

CONTINUOUS BASE-LINE STUDY

✓ Project 1108-13

Report 186

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

December 1, 1963

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 186

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

December 1, 1963

TABLE OF CONTENTS

	Page
INTRODUCTION	1
PRESENTATION AND DISCUSSION OF TEST RESULTS	2
SUMMARY OF COMPOSITE MILL AVERAGES	3
GRAPHICAL PRESENTATIONS	4
NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL	7
PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT SPECIFICATIONS	8
INSTITUTE AND MILL TEST DATA FOR INDIVIDUAL MILLS	10
SUMMARY OF TEST RESULT COMPARISONS	28
COMPARISON OF INSTITUTE-MILL DIFFERENCES	29
SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS	30
PRECONDITIONING AND CONDITIONING DATA FOR THE MILL TESTS	31

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 October and November, 1963.

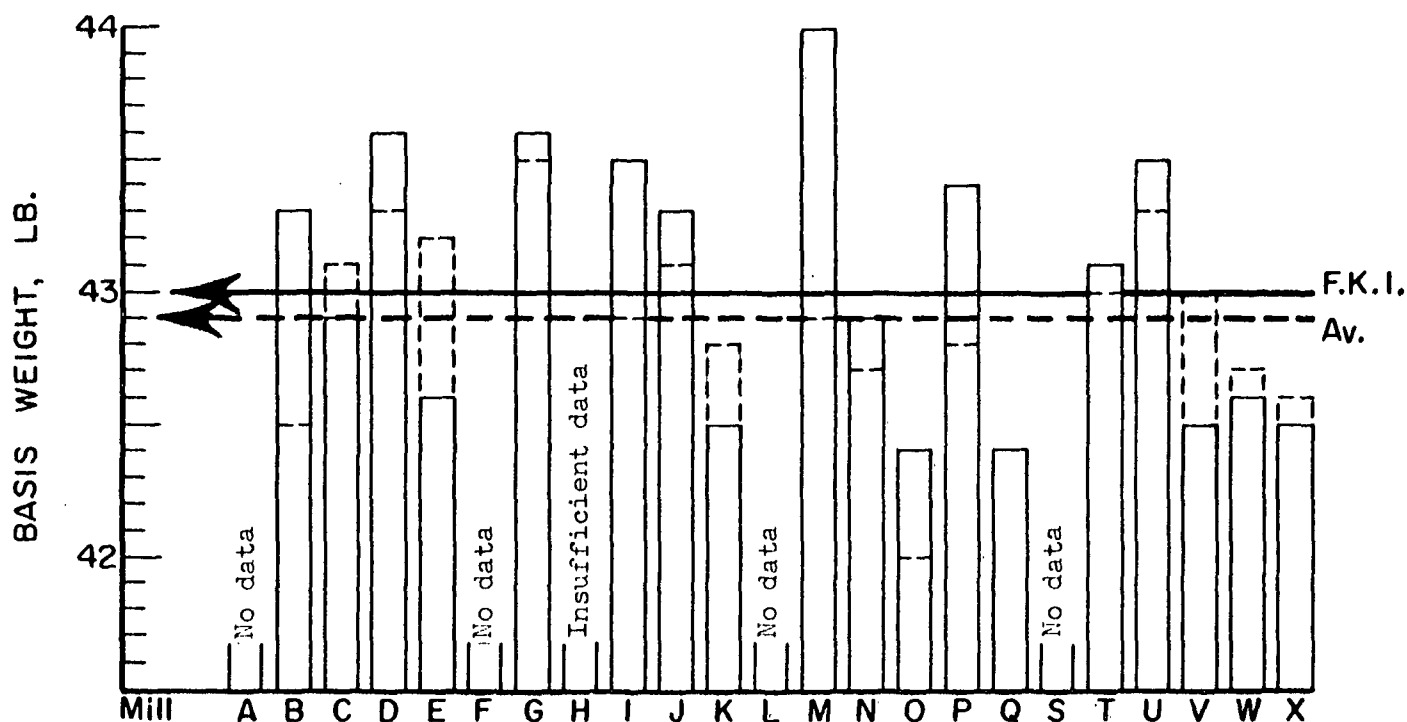


Figure 1. Comparison of Basis Weight Results

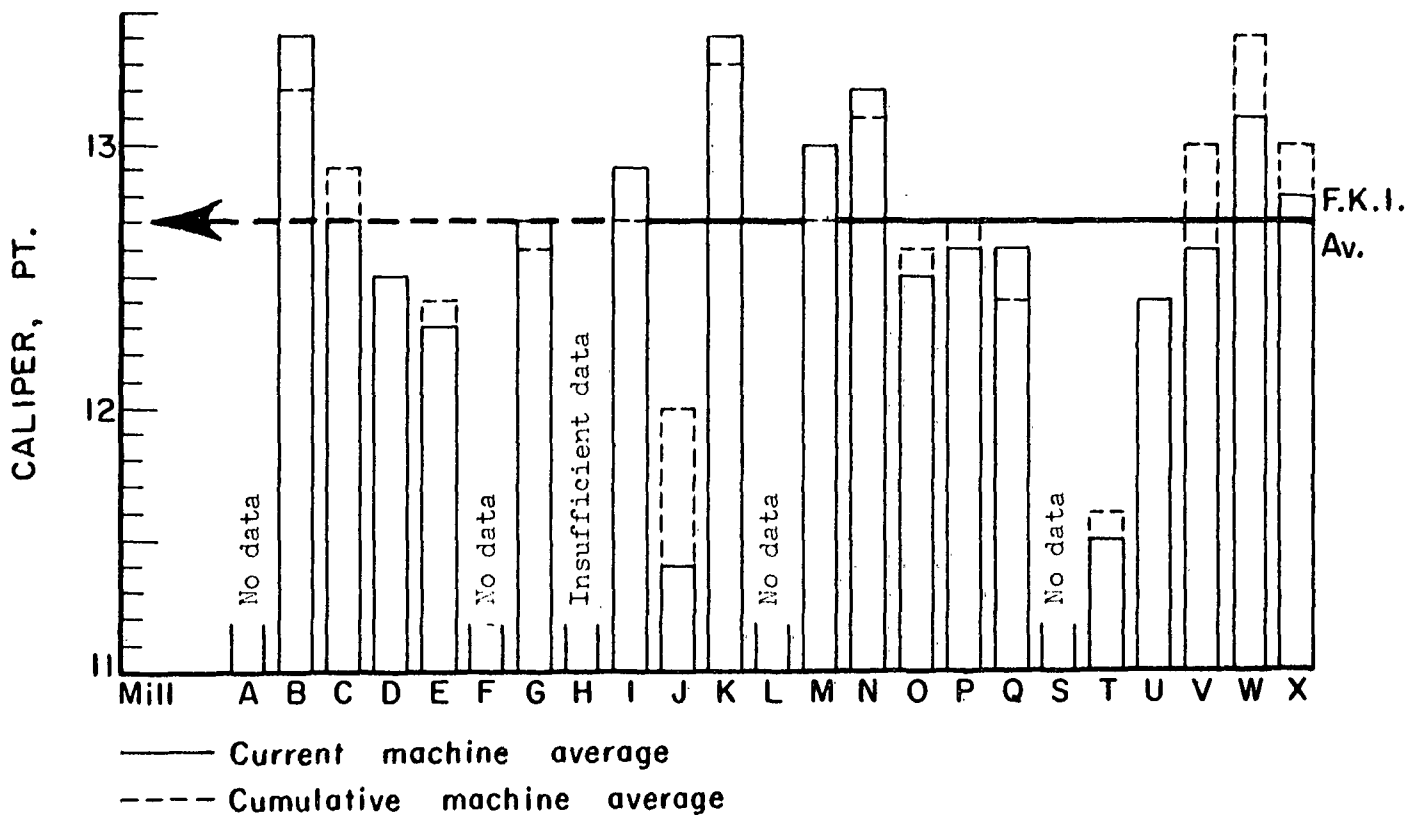


Figure 2. Comparison of Caliper Results

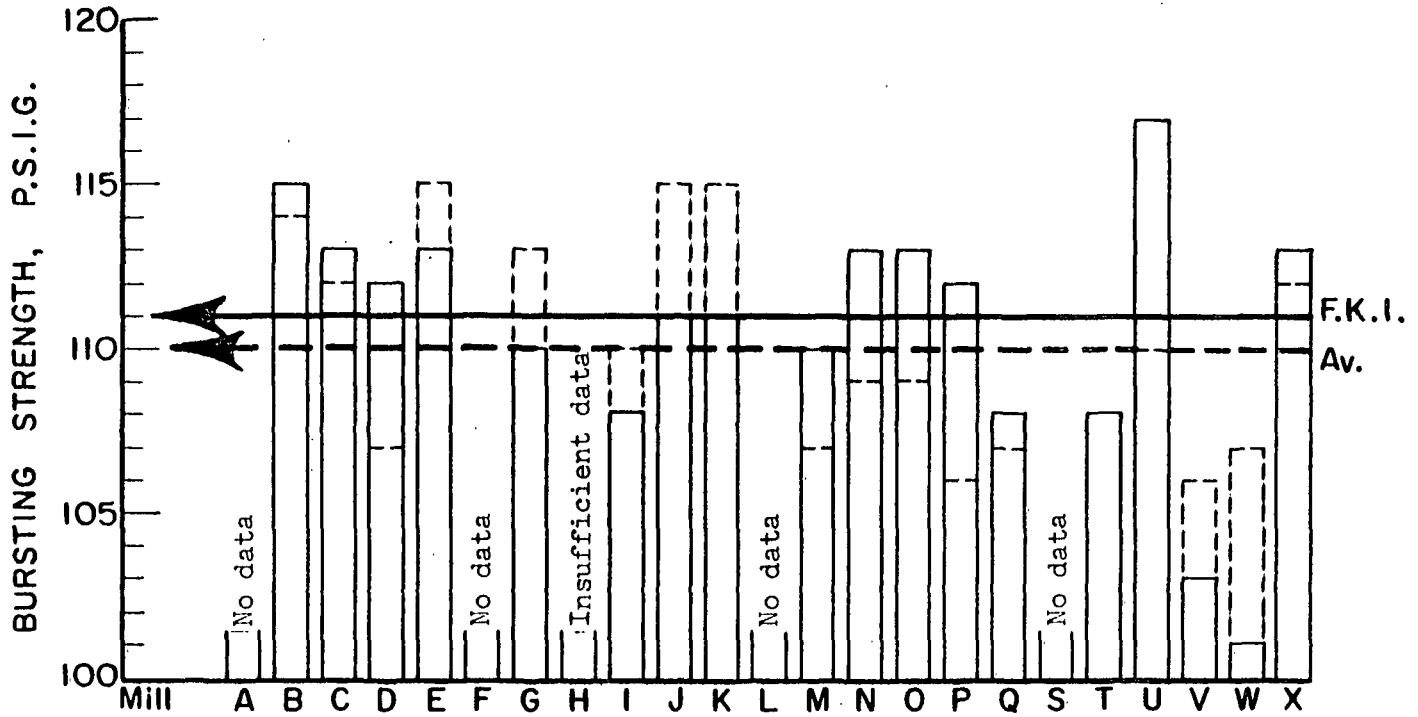


