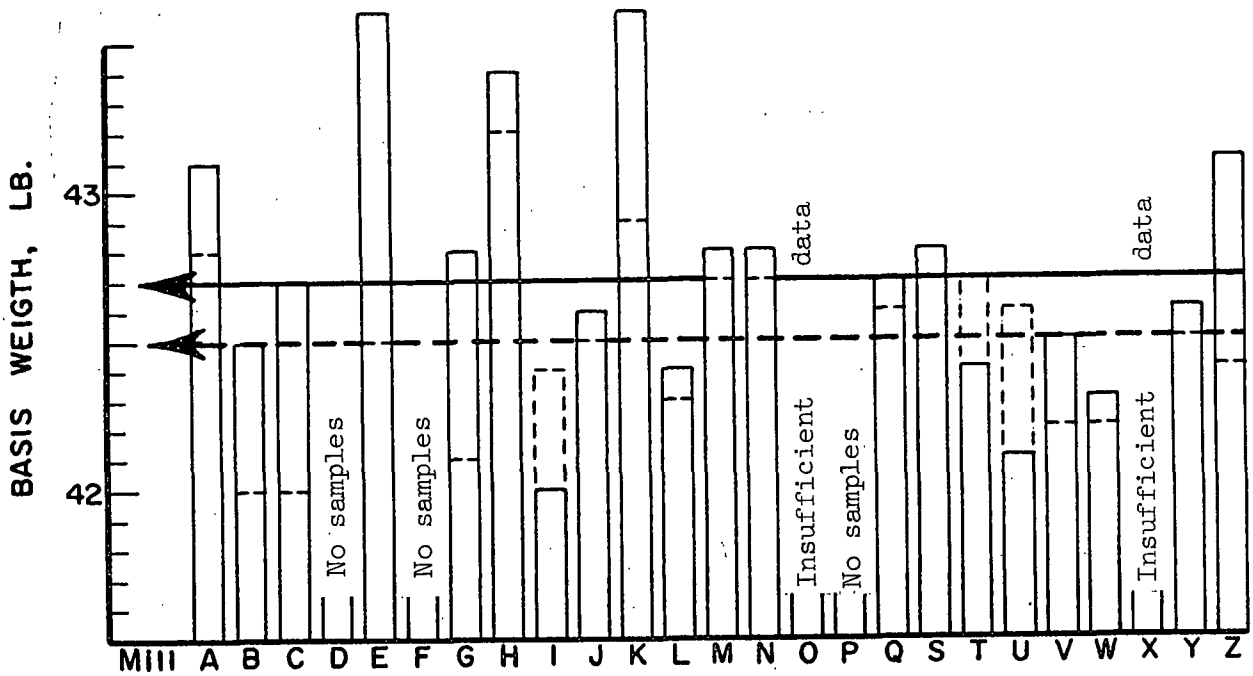


Figure 1. Comparison of Basis Weight Results

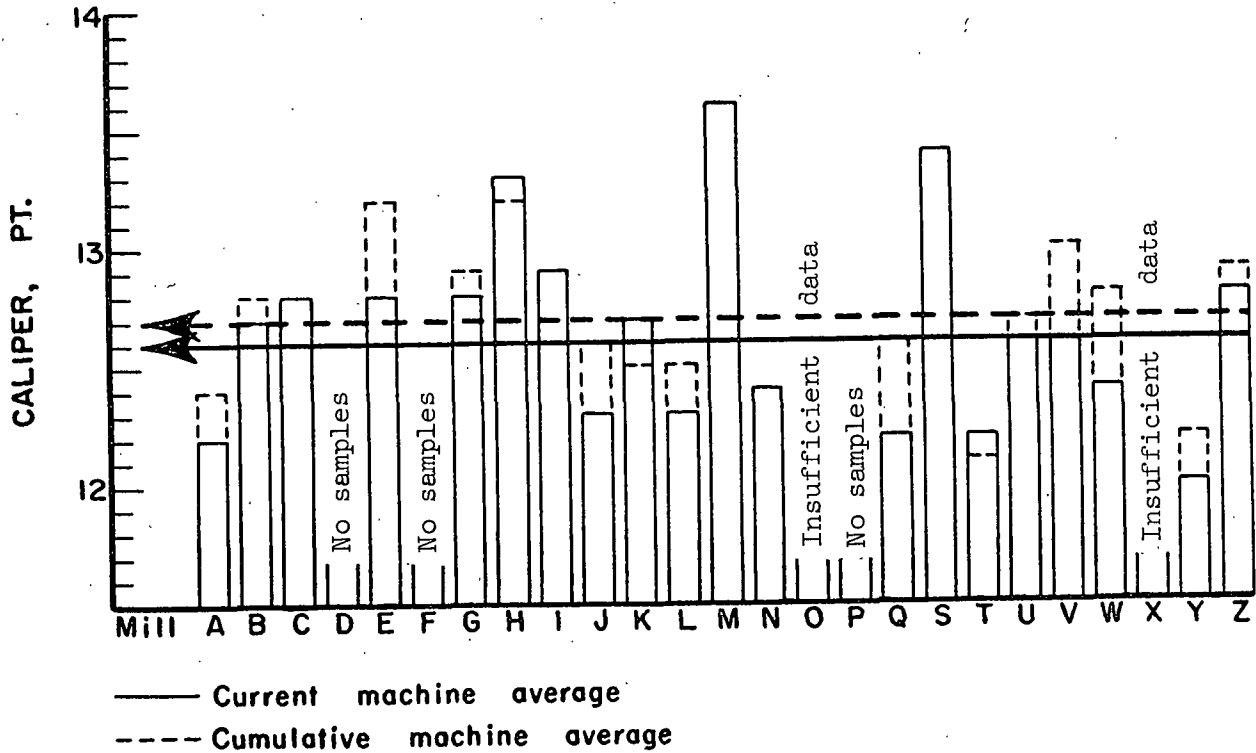


Figure 2. Comparison of Caliper Results

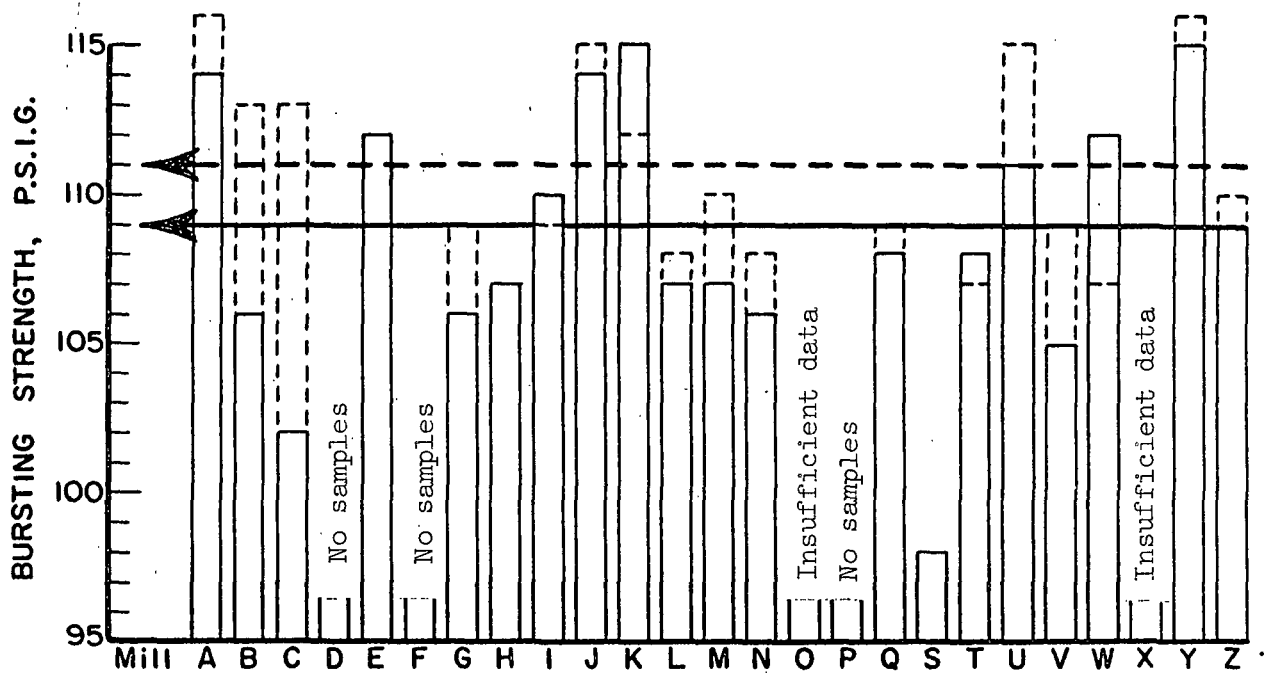


Figure 3. Comparison of Bursting Strength Results

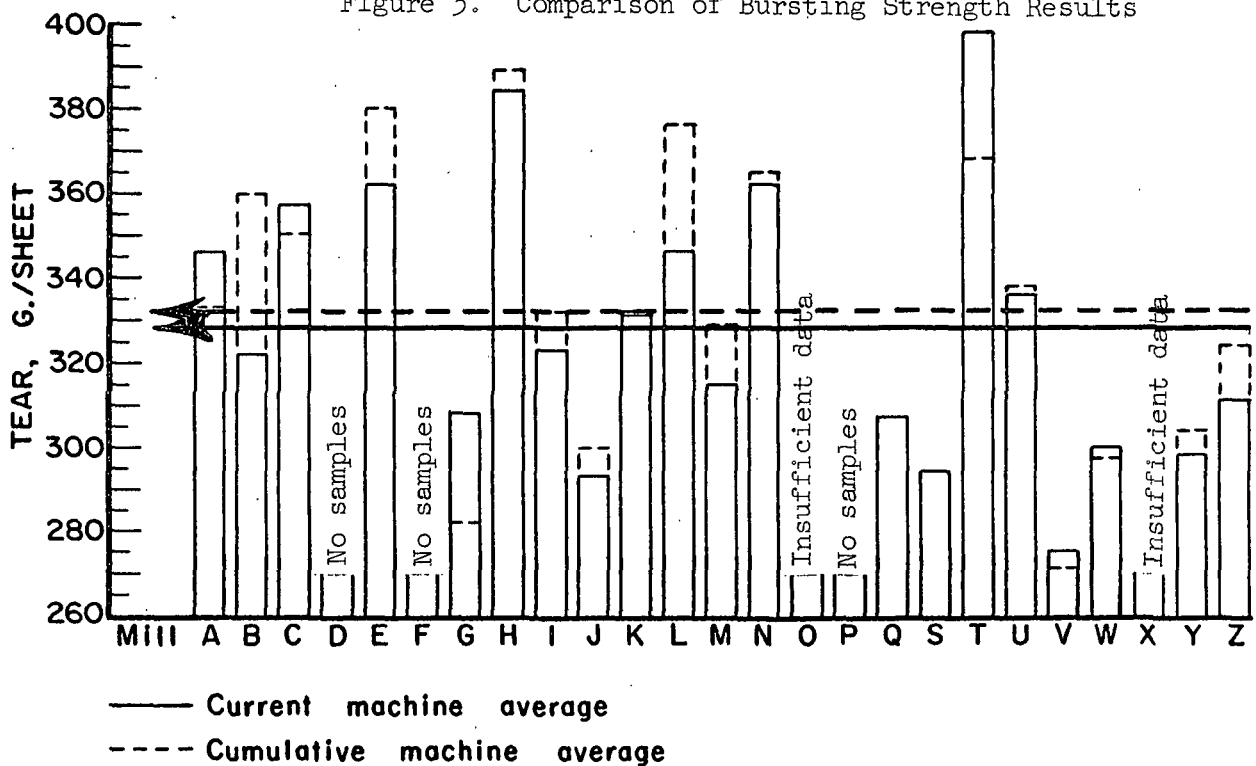


Figure 4. Comparison of Machine-Direction Tear Results

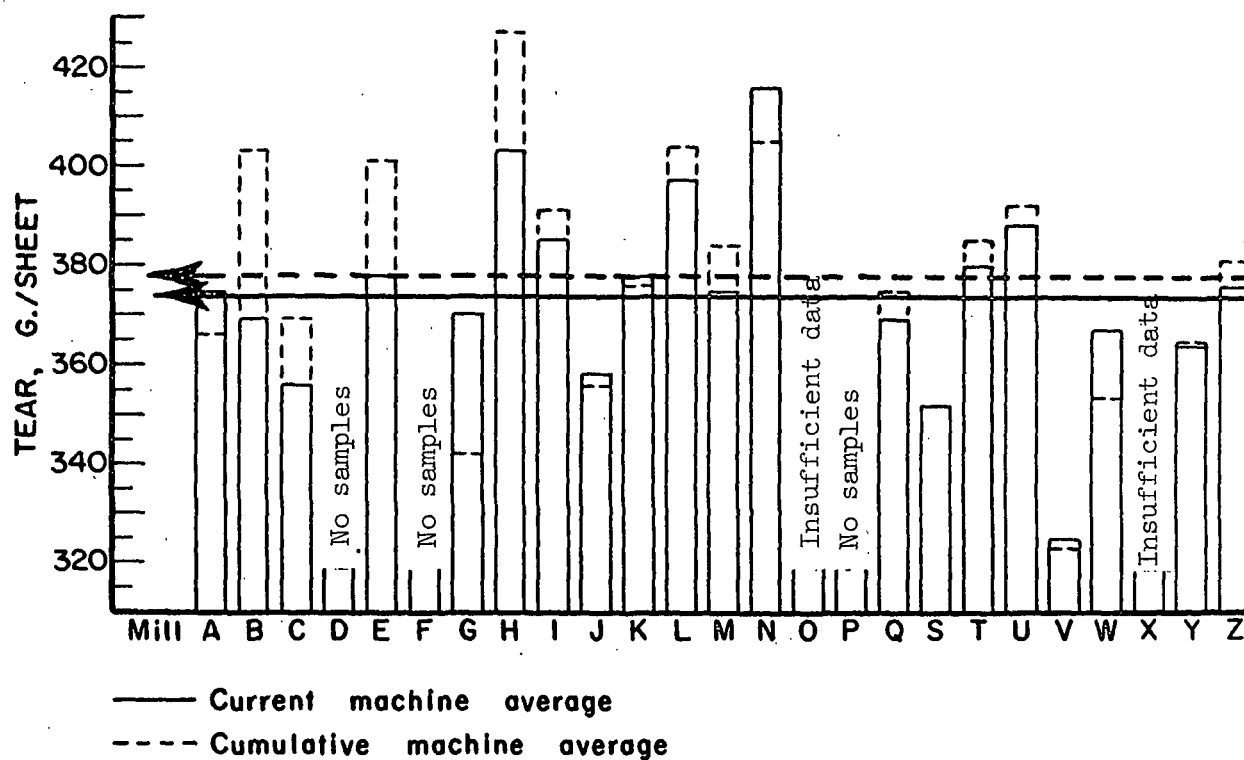


Figure 5. Comparison of Cross-Machine Direction Tear Results

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
DURING DECEMBER, 1965 AND JANUARY, 1966

Mill Code	Number of Sample Lots
A	8
B	9
C	3
D	0
E	4
F	0
G	6
H	3
I	8
J	7
K	5
L	4
M	8
N	6
O	1
P	0
Q	9
S	6
T	4
U	4
V	7
W	4
X	1
Y	6
Z	<u>8</u>
Total	121

TABLE III

PERCENTAGE DEVIATION OF CURRENT MILL AVERAGES FROM
42-LB. BASIS WEIGHT SPECIFICATION FOR
DECEMBER, 1965 AND JANUARY, 1966

Mill Code	Percentage Deviation
A	+2.6
B	+1.2
C	+1.7
D	--
E	+3.8
F	--
G	+1.9
H	+3.3
I	0.0
J	+1.4
K	+3.8
L	+1.0
M	+1.9
N	+1.9
O	+2.4
P	--
Q	+1.7
S	+1.9
T	+1.0
U	+0.2
V	+1.2
W	+0.7
X	+2.4
Y	+1.4
Z	+2.6

Test	Current Mill Averages		F.K.I. Averages	
	Max.	Min.	Current	Cumulative
Basis weight, lb:	43.6	42.0	42.7	42.5
Caliper, points	13.6	12.0	12.6	12.7
Bursting strength, p.s.i.g.	115	98	109	111
Machine direction Elmendorf tear, g./sheet	398	275	328	332
Cross-machine direction Elmendorf tear, g./sheet	416	325	374	378

The test results obtained at the Institute and at the mill during the current period are given alphabetically in Tables IV to XXVIII 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 percent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in percent 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 Table IV to XXVIII 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

(Text is continued on page 30)

TABLE IV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL A
December, 1965, and January, 1966

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		Mill	Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill												
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.												
12-2-65	N.F.	-	44.6	43.6	44.3	44.4	+0.1	13.2	12.2	12.8	12.6	-0.2	135	85	112	109	-3	376	320	346 ^a	360	+14	400	360	382 ^a	372	-10	
12-3-65	N.F.	-	44.4	42.8	43.8	43.7	-0.1	12.3	12.0	12.1	12.0	-0.1	140	75	117	114	-3	448	320	372 ^a	364	-8	400	328	362 ^a	371	+9	
12-10-65	N.F.	-	42.2	41.6	42.0	41.4	-0.6	12.2	11.7	12.0	11.9	-0.1	132	74	111	113	+2	424	320	354	317	-37	368	328	349 ^a	309	-40	
12-17-65	N.F.	-	44.0	43.4	43.8	43.8	0.0	12.8	12.0	12.3	12.0	-0.3	140	100	120	119	-1	424	296	341 ^a	324	-17	400	304	360 ^a	363	+3	
12-29-65	N.F.	-	43.0	41.4	42.0	42.6	+0.6	12.4	11.8	12.1	12.2	+0.1	139	87	108	109	+1	368	288	339 ^a	320	-19	408	320	361 ^a	355	-6	
12-30-65	N.F.	-	43.6	41.2	42.3	42.6	+0.3	12.1	11.1	11.8	11.9	+0.1	132	80	109	111	+2	360	280	311 ^a	318	+7	424	336	375 ^a	357	-16	
1-7-66	N.F.	-	46.0	44.0	44.6	44.8	+0.2	12.9	11.5	12.2	12.1	-0.1	139	98	117	116	-1	368	320	348	339	-9	464	368	415 ^a	392	-23	
1-14-66	N.F.	-	43.0	40.0	41.8	42.7	+0.9	12.4	11.5	12.0	11.9	-0.1	143	92	120	122	+2	400	320	357 ^a	327	-30	448	336	392 ^a	387	-5	
Current mill average:			43.1	43.2	+0.1	12.2	12.1	-0.1	114	114	114	0	346	334	-12	375	363	-12										
Cumulative mill average:			42.8			12.4			116				333			366												
Mill factor, %			100.7			98.4			98.3				103.9			102.5												
Mill index, %			101.4			96.1			102.7				104.2			99.2												

^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 V
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B
December, 1965, and January, 1966

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.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.	Institute	Max. Min.	Av.										
		Diff.			Diff.			Diff.			Diff.			Diff.												
11-28-65	----	43.6	42.4	42.8	42.6	-0.2	12.9	11.9	12.5	12.1	-0.4	137	84	108	0	320	272	299 ^a	311	+12	392	312	347 ^a	349	+2	
12-1-65	----	42.6	41.0	42.1	41.7	-0.4	13.3	12.1	12.8	12.1	-0.7	141	84	111	109	-2	352	248	285 ^a	295	+10	368	304	341 ^a	319	-22
11-30-65	----	42.8	40.6	41.6	41.1	-0.5	13.1	11.9	12.4	12.4	0.0	129	83	106	106	0	368	232	268 ^a	239	-29	384	280	315 ^a	306	-9
12-15-65	----	43.8	42.0	42.7	42.4	-0.3	13.2	12.1	12.7	12.6	-0.1	130	84	108	107	-1	384	272	310 ^a	271	-39	400	344	363 ^a	325	-38
12-15-65	----	42.2	41.8	42.0	41.4	-0.6	12.9	12.0	12.4	12.1	-0.3	139	82	106	108	+2	376	248	287	266	-21	352	288	330 ^a	325	-5
12-15-65	----	43.8	42.0	43.1	42.2	-0.9	12.9	11.5	12.3	12.4	+0.1	129	82	102	104	+2	312	248	283	269	-14	368	280	341 ^a	331	-10
12-30-65	----	44.8	42.6	43.9	43.2	-0.7	14.8	12.4	13.5	13.1	-0.4	129	78	104	111	+7	496	328	415 ^a	353	-62	488	392	441 ^a	403	-38
12-30-65	----	43.4	41.6	42.7	42.2	-0.5	13.8	12.0	12.8	12.4	-0.4	141	78	105	111	+6	480	344	381	337	-44	560	352	435 ^a	375	-60
12-30-65	----	42.0	40.4	41.4	41.2	-0.2	13.8	11.8	12.8	12.7	-0.1	140	70	105	109	+4	432	336	369	351	-18	448	344	409 ^a	407	-2
Current mill average:		42.5	42.0	-0.5	12.7	12.4	-0.3	106	108	+2				322	299	-23						369	349		-20	
Cumulative mill average:		42.0			12.8			113						360								403				
Mill factor, %		101.2			99.2			93.8						89.4								91.6				
Mill index, %		100.0			100.0			95.5						97.0								97.6				

^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 VI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C
December, 1965, and January, 1966

Date Made	Finish	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I.			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.								
11-22-65	----	1	44.0	42.0	43.1	43.2	+0.1	13.3	12.3	12.9	12.8	-0.1	130	87	106	112	+ 6	400	312	363 ^a	---	400	320	355 ^a	---	
1- 5-66	----	1	44.0	42.6	43.2	43.1	-0.1	14.3	12.2	13.3	12.9	-0.4	133	63	96	106	+10	432	296	354 ^a	---	416	288	345 ^a	---	
1-12-66	----	1	42.6	40.4	41.8	41.8	0.0	12.7	11.9	12.2	12.1	-0.1	135	82	104	108	+ 4	408	320	355 ^a	---	416	320	368 ^a	---	
Current mill average:			42.7	42.7	42.7	42.7	0.0	12.8	12.6	-0.2	12.8	12.6	-0.2	102	109	+ 7	357	356								
Cumulative mill average:			42.0			42.0		12.8			12.8			113			350	369								
Mill factor, %			101.7			101.7		100.0			100.0			90.3			102.0	96.5								
Mill Index, %			100.5			100.5		100.8			100.8			91.9			107.5	94.2								

TABLE VII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D

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 VIII
SUMMARY OF INSTITUTES AND MILL DATA FOR MILL E
December, 1965, and January, 1966