Figure 3. Comparison of Bursting Strength Results

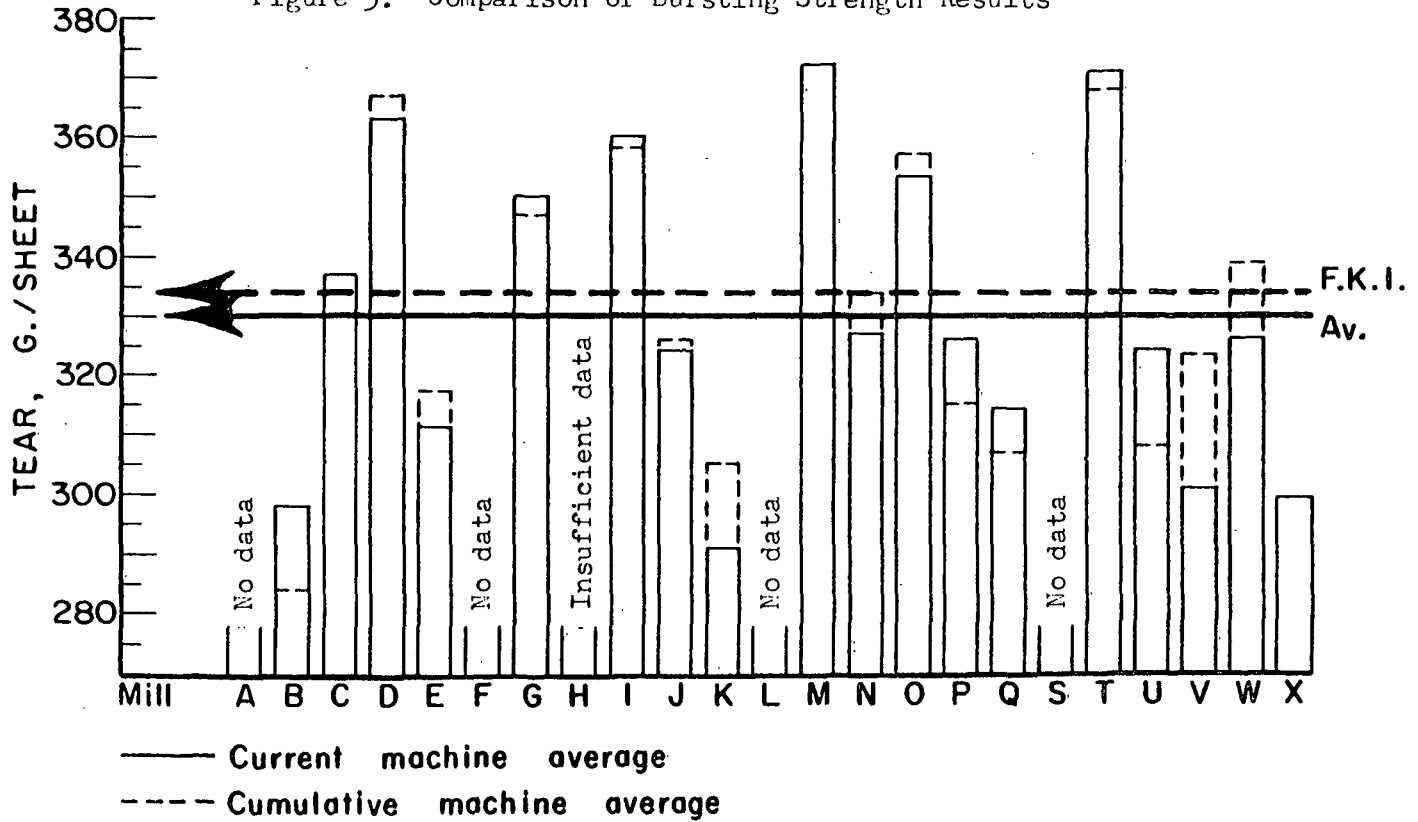


Figure 4. Comparison of Machine-Direction Tear Results

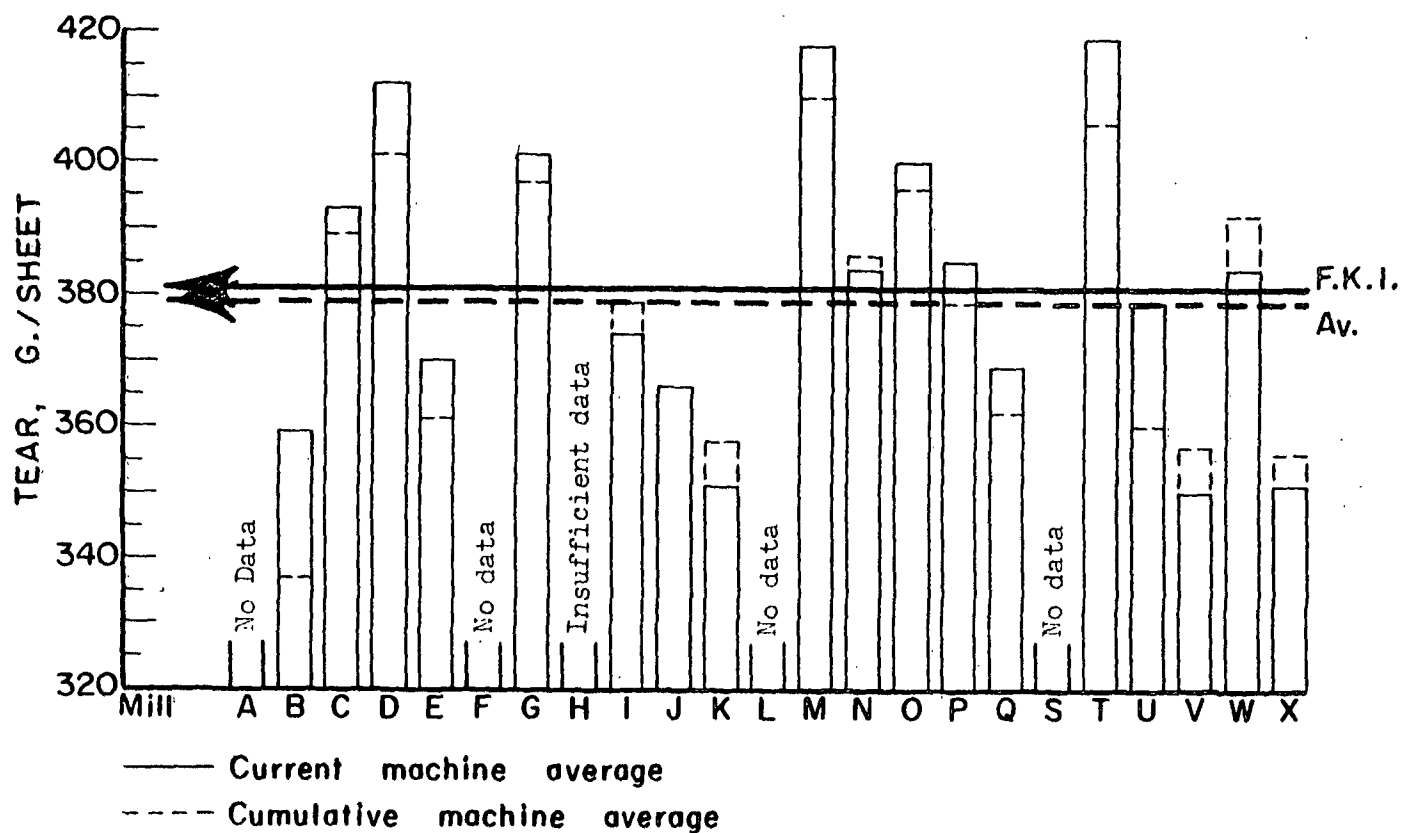


Figure 5. Comparison of Cross-Machine Direction Tear Results

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
DURING OCTOBER AND NOVEMBER, 1963