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.					
12-3-65	W.F.	44.8	41.8	43.9	43.4	-0.5	13.6	12.3	13.1	12.9	-0.2	127	90	110	99	-11	432	336	383 ^a	350	-33	480	336	382 ^a	364	-18
12-3-65	W.F.	44.4	43.6	44.0	43.3	-0.7	13.8	12.6	13.2	12.6	-0.6	129	90	112	103	-9	424	320	366 ^a	339	-27	432	352	390 ^a	363	-27
1-2-66	W.F.	44.2	42.4	43.4	42.9	-0.5	12.9	12.1	12.5	12.8	+0.3	127	95	114	110	-4	392	304	341 ^a	327	-14	400	336	372 ^a	373	+1
1-3-66	W.F.	43.8	42.4	43.0	43.1	+0.1	12.9	12.1	12.6	12.5	-0.1	126	93	114	108	-6	400	320	357 ^a	356	-1	416	344	370 ^a	385	+15
Current mill average:		43.6	43.2	-0.4	12.8	12.7	-0.1	112	105	-7	362	343	-19				378	371	-7							
Cumulative mill average:		42.5			13.2			112			380						401									
Mill factor, %		102.6			97.0			100.0			95.3						94.3									
Mill index, %		102.6			100.8			100.9			109.0						100.0									

TABLE IX
SUMMARY OF INSTITUTES AND MILL DATA FOR MILL F

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 I
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G
December, 1965, and January, 1966

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliber, 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.											
11-12-65	W.F.	1	44.0	42.2	43.2	42.3	-0.9	13.7	12.8	13.1	13.0	-0.1	121	75	103	105	+2	368	272	305	233	-72	400	320	359 ^a	323	-36
11-18-65	W.F.	1	43.8	42.0	42.8	42.0	-0.8	13.1	12.3	12.8	12.6	-0.2	120	85	105	111	+6	368	272	321 ^a	203	-118	384	336	362 ^a	245	-117
11-28-65	W.F.	1	43.8	42.2	43.1	42.1	-1.0	12.9	12.1	12.6	12.7	+0.1	138	94	113	111	-2	400	240	326	220	-106	408	352	365 ^a	260	-125
12- 8-65	W.F.	1	44.2	43.2	43.8	41.6	-2.2	13.4	12.8	13.1	12.0	-1.1	133	84	107	107	0	336	272	307 ^a	232	-75	440	344	385 ^a	338	-47
12-15-65	W.F.	1	43.6	41.8	42.7	42.4	-0.3	13.2	12.7	13.0	12.9	-0.1	125	74	103	109	+6	336	264	298 ^a	259	-39	392	320	363 ^a	345	-18
12-21-65	W.F.	1	41.8	40.2	41.2	42.9	+1.7	12.2	11.8	12.0	12.9	+0.9	129	84	108	108	0	328	240	288	234	-54	400	352	364 ^a	330	-34
Current mill average:			42.8	42.2		42.2	-0.6		12.8	12.7		-0.1		106	108		+2		308	230		-78		370	307		-63
Cumulative mill average:			42.1						12.9					109					282					342			
Mill factor, %			101.7						99.2					97.2					109.2					108.2			
Mill index, %			100.7						100.8					95.5					92.8					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 XI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H
December, 1965, and January, 1966

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.					
11-21-65	1	44.2	41.4	43.3	42.5	-0.8	13.9	12.3	13.2	12.8	-0.4	130	92	109	104	-5	400	336	362	330	-32	440	368	405 ^a	379	-26
12-15-65	1	44.2	42.8	43.8	42.7	-1.1	14.0	12.4	13.2	12.9	-0.3	124	90	108	104	-4	456	320	388 ^a	324	-64	432	368	399 ^a	360	-39
12-22-65	1	44.0	42.0	43.0	43.4	+0.4	14.0	12.7	13.4	13.2	-0.2	130	82	104	104	0	448	352	403	369	-34	480	352	405 ^a	393	-12
Current mill average:		43.4	42.8	-0.6	13.3	13.0	-0.3	107	104	-3	384	341	-43	403	378	-25										
Cumulative mill average:		43.2			13.2			107			389			427												
Mill factor, %		100.5			100.8			100.0			98.7			94.4												
Mill index, %		102.1			104.7			96.4			115.7			106.6												

^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 XII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I
December, 1965, and January, 1966

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.	Diff.	Max.	Min.	Av.	Diff.	Max.	Min.	Av.	Diff.							
11-14-65	2	WFIS	43.8	42.2	43.0	43.1	+0.1	13.5	12.4	13.0	12.6	-0.4	135	90	112	107	-5	360	280	333	381	+48	400	352	381 ^a	470	+89
11-24-65	2	WFIS	43.0	42.0	42.2	42.5	+0.3	13.0	12.1	12.6	12.3	-0.3	126	92	107	108	+1	376	272	309	336	+27	432	344	379 ^a	434	+55
11-24-65	2	WFIS	43.8	42.2	42.8	43.1	+0.3	13.5	12.7	12.9	12.4	-0.5	136	87	113	109	-4	368	296	341 ^a	352	+11	432	352	393 ^a	426	+33
11-25-65	2	WFIS	43.4	41.8	42.3	42.9	+0.6	13.1	12.1	12.8	12.4	-0.4	125	95	109	106	-3	368	296	326 ^a	318	-8	432	344	391 ^a	427	+36
12-12-65	2	WFIS	42.0	40.4	41.4	42.1	+0.7	13.5	12.2	13.0	12.5	-0.5	137	89	112	108	-4	384	288	321	330	+9	432	352	388 ^a	418	+30
12-12-65	2	WFIS	42.0	40.0	41.1	42.4	+1.3	13.4	12.2	13.0	12.4	-0.6	129	86	107	105	-2	368	256	313	342	+29	448	336	385 ^a	420	+31
12-13-65	2	WFIS	42.0	40.4	41.1	42.3	+1.2	13.6	12.5	13.0	12.4	-0.6	130	82	107	108	+1	384	288	327	336	+9	424	352	375 ^a	444	+69
12-28-65	2	WFIS	42.2	41.2	41.8	42.3	+0.5	13.1	12.4	12.7	12.1	-0.6	132	83	110	110	0	344	288	314	332	+18	408	368	383 ^a	430	+47
Current mill average:			42.0	42.6	+0.6				12.9	12.4	-0.5				110	108	-2	323	341	+18					385	434	449
Cumulative mill average:			42.4						12.9						109			332							391		
Mill factor, %			99.1						100.0						100.9			97.3							98.5		
Mill index, %			98.8						101.6						99.1			97.3							101.9		

^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
December, 1965, and January, 1966

Date Made	Mch. No.	Finish	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	Max.	Min.	Av.	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.									
					Diff.			Diff.			Diff.			Diff.			Diff.			Diff.			Diff.			Diff.			Diff.
11-12-65	WFLS	2	43.0	42.2	42.6	42.8	42.8	+0.2	12.8	12.0	12.3	12	-0.3	144	93	116	121	+ 5	336	280	308 ^a	286	-22	392	328	361 ^a	464	+103	
11-18-65	WFLS	2	43.2	42.8	43.0	43.0	43.0	0.0	12.8	12.1	12.4	12	-0.4	145	90	121	119	- 2	368	232	296 ^a	341	+45	440	336	375 ^a	452	+ 77	
11-26-65	WFLS	2	43.0	41.8	42.3	42.5	42.5	+0.2	12.6	12.0	12.2	11.9	-0.3	135	88	112	116	+ 4	352	232	301 ^a	346	+45	400	336	362 ^a	430	+ 68	
12- 4-65	WFLS	2	43.6	42.2	42.9	43.1	43.1	+0.2	12.8	12.0	12.2	11.9	-0.3	133	95	115	120	+ 5	344	248	299 ^a	319	+20	432	320	369 ^a	424	+ 55	
12- 8-65	WFLS	2	43.0	42.0	42.4	42.3	42.3	-0.1	12.9	12.0	12.3	12	-0.3	139	87	112	122	+10	384	240	277 ^a	286	+11	368	320	344 ^a	388	+ 44	
12-13-65	WFLS	2	43.6	42.0	42.7	42.3	42.3	-0.4	12.8	12.0	12.3	11.8	-0.5	138	88	111	116	+ 5	352	232	295	276	-19	384	320	349 ^a	392	+ 43	
12-30-65	WFLS	2	42.6	41.8	42.3	42.2	42.2	-0.1	12.7	12.0	12.3	11.9	-0.4	130	89	111	116	+ 5	320	240	277	324	+47	400	272	343 ^a	395	+ 52	
Current mill average:			42.6	42.6	42.6	42.6	42.6	0.0			12.3	11.9	-0.4			114	118	+ 4			293	311	+18			358	421	+ 63	
Cumulative mill average:			42.5								12.6					115					300					356			
Mill factor, %			100.2								97.6					99.1					97.7					100.6			
Mill index, %			100.2								96.9					102.7					88.3					94.7			

^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 XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

December, 1965, and January, 1966

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.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill										
		Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.										
11-21-65	W.F. 3	42.4	42.0	42.1	42.8	+0.7	12.6	11.9	12.2	12.0	-0.2	125	96	111	110	-1	368	240	293	311	+18	368	320	343 ^a	384	+41
11-22-65	W.F. 3	44.0	43.4	43.8	43.5	-0.3	13.2	12.2	13.0	12.5	-0.5	150	86	115	119	+4	384	296	335	343	+8	464	368	401 ^a	424	+23
11-28-65	W.F. 3	44.4	43.8	44.0	43.4	-0.6	13.5	12.8	13.2	12.5	-0.7	157	97	123	117	-6	400	304	351	349	-2	448	368	402 ^a	404	+2
11-29-65	W.F. 3	44.2	43.6	43.9	43.5	-0.4	13.0	12.1	12.5	12.4	-0.1	138	87	111	113	+2	416	296	339	318	-21	432	320	361 ^a	393	+32
12-1-65	W.F. 3	44.2	43.8	44.0	43.5	-0.5	13.1	12.1	12.5	12.4	-0.1	145	90	116	112	-4	384	296	339	337	-2	448	336	384 ^a	380	-4
Current mill average:			43.6	43.3	-0.3		12.7	12.3	-0.4			115	114	-1			331	332	+1			378	397	+19		
Cumulative mill average:			42.9				12.5					112					332					376				
Mill factor, %			101.6				101.6					102.7					99.7					100.5				
Mill index, %			102.6				100.0					103.6					99.7					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 IV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L
December, 1965, and January, 1966

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.	Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.	Institute	Max.	Min.	Av.											
11-15-65	W.B.	-	42.6	40.6	42.0	42.3	+0.3	12.6	11.3	12.1	12.0	-0.1	120	92	105	108	+3	392	304	339 ^a	371	+32	408	360	388 ^a	395	+7	
11-17-65	W.B.	-	43.8	41.6	42.2	42.1	-0.1	12.7	11.8	12.1	12.0	-0.1	129	93	107	106	-1	384	320	347 ^a	369	+22	456	368	407 ^a	387	-20	
11-24-65	W.B.	-	44.0	42.0	43.1	43.4	+0.3	12.9	12.1	12.6	12.6	0.0	122	93	108	105	-3	384	312	348	375	+27	432	336	389 ^a	384	-5	
11-24-65	W.B.	-	43.4	41.4	42.3	42.2	-0.1	12.9	12.1	12.4	12.2	-0.2	122	90	107	105	-2	384	272	349 ^a	356	+7	448	376	404 ^a	379	-25	
Current mill average:			42.4		42.5	+0.1		12.3	12.2	12.2	-0.1		107	106	106	-1		346	368	376		+22	397	386	397		-11	
Cumulative mill average:			42.3					12.5					108					376					404					
Mill factor, %			100.2					98.4					99.1					92.0										98.3
Mill index, %			99.8					96.9					96.4					104.2										105.0

^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 XVI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M
December, 1965, and January, 1966

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.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.											
11-14-65	WFLS	1	43.6	40.8	42.3	42.5	+0.2	13.9	12.8	13.2	12.8	-0.4	131	89	113	108	-5	352	256	301 ^a	329	+28	408	344	374 ^a	382	+8
11-22-65	WFLS	1	43.6	40.2	42.3	42.2	-0.1	12.9	12.0	12.2	13.0	+0.8	129	78	105	105	0	352	232	291 ^a	328	+37	400	328	360 ^a	383	+23
11-30-65	WFLS	1	43.8	41.8	42.5	42.3	-0.2	13.9	12.9	13.4	12.9	-0.5	130	81	104	105	+1	352	240	283 ^a	297	+14	432	304	374 ^a	349	-25
12-7-65	WFLS	1	43.8	42.0	42.6	42.1	-0.5	14.7	13.8	14.1	13.3	-0.8	132	85	104	104	0	352	280	323 ^a	299	-24	400	328	362 ^a	348	-14
12-14-65	WFLS	1	43.0	41.8	42.2	41.9	-0.3	14.8	13.7	14.1	13.5	-0.6	118	85	102	105	+3	352	256	317 ^a	302	-15	400	312	358 ^a	355	-3
12-21-65	WFLS	1	44.8	42.8	43.9	43.7	-0.2	14.7	13.0	14.0	13.5	-0.5	122	87	108	108	0	416	304	355 ^a	317	-38	448	376	411 ^a	383	-28
1-3-66	WFLS	1	44.0	42.0	43.5	43.0	-0.5	14.8	13.4	14.1	13.6	-0.5	127	93	111	108	-3	384	288	345	318	-27	432	384	403 ^a	385	-18
1-11-66	WFLS	1	43.8	41.8	43.0	42.3	-0.7	13.9	13.0	13.4	13.0	-0.4	127	88	111	110	-1	368	248	305 ^a	305	0	384	328	357 ^a	352	-5
Current mill average:			42.8	42.5	-0.3			13.6	13.2	-0.4			107	107	0			315	312	-3					375	367	-8
Cumulative mill average:			42.7					13.6					110					329							384		
Mill factor, %			100.2					100.0					97.3					95.7								97.7	
Mill index, %			100.7					107.1					96.4					94.9								99.2	

^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.

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

12- 1-65	----	1	43.8	42.0	43.0	43.5	+0.5	12.8	11.0	12.1	12.1	0.0	138	84	116	103	-13	528	384	440 ^a	392	-48	536	400	473 ^a	452	-21
		Current mill average:		43.0	43.5	+0.5		12.1	12.1	12.1	0.0				116	103	-13			440	392	-48		473	452	-21	
		Cumulative mill average:		----	----	----		----	----	----				----	----	----			----	----	----		----	----	----		
		Mill factor, %		----	----	----		----	----	----				----	----	----			----	----	----		----	----	----		
		Mill index, %		101.2				95.3						104.5						132.5				125.1			

at 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 XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P

December, 1965, and January, 1966

Date Made	Finish No.	Mch.	Basis Weight, lb.			Caliper, Points			Bursting Strength, P.s.i.g.			Elmendorf Tear, g./sheet		
			Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.

No samples submitted.