Mill Code	Number of Sample Lots
A	0
B	8
C	14
D	12
E	8
F	0
G	4
H	2
I	4
J	3
K	8
L	0
M	3
N	8
O	3
P	8
Q	16
S	0
T	7
U	3
V	6
W	7
X	6
Total	<hr/> 130

TABLE III

PERCENTAGE DEVIATION OF CURRENT MILL AVERAGES
FROM 42-LB. BASIS WEIGHT SPECIFICATION

Mill Code	Percentage Deviation
A	--
B	+3.1
C	+2.1
D	+3.8
E	+1.4
F	--
G	+3.8
H	+0.2
I	+3.6
J	+3.1
K	+1.2
L	--
M	+4.8
N	+2.1
O	+1.0
P	+3.3
Q	+1.0
S	--
T	+2.6
U	+3.6
V	+1.2
W	+1.4
X	+1.2

Test	Current Mill Averages		F.K.I. Averages	
	Max.	Min.	Current	Cumulative
Basis weight, lb.	44.0	42.1	43.0	42.9
Caliper, points	13.4	11.4	12.7	12.7
Bursting strength, p.s.i. gage	117	101	111	110
Machine direction Elmendorf tear, g./sheet	374	291	330	334
Cross-machine direction Elmendorf tear, g./sheet	419	350	381	379

The test results obtained at the Institute and at the mill during October and November 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 through

TABLE IV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL #
October and November, 1963

Date Name	Mch. Finish No.	Basis Weight, lb.			Caliber, 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.

No samples submitted.

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

9-10-63	WFLS	1	44.0	42.2	42.9	42.7	-0.2	13.6	12.8	13.3	13.1	-0.2	134	98	116	118	+2	400	280	320	284	-36	376	320	345 ^a	368	+23
9-19-63	WFLS	1	44.0	43.0	43.5	43.2	-0.3	14.1	13.4	13.8	13.4	-0.4	129	85	111	114	+3	368	256	305	289	-16	392	320	353 ^a	374	+21
10-14-63	WFLS	1	45.6	44.2	44.9	44.1	-0.8	14.0	13.6	14.0	13.5	-0.5	138	92	117	118	+1	344	272	305	296	-9	464	368	403 ^a	386	-17
10-16-63	WFLS	1	44.0	42.2	43.2	43.2	0.0	13.4	12.2	13.0	12.7	-0.3	131	105	120	120	0	360	256	308	299	-9	448	336	391 ^a	366	-25
10-18-63	WFLS	1	44.4	43.6	44.0	43.3	-0.7	14.0	13.2	13.5	13.2	-0.3	131	92	117	116	-1	352	232	283 ^a	300	+17	400	320	353 ^a	387	+34
10-20-63	WFLS	1	43.8	42.4	43.1	42.5	-0.6	13.9	12.4	13.3	13.1	-0.2	129	97	112	108	-4	328	248	289	278	-11	352	320	341 ^a	356	+15
10-25-63	WFLS	1	43.4	42.0	42.4	42.2	-0.2	13.4	12.6	13.0	12.5	-0.5	129	89	113	108	-5	336	248	285	306	+21	384	320	349 ^a	355	+6
10-31-63	WFLS	1	43.4	42.0	42.8	42.1	-0.7	13.7	12.3	13.1	13.0	-0.1	124	85	111	111	0	328	248	285	278	-7	368	312	337 ^a	367	+30
Current mill average:				43.3	42.9	-0.4		13.4	13.1	-0.3				115	114	-1		298			291	-7			359	370	+11
Cumulative mill average:				42.5				13.2						114							284				337		
Mill factor, %				101.9				101.5						100.9							104.9				106.5		
Mill index, %				100.9				105.5						104.5							89.2				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.