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

11-16-65	WFLS	1	44.0	42.2	43.2	43.0	-0.2	12.5	11.3	12.0	12.0	0.0	127	92	108	105	-3	408	272	306 ^a	327	+21	392	320	365 ^a	387	+22
11-23-65	WFLS	1	44.0	41.8	42.8	42.8	0.0	12.3	11.2	12.0	12.3	+0.3	129	87	107	106	-1	344	264	304 ^a	337	+33	464	288	361 ^a	415	+54
11-30-65	WFLS	1	42.6	41.8	42.2	42.2	0.0	12.2	11.4	11.9	11.8	-0.1	116	88	104	105	+1	384	296	340	364	+24	400	336	369 ^a	437	+68
12-7-65	WFLS	1	44.0	42.2	43.2	42.6	-0.4	12.9	12.0	12.4	11.9	-0.5	132	92	110	109	-1	328	248	280 ^a	319	+39	408	312	366 ^a	396	+30
12-14-65	WFLS	1	43.8	42.0	42.8	42.8	0.0	12.2	11.1	11.7	11.8	+0.1	127	88	107	106	-1	352	272	313 ^a	344	+31	424	344	373 ^a	401	+28
12-20-65	WFLS	1	42.8	42.0	42.4	42.6	+0.2	12.8	11.9	12.3	12.4	+0.1	137	90	109	106	-3	376	240	297 ^a	341	+44	416	336	389 ^a	412	+23
12-28-65	WFLS	1	42.8	42.0	42.3	42.5	+0.2	13.3	12.0	12.7	12.5	-0.2	131	85	108	111	+3	368	256	323	325	+2	416	336	365 ^a	404	+39
1-4-66	WFLS	1	43.8	42.4	43.0	42.5	-0.5	12.8	11.8	12.4	12.4	0.0	136	81	109	108	-1	368	240	303 ^a	321	+18	416	336	367 ^a	399	+32
1-11-66	WFLS	1	43.6	41.8	42.8	42.4	-0.4	12.9	12.1	12.5	12.1	-0.4	130	86	107	107	0	384	256	293 ^a	320	+27	384	336	368 ^a	378	+10
Current mill average:			42.7	42.6	-0.1	12.2	12.1	-0.1	108	107	-1	307	333	+26	369	403	+34										
Cumulative mill average:			42.6			12.6			109			307			375												
Mill factor, %			100.2			96.8			99.1			100.0			98.4												
Mill index, %			100.5			96.1			97.3			92.5			97.6												

^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 XII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S
December, 1965, and January, 1966

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.	Institute	Max.	Min.	Institute	Max.	Min.	Institute	Max.	Min.	Institute	Max.	Min.
		Av.	Diff.	Av.	Diff.	Av.	Diff.	Av.	Diff.	Av.	Diff.	Av.	Diff.	Av.	Diff.	Av.
		44.6	43.4	43.8	14.9	13.8	14.3	118	71	97	352	248	302 ^a	392	328	361 ^a
		44.0	42.2	43.1	13.2	12.3	12.9	120	82	104	352	232	310 ^a	416	336	368 ^a
12-16-65		42.8	41.8	42.2	14.4	13.5	13.9	120	78	95	344	288	313 ^a	408	352	378 ^a
12-23-65		43.6	43.0	43.4	13.9	12.9	13.5	123	84	101	352	240	292 ^a	416	304	349 ^a
1-1-66		42.4	41.0	41.8	13.2	12.2	12.8	104	81	95	352	216	271 ^a	352	288	320 ^a
		43.2	42.0	42.6	13.6	12.8	13.1	111	81	95	344	208	278 ^a	376	304	339 ^a
Current mill average:		42.8			13.4			98			294			352		
Cumulative mill average:		----			----			--			----			----		
Mill factor, %		----			----			--			----			----		
Mill index, %		100.7			105.5			88.3			88.6			93.1		

^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 XIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T
December, 1965, and January, 1966

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	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.	Institute	Mill	Diff.	Max.	Min.	Av.							
12-3-65	----	-	43.8	42.0	42.9	43.1	+0.2	12.8	11.8	12.1	11.5	-0.6	132	98	110	113	+3	432	344	384 ^a	375	-9	432	360	397 ^a	387	-10
12-7-65	----	-	43.8	42.0	42.9	42.8	-0.1	12.7	11.8	12.1	12.0	-0.1	143	91	113	111	-2	448	352	413 ^a	386	-27	440	352	398 ^a	416	+18
1-6-66	----	-	42.6	40.2	41.6	42.2	+0.6	12.9	11.7	12.3	11.8	-0.5	126	82	104	107	+3	456	352	399 ^a	378	-21	400	312	365 ^a	366	+1
1-10-66	----	-	43.8	40.8	42.3	42.4	+0.1	12.9	11.7	12.3	11.4	-0.9	125	82	103	108	+5	432	312	399 ^a	386	-7	392	320	359 ^a	366	+7
Current mill average:			42.4	42.6	+0.2	42.4	42.6		12.2	11.7	-0.5	12.2	11.7	-0.5	108	110	+2	398	381	-17	380	384	+4				
Cumulative mill average:			42.7			42.7			12.1			12.1			107			368			385						
Mill factor, %			99.3			99.3			100.8			100.8			100.9			108.2			98.7						
Mill index, %			99.8			99.8			96.1			96.1			97.3			119.9			100.5						

^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 XIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U
December, 1965, and January, 1966

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet														
		Max.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill	Max.	Institute	Mill												
		Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.	Min.	Av.	Diff.												
11-10-65	W.F. 2	43.2	41.6	42.1	42.5	+0.4		13.0	12.0	12.4	12.4	0.0		140	82	113	117	+4	368	288	326	307	-19	432	352	394 ^a	392	-2
11-10-65	W.F. 2	42.4	41.8	42.0	42.4	+0.4		13.0	12.0	12.4	12.5	+0.1		132	93	112	116	+4	408	256	327 ^a	316	-11	424	360	395 ^a	379	-16
12-15-65	W.F. 2	43.0	41.6	42.2	42.5	+0.3		13.1	12.3	12.9	12.6	-0.3		125	90	110	113	+3	384	304	343	310	-33	416	352	381 ^a	353	-28
12-15-65	W.F. 2	43.0	41.2	42.1	42.5	+0.4		13.1	12.2	12.8	12.6	-0.2		126	90	111	113	+2	384	320	348	319	-29	424	336	380 ^a	352	-28
Current mill average:			42.1	42.5	+0.4				12.6	12.5	-0.1			111	115	+4			336	313	-23			388	369	-19		
Cumulative mill average:			42.6						12.7					115					338					392				
Mill factor, %			98.8						99.2					96.5					99.4					99.0				
Mill index, %			99.1						99.2					100.0					101.2					102.6				

^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 XXIV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V
December, 1965, and January, 1966

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.	Institute Min.	Institute Av.	Institute Max.	Institute Min.	Institute Av.	Institute Max.	Institute Min.	Institute Av.	Institute Max.	Institute Min.	Institute Av.	Institute Max.	Institute Min.	Institute Av.											
	Finish																										
11-22-65	----	1	43.2	41.6	42.1	42.7	+0.6	12.9	11.9	12.4	12.2	-0.2	124	88	109	108	-1	304	232	263 ^a	279	+16	360	272	317 ^a	321	+4
11-21-65	----	1	43.6	42.0	42.6	42.7	+0.1	12.8	11.9	12.2	12.3	+0.1	121	79	104	106	+2	336	232	276	283	+7	400	288	318 ^a	352	+34
12- 1-65	----	1	44.0	42.0	42.6	43.0	+0.4	13.9	12.9	13.5	13.2	-0.3	131	85	108	103	-5	328	248	279 ^a	316	+37	384	288	331 ^a	371	+40
12- 3-65	----	1	43.8	42.0	42.7	43.0	+0.3	13.3	12.2	12.9	12.5	-0.4	144	88	107	104	-3	336	232	287	282	-5	384	320	341 ^a	338	-3
12-20-65	----	1	43.8	42.4	43.1	43.4	+0.3	13.0	11.8	12.5	12.3	-0.2	125	74	101	100	-1	424	240	303 ^a	298	-5	392	320	341 ^a	333	-8
1- 9-66	----	1	43.2	41.0	42.0	41.9	-0.1	12.8	12.1	12.5	12.3	-0.2	130	87	106	100	-6	288	224	249 ^a	230	-19	336	280	313 ^a	277	-36
1-15-66	----	1	42.8	42.0	42.3	41.6	-0.7	12.6	11.8	12.1	12.2	+0.1	122	80	102	101	-1	304	224	267	226	-41	352	288	315 ^a	299	-16
Current mill average:			42.5		42.6	+0.1		12.6		12.4	-0.2		105		103	-2		275		273	-2		325		327	+2	
Cumulative mill average:			42.2					13.0					109					271					323				
Mill factor, %			100.7					96.9					96.3					101.5					100.6				
Mill index, %			100.0					99.2					94.6					82.8					86.0				