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

October and November, 1963

Date Code	Vch. No.	Finish	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet																
			Institute		Mill	Institute		Mill	Institute		Mill	Institute		Mill														
			Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.														
7-22-63	W.F.	2	43.8	42.4	43.1	43.0	-0.1	13.5	12.2	12.9	12.7	-0.2	146	100	118	115	-3	360	256	327	319	-8	464	368	418 ^a	408	-10	
7-22-63	W.F.	2	43.8	42.0	42.9	43.2	-0.3	13.1	12.3	12.8	12.7	-0.1	147	93	115	116	+1	432	272	343 ^a	327	-16	496	368	413 ^a	401	-12	
8-19-63	W.F.	2	44.2	42.6	43.6	43.8	+0.2	13.2	12.1	12.7	12.7	0.0	142	95	116	114	-2	368	264	315	330	+15	440	360	388 ^a	387	-1	
8-19-63	W.F.	2	44.0	42.5	43.6	43.8	+0.2	13.0	12.1	12.6	12.6	0.0	138	79	115	114	-1	384	256	337	319	-18	424	352	387 ^a	397	+10	
9-12-63	W.F.	2	44.2	42.6	43.4	43.5	+0.1	13.8	12.7	13.2	13.0	-0.2	130	88	114	108	-6	432	320	356	339	-17	472	360	405 ^a	396	-9	
9-12-63	W.F.	2	44.2	42.4	43.5	43.5	0.0	13.6	12.4	13.1	13.1	0.0	131	93	114	107	-7	408	312	348 ^a	341	-7	460	360	404 ^a	415	+11	
10-1-63	W.F.	2	43.8	42.8	43.4	43.1	-0.3	13.1	12.4	12.8	12.8	0.0	132	90	110	112	+2	432	268	359 ^a	335	-24	416	360	388 ^a	390	+2	
10-1-63	W.F.	2	44.0	43.0	43.6	43.0	-0.6	13.1	12.1	12.8	12.8	0.0	125	91	112	111	-1	448	288	356 ^a	328	-28	464	360	409 ^a	385	-24	
11-1-63	W.F.	2	42.4	41.8	42.0	42.5	+0.5	12.9	12.1	12.5	12.5	0.0	138	94	115	112	-3	424	280	334 ^a	327	-7	416	352	378 ^a	394	+16	
11-1-63	W.F.	2	43.0	41.6	42.2	42.6	+0.4	12.9	12.1	12.5	12.5	0.0	135	92	117	111	-6	400	272	341 ^a	345	-4	464	352	400 ^a	390	-10	
11-1-63	W.F.	2	42.8	41.2	42.2	42.6	-0.4	12.9	12.0	12.5	12.6	+0.1	132	94	116	111	-5	416	272	332 ^a	343	+11	408	352	384 ^a	386	+4	
11-5-63	W.F.	2	42.2	41.4	41.9	42.1	-0.2	12.7	11.9	12.2	12.2	0.0	128	76	105	109	+4	368	272	318 ^a	314	-4	392	344	368 ^a	374	+6	
11-5-63	W.F.	2	42.2	41.8	41.9	42.0	+0.1	12.5	12.0	12.2	12.2	0.0	126	90	112	106	-6	376	264	315 ^a	327	+12	424	336	378 ^a	366	-12	
11-7-63	W.F.	2	43.8	43.2	43.6	43.3	-0.3	13.0	12.4	12.8	12.7	-0.1	135	83	109	111	-2	408	272	341 ^a	331	-10	448	360	389 ^a	373	-16	
Current mill average:						42.9	43.0	+0.1	12.7			12.6	-0.1	113			111	-2	337			330	-7	393			390	-3
Cumulative mill average:						43.1			12.9			112			337			389						101.0				
Mill factor, %						99.5			98.4			100.9						100.0						103.7				
Mill index, %						100.0			100.0			102.7			100.9									103.7				

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 VII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D
October and November, 1963

Date Make	Veh. No.	Finish	Basis Weight, lb.			Caliber, points			Bursting Strength, P.S.I.g.			Elendorf Tear, g./sheet In Machine			Elendorf 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.																		
9-17-63	2	----	44.4	43.0	43.8	42.9	-0.9	12.4	12.0	12.1	12.2	+0.1	132	98	113	112	-1	376	272	332	---	---	---	432	368	409 ^a	---	---	---		
9-18-63	2	----	45.8	43.8	44.2	43.1	-1.1	12.5	12.0	12.3	12.5	-0.2	131	80	108	106	-2	432	312	367	---	---	---	448	368	409 ^a	---	---	---		
9-13-63	1	----	45.4	42.2	43.9	43.3	-0.6	13.9	13.2	13.6	13.5	-0.1	135	84	109	106	-3	432	344	389 ^a	---	---	---	440	336	410 ^a	---	---	---		
9-26-63	1	----	43.2	42.0	42.4	41.6	-0.8	13.0	12.5	12.8	12.8	0.0	127	87	107	105	-2	368	304	347	---	---	---	464	368	408 ^a	---	---	---		
10-3-63	2	----	44.0	42.6	43.5	42.5	-1.0	12.2	11.8	12.1	12.2	-0.1	150	94	112	109	-3	448	304	341	---	---	---	496	384	428 ^a	---	---	---		
10-4-63	2	----	44.4	43.0	44.0	42.6	-1.4	12.9	12.2	12.5	12.3	-0.2	125	81	108	109	+1	400	328	362 ^a	---	---	---	512	376	427 ^a	---	---	---		
10-4-63	1	----	45.4	42.4	44.1	43.5	-0.6	13.3	12.8	13.0	13.0	0.0	140	94	113	113	0	480	368	408 ^a	---	---	---	480	368	419 ^a	---	---	---		
10-23-63	1	----	44.0	42.2	43.2	42.1	-1.1	12.6	12.0	12.4	12.4	0.0	138	101	117	118	+1	432	336	369 ^a	---	---	---	416	336	375 ^a	---	---	---		
11-1-63	2	----	43.8	42.2	43.4	42.8	-0.6	13.0	12.1	12.6	12.3	-0.3	130	83	110	116	+6	392	296	343	---	---	---	484	384	418 ^a	---	---	---		
11-5-63	2	----	44.0	41.8	43.6	43.1	-0.5	12.9	12.0	12.5	12.3	-0.2	145	77	117	112	-5	424	296	375 ^a	---	---	---	472	336	411 ^a	---	---	---		
11-8-63	1	----	44.2	42.0	43.4	42.6	+0.8	12.9	12.0	12.4	12.1	-0.3	141	103	116	113	-3	392	328	359 ^a	---	---	---	464	336	404 ^a	---	---	---		
11-12-63	1	----	44.2	42.2	43.6	42.7	-0.9	12.9	12.0	12.4	12.1	-0.3	146	86	118	110	-8	408	344	371	---	---	---	448	368	413 ^a	---	---	---		
Current mill average:			43.6	42.7	43.2	42.7	-0.5	12.5	12.5	12.5	12.5	0.0		112	111	111	-1	363													
Cumulative mill average:			43.3					12.5						107				367													
Mill factor, %			100.7					100.0						104.7				98.9													
Mill index, %			101.6					96.4						101.8				108.7													