^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 XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N
December, 1965, and January, 1966

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliber, 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.	Institute	Max. Min.	Av.
11-6-65	----	43.8	42.2	43.0	42.6	-0.4		13.3	12.2	12.9	12.4	-0.5		132	82	113
11-22-65	----	42.4	40.6	41.5	41.8	+0.3		12.9	11.7	12.2	11.9	-0.3		127	82	106
11-23-65	----	42.8	40.6	41.8	42.2	+0.4		12.8	11.8	12.2	11.8	-0.4		136	92	116
12-9-65	----	43.8	42.4	43.1	43.0	-0.1		13.0	11.8	12.4	12.3	-0.1		143	90	113
Current mill average:		42.3	42.4	42.3	42.4	+0.1		12.4	12.1	12.1	12.1	-0.3		112	110	110
Cumulative mill average:		42.2			12.8			107						297		354
Mill factor, %		100.2			96.9			104.7						101.0		103.7
Mill index, %		99.5			97.6			100.9						90.4		97.1

TABLE XXVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL X

12-30-65	WFLS	1	43.6	42.4	43.0	42.6	-0.4	13.0	12.1	12.6	12.0	-0.6	132	89	111	116	+5	416	304	361	338	-23	464	360	407 ^a	374	-33
Current mill average:			43.0	42.6	42.7	42.6	-0.4			12.6	12.0	-0.6			111	116	+5	361		357	338	-23	407		395	374	-33
Cumulative mill average:			42.7			12.1									115												
Mill factor, %			100.7			104.1									96.5						101.1				103.0		
Mill index, %			101.2			99.2									100.0						108.7				107.7		

^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 XXVII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I
December, 1965, and January, 1966

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 Av.	Diff.	Institute		Mill Av.	Diff.	Institute		Mill Av.	Diff.	Institute		Mill Av.	Diff.	Institute		Mill Av.	Diff.						
		Max.	Min.			Max.	Min.			Max.	Min.			Max.	Min.			Max.	Min.								
10-14-65	W.F.	2	43.8	41.8	42.6	42.4	-0.2	12.3	11.9	12.1	11.8	-0.3	140	99	117	117	0	304	240	273	288	+15	432	336	366 ^a	361	-5
10-25-65	W.F.	1	43.8	42.2	43.2	42.9	-0.3	12.2	11.4	12.0	11.8	-0.2	140	100	113	115	+2	360	264	311 ^a	308	-3	424	352	377 ^a	371	-6
11-9-65	W.F.	1	43.4	42.0	42.9	42.6	-0.3	12.2	11.5	12.0	11.7	-0.3	136	95	114	115	+1	328	264	296 ^a	288	-8	392	320	367 ^a	365	-2
11-19-65	W.F.	1	43.6	41.8	42.4	42.6	+0.2	12.2	11.2	11.8	11.7	-0.1	130	99	113	113	0	384	268	307 ^a	290	-17	416	328	364 ^a	350	-14
12-8-65	W.F.	1	43.0	41.4	42.2	42.6	+0.4	13.0	11.4	12.0	11.8	-0.2	138	100	118	112	-6	336	256	289 ^a	272	-17	384	280	347 ^a	353	+6
12-16-65	W.F.	1	43.8	42.0	42.6	42.7	+0.1	12.7	11.8	12.1	11.8	-0.3	139	90	116	114	-2	352	272	313 ^a	287	-26	384	304	363 ^a	349	-14
Current mill average:			42.6	42.6	42.6	42.6	0.0			12.0	11.8	-0.2		115	114	114	-1		298	289	289	-9		364	358	358	-6
Cumulative mill average:			42.5							12.2				116					304					365			
Mill factor, %			100.2							98.4				99.1					98.0					99.7			
Mill index, %			100.2							94.5				103.6					89.8					96.3			

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

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

TABLE XXVIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Z
December, 1965, and January, 1966

Date Made	Mch. No.	Finish	Basis Weight, lb.			Caliper, points			Bursting Strength, P.s.i.g.			Elmendorf Tear, g./sheet In Machine			Elmendorf Tear, g./sheet Cross Machine																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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^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.

of linerboard. In addition to the presentations of Institute and mill data described above, Tables IV through XXVIII 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 XXIX 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 XXX, the differences for each test between the current mill averages based on Institute data and those based on mill data shown in Table XXIX have been converted to percent (based on Institute data as a reference). In addition, for purposes of comparison, the percentage differences from the previous two bimonthly reports are shown in Table XXX.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXXI. This summary is based on the results given in Table XXX. 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 good.

TABLE XXIX
SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS) FOR DECEMBER, 1965 AND JANUARY, 1966

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	Y	Z
No. of samples compared	8	9	3	0	4	0	6	3	8	7	5	4	8	6	1	0	9	0	4	4	7	4	1	6	8
	Basis Weight																								
Institute	43.1	42.5	42.7	43.6	42.8	43.4	42.8	43.6	42.4	42.8	42.8	42.8	42.8	42.8	43.0	42.7	42.6	42.4	42.1	42.5	42.5	42.5	42.6	42.6	43.1
Mill	43.2	42.0	42.7	43.2	42.7	42.8	42.8	42.6	42.6	42.6	42.6	42.5	42.5	42.5	43.5	42.7	42.6	42.4	42.5	42.5	42.5	42.6	42.6	42.6	43.3
Av. diff. ^b	+0.1	-0.5	0.0	-0.4	-0.7	-0.6	-0.6	0.0	-0.6	0.0	-0.3	+0.1	-0.3	-0.1	+0.5	-0.1	-0.1	-0.1	+0.2	+0.4	+0.1	+0.1	-0.4	0.0	+0.2
Max. diff. ^c	+0.9	-0.9	+0.1	-0.7	-0.7	-2.2	-1.1	+1.3	-0.4	-0.4	+0.7	+0.3	-0.7	-0.5	+0.5	-0.5	-0.5	-0.5	+0.6	+0.4	-0.7	+0.4	-0.4	+0.4	+0.6
	Caliper																								
Institute	12.2	12.7	12.8	12.8	12.7	13.3	12.8	12.7	12.3	13.6	12.4	12.4	12.4	12.1	12.2	12.2	12.6	12.4	12.6	12.6	12.4	12.6	12.0	12.0	12.8
Mill	12.1	12.4	12.6	12.7	12.7	13.0	12.4	12.4	11.9	12.3	12.2	13.2	12.5	12.1	12.1	12.1	12.5	12.4	12.4	12.5	12.4	12.1	12.0	11.8	12.8
Av. diff. ^b	-0.1	-0.3	-0.2	-0.1	-0.1	-0.3	-0.5	-0.4	-0.4	-0.1	-0.4	+0.1	+0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	-0.3	-0.4	-0.5	-0.6	-0.2	0.0
Max. diff. ^c	-0.3	-0.7	-0.4	-0.6	-0.6	-1.1	-0.4	-0.6	-0.5	-0.7	-0.7	-0.2	+0.8	+0.4	0.0	-0.5	-0.5	-0.5	-0.9	-0.3	-0.4	-0.5	-0.6	-0.3	-0.3
	Bursting Strength																								
Institute	114	106	102	112	105	107	110	107	110	114	115	107	107	106	116	108	108	111	111	115	105	112	111	115	109
Mill	114	108	109	105	107	108	104	108	108	118	114	106	107	109	103	107	110	110	115	103	103	110	116	114	111
Av. diff. ^b	0	+2	+7	-7	-2	-3	-5	-5	-5	+4	-1	-1	0	+3	-13	-1	+2	+2	+4	-2	-2	-2	+5	-1	+2
Max. diff. ^c	-3	+7	+10	-11	-11	+6	-5	-5	-5	+10	-6	+3	-5	+6	-13	+3	+5	+5	+4	-6	-6	-6	+5	-6	+5
	Tearing Strength, in																								
Institute	346	322	357	362	343	308	384	323	323	293	331	346	315	362	440	307	398	336	336	275	300	361	298	311	311
Mill	334	299	--	343	341	230	341	341	341	311	332	368	312	--	392	333	381	313	313	273	275	338	289	300	300
Av. diff. ^b	-12	-23	--	-19	-4	-78	-43	+18	+18	+18	+1	+22	-3	--	-48	+26	-17	-23	-23	-2	-25	-23	-9	-11	-25
Max. diff. ^c	-37	-62	--	-33	-33	-118	-64	+48	+48	+47	-21	+32	-38	--	-48	+44	-27	-33	-33	-41	-51	-23	-26	-25	-25
	Tearing Strength, cross																								
Institute	375	369	356	378	371	370	403	385	385	358	378	397	375	416	473	369	380	388	388	325	367	407	364	376	376
Mill	363	349	--	371	371	307	378	434	434	421	397	386	367	--	452	403	384	369	369	327	354	374	358	384	384
Av. diff. ^b	-12	-20	--	-7	-7	-63	-25	+49	+49	+63	+19	-11	-8	--	-21	+34	+4	-19	-19	+2	-13	-33	-6	+8	+8
Max. diff. ^c	-40	-60	--	-27	-27	-125	-39	+89	+89	+105	+41	-25	-28	--	-21	+68	+18	-28	-28	+40	-36	-33	-14	+40	+40

^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 XXX

COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR DECEMBER, 1965 AND JANUARY, 1966

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	Aug.-Sept.	+0.9	-2	-2	-2	-2	M	Aug.-Sept.	+0.2	-4	-0.9	+3	+5
	Oct.-Nov.	+0.7	-2	+0.9	-5	-1		Oct.-Nov.	-0.5	-3	-2	+2	+2
	Current	+0.2	-0.8	0	-3	-3		Current	-0.7	-3	0	-1	-2
B	Aug.-Sept.	+0.2	-4	+2	-4	-1	N	Aug.-Sept.	+0.5	0	+3	--	--
	Oct.-Nov.	-0.2	-3	+2	-4	-3		Oct.-Nov.	0	-2	+5	--	--
	Current	-1	-2	+2	-7	-5		Current	-0.2	+0.8	+3	--	--
C	Aug.-Sept.	+1	-2	+0.8	--	--	O	Aug.-Sept.	--	--	--	--	--
	Oct.-Nov.	+1	-2	--	--	--		Oct.-Nov.	--	--	--	--	--
	Current	0	-2	+7	--	--		Current	+1	0	-11	-11	-4
D	Aug.-Sept.	--	--	--	--	--	P	Aug.-Sept.	--	--	--	--	--
	Oct.-Nov.	--	--	--	--	--		Oct.-Nov.	--	--	--	--	--
	Current	--	--	--	--	--		Current	--	--	--	--	--
E	Aug.-Sept.	0	-2	-4	-9	-2	Q	Aug.-Sept.	+0.7	-2	-4	+10	+11
	Oct.-Nov.	0	-0.8	-7	-11	-5		Oct.-Nov.	+0.2	-0.8	+1	+8	+10
	Current	-0.9	-0.8	-6	-5	-2		Current	-0.2	-0.8	-0.9	+8	+9
F	Aug.-Sept.	--	--	--	--	--	S	Aug.-Sept.	--	--	--	--	--
	Oct.-Nov.	--	--	--	--	--		Oct.-Nov.	--	--	--	--	--
	Current	--	--	--	--	--		Current	--	--	--	--	--
G	Aug.-Sept.	+1	0	-3	+2	+9	T	Aug.-Sept.	+0.5	-5	+2	-4	-2
	Oct.-Nov.	+0.5	0	+3	-14	-3		Oct.-Nov.	0	-4	+3	-3	-0.3
	Current	-1	-0.8	+2	-25	-17		Current	+0.5	-4	+2	-4	+1
H	Aug.-Sept.	--	--	--	--	--	U	Aug.-Sept.	+0.5	-2	-3	-5	-2
	Oct.-Nov.	+1	-0.8	-7	-6	+0.7		Oct.-Nov.	+0.9	0	+4	-5	+0.3
	Current	-1	-2	-3	-11	-6		Current	+1	-0.8	+4	-7	-5
I	Aug.-Sept.	0	-6	+2	+3	+7	V	Aug.-Sept.	+2	-2	-5	+6	+6
	Oct.-Nov.	+1	-3	+5	+2	+11		Oct.-Nov.	+2	-2	-3	+5	+10
	Current	+1	-4	-2	+6	+13		Current	+0.2	-2	-2	-0.7	+0.6
J	Aug.-Sept.	+0.9	-2	+2	+11	+22	W	Aug.-Sept.	+0.5	-2	0	+4	+7
	Oct.-Nov.	+0.5	-2	0	+4	+17		Oct.-Nov.	+2	-2	-4	-2	+8
	Current	0	-3	+4	+6	+18		Current	+0.2	-2	-2	-8	-4
K	Aug.-Sept.	+3	0	-3	-0.3	+2	X	Aug.-Sept.	+0.9	-2	+2	-2	-4
	Oct.-Nov.	+1	-2	+2	+5	+5		Oct.-Nov.	+0.5	-2	0	0	-6
	Current	-0.7	-3	-0.9	+0.3	+5		Current	-0.9	-5	+5	-6	-8
L	Aug.-Sept.	+0.5	0	+3	-9	-0.7	Y	Aug.-Sept.	-0.2	-2	-3	-11	-2
	Oct.-Nov.	+0.9	0	0	+6	+4		Oct.-Nov.	-0.2	-4	-2	-9	-2
	Current	+0.2	-0.8	-0.9	+6	-3		Current	0	-2	-0.9	-3	-2
							Z	Aug.-Sept.	+0.7	-2	0	-6	+0.3
								Oct.-Nov.	+0.5	-3	+5	-8	-0.3
								Current	+0.5	0	+2	-4	+2

TABLE XXXI

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS
FOR DECEMBER, 1965 AND JANUARY, 1966

Average Percentage Difference Between Institute and Mill Test Results ^a										
	+ 0.5	+ 1	+2	+ 3	+ 4	+5	+7.5	+10	+25	
Basis weight	11	21								
	52.4	100.0								
Caliper	2	9	15	18	20	21				
	9.5	42.9	71.4	85.7	95.2	100.0				
Bursting strength	2	6	13	15	17	18	20	20	21	
	9.5	28.6	61.9	71.4	81.0	85.7	95.2	95.2	100.0	
Tearing strength, in	1	3	3	5	7	8	14	16	19	
	5.3	15.8	15.8	26.3	36.8	42.1	73.7	84.2	100.0	
Tearing strength, cross	0	2	6	8	10	13	14	16	19	
	0.0	10.5	31.6	42.1	52.6	68.4	73.7	84.2	100.0	

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

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

TABLE XXXII

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS
DECEMBER, 1965 AND JANUARY, 1966

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A	34-36	76-78	8	48-52	72-73	16
B	50	70-72	48-72	50	70-72	1-3
C _b	--	--	--	57-58	72-78	2-4
D ^b						
E	--	--	--	50	73	24
F ^b						
G	--	--	--	36-68	65-76	--
H	50	73-74	18-36	50	74-75	18
I	50	70-73	120	50	70-73	120
J	50	72	24	--	--	--
K	--	--	--	50	73	24
L	54-58	71-74	48	50	73	--
M	50	72-73	24	50	72-73	24
N	50	73	--	50	73	24-72
O	50	76	168	51	76	24
P ^b						
Q _a	55	72	--	55	72	--
S ^a						
T ^a						
U	50	73	24	50	73	24
V	50	72	72	50	72	72
W	50	72-74	648-720	50	72-74	3.5
X	35	73	24	50	72	48
Y	38-64	63-78	0.5	50	72-73	24
Z	35	73	48	50	73	48

^aNo data were submitted relative to preconditioning and conditioning.

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

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