^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 VIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E
October and November, 1963

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength,			Elmendorf Tear, s./sheet			Elmendorf Tear, g./sheet													
		Institute Max. Min. Av.	Mill Av.	Diff.	Institute Max. Min. Av.	Mill Av.	Diff.	Institute Max. Min. Av.	Mill Av.	Diff.	Institute Max. Min. Av.	Mill Av.	Diff.	Institute Max. Min. Av.	Mill Av.	Diff.											
10-3-63	K.F.	-	43.8	42.4	43.3	43.2	-0.1	12.9	11.8	12.3	12.1	-0.2	125	95	113	118	-5	376	280	318	301	-17	424	352	384 ^a	399	-15
10-4-63	K.F.	-	43.0	41.6	42.3	42.3	0.0	13.2	12.2	12.8	12.5	-0.3	121	95	109	111	-2	368	272	317	309	-8	400	344	368 ^a	356	-12
10-11-63	K.F.	-	42.4	41.8	42.1	42.2	-0.1	12.5	12.0	12.1	12.0	-0.1	129	101	116	117	-1	344	256	309 ^a	295	-14	440	328	373 ^a	348	-25
10-16-63	K.F.	-	42.2	42.0	42.0	41.6	-0.4	12.2	11.6	12.0	11.7	-0.3	137	103	118	111	-7	336	272	294	284	-10	368	320	343 ^a	329	-14
10-31-63	K.F.	-	42.2	41.4	41.7	41.5	-0.2	12.2	11.6	11.9	11.6	-0.3	134	95	115	111	-4	352	256	304	257	-47	384	320	358 ^a	317	-41
11-1-63	K.F.	-	42.6	42.0	42.2	42.7	+0.5	12.5	12.0	12.2	11.6	-0.4	137	95	117	112	-5	376	288	329	276	-53	416	352	388 ^a	347	-41
11-8-63	K.F.	-	44.0	42.2	43.3	43.1	-0.2	13.7	12.0	12.6	12.6	0.0	134	76	108	107	-1	336	240	287	301	-14	384	312	346 ^a	343	-3
11-15-63	K.F.	-	44.0	42.8	43.5	43.2	-0.3	13.1	12.2	12.6	12.4	-0.4	129	90	111	109	-2	384	256	327	285	-42	464	352	404 ^a	347	-57
Current mill average:				42.6	42.5	-0.1		12.3	12.1	-0.2			113	112	-1			311	269	-22				370	346	-22	
Cumulative mill average:				43.2				12.4					115					317						361			
Mill factor, %				98.6				96.2					98.3					96.1						102.5			
Mill index, %				99.3				96.9					102.7					95.1						97.6			

TABLE IX
SUMMARY OF INSTITUTE 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 X

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

October and November, 1963

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.										
9-22-63	W.F. 3	44.2	43.0	43.7	44.4	+0.7	13.6	11.9	12.9	12.8	-0.1	136	83	110	108	-2	392	320	362	369	+7	440	360	398 ^a	407	+9
9-29-63	W.F. 3	45.4	44.0	44.6	44.6	0.0	13.7	12.3	13.0	12.6	-0.4	138	87	109	110	+1	400	288	342	332	-10	464	366	417 ^a	395	-22
10- 1-63	W.F. 3	43.4	42.0	42.8	42.9	+0.1	13.0	12.0	12.5	12.3	-0.2	136	94	112	108	-4	408	286	346	322	-26	432	344	387 ^a	395	+8
10- 2-63	W.F. 3	43.8	42.2	43.4	43.5	+0.1	13.1	12.0	12.6	12.5	-0.1	129	76	106	106	0	400	264	346	384	+36	512	368	403 ^a	399	-4
Current mill average:		43.6			43.9	+0.3	12.7			12.6	-0.1	110			109	-1	350			352	+2	401			399	-2
Cumulative mill average:		43.5					12.6					113					347					397				
Mill factor, %		100.2					100.8					97.3					100.9					101.0				
Mill index, %		101.6					100.0					100.0					104.8					105.2				

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H

10-9-63	----	43.2	40.8	42.3	42.1	-0.2	14.2	12.9	13.5	13.3	-0.3	124	80	106	114	+6	440	304	375	---	---	480	336	381 ^a	---	---
10-31-63	----	42.4	41.6	41.9	41.6	-0.3	13.5	12.6	13.1	12.5	-0.6	138	90	120	118	-2	408	296	374 ^a	---	---	416	320	371 ^a	---	---
Current mill average:		42.1			41.8	-0.3	13.3			12.9	-0.4	113			116	-3	374					376				
Cumulative mill average:		42.0					13.6					106					355					375				
Mill factor, %		100.2					97.8					106.6					105.4					100.3				
Mill index, %		98.1					104.7					102.7					112.0					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 XII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I
October and November, 1963

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliber, 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.											
9-20-63	W.F.	-	44.2	43.0	43.9	43.8	-0.1	13.5	12.2	13.0	12.7	-0.3	125	84	106	104	-2	480	368	395 ^a	357	-38	472	336	415 ^a	396	-19
9-20-63	W.F.	-	43.6	41.2	42.6	42.4	-0.2	13.4	11.8	12.7	12.6	-0.1	125	90	105	104	-1	416	320	352 ^a	326	-26	416	352	373 ^a	364	-9
10-22-63	W.F.	-	44.4	42.4	43.8	43.6	-0.2	13.2	12.8	13.1	13.0	-0.1	128	88	111	106	-5	416	320	356	334	-22	384	328	357 ^a	377	+20
10-23-63	W.F.	-	44.0	42.2	43.7	43.3	-0.4	13.2	12.5	13.0	13.0	0.0	130	80	108	109	+1	400	296	338	327	-11	384	320	353 ^a	353	0
Current mill average:					43.5	43.3	-0.2		12.9	12.9	0.0		108	106	-2			360	336	-24			374	372	-2		
Cumulative mill average:					42.9				12.7				110					356					379				
Mill factor, %					101.4				101.6				98.2					100.6					98.7				
Mill index, %					101.4				101.6				98.2					107.8					98.7				
TABLE XIII																											
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J																											
9-20-63	W.F.S	2	43.8	43.6	43.7	42.9	-0.8	11.9	11.1	11.5	11.1	-0.4	130	91	111	111	0	368	272	312	307	-5	392	320	358 ^a	337	-21
10-17-63	W.F.	2	43.8	42.8	43.3	42.9	-0.4	11.6	11.1	11.4	11.2	-0.2	130	95	114	115	+1	376	288	332	319	-13	400	336	367 ^a	362	-5
11-11-63	W.F.	2	43.8	42.0	42.7	43.6	-0.9	11.7	11.0	11.3	11.1	-0.2	129	90	109	119	-10	376	272	327	313	-14	400	320	374 ^a	357	-17
Current mill average:			43.3	43.1	-0.2			11.4	11.1	-0.3			111	115	-4			324	313	-11			366	352	-14		
Cumulative mill average:			43.1					12.0					115					326					366				
Mill factor, %			100.5					95.0					96.5					99.4					100.0				
Mill index, %			100.9					89.8					100.9					97.0					96.6				

^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 XIV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL #
October and November, 1963

Date Name	Run. 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												
			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.										
10-1-63	2	WFLS	42.2	42.0	42.0	42.2	+0.2	12.8	12.2	12.5	13.0	-0.5	130	90	112	104	-8	344	208	271	332	+61	368	320	335 ^a	386	+51
10-7-63	2	WFLS	43.8	42.0	42.7	43.3	+0.6	14.0	13.0	13.3	12.5	-0.8	139	93	112	98	-14	360	272	303	284	-19	416	304	355 ^a	392	+37
10-11-63	2	WFLS	43.0	41.8	42.3	42.7	+0.4	14.0	13.4	13.7	12.3	-1.4	132	82	109	104	-5	368	200	297 ^a	286	-11	480	336	387 ^a	379	-8
10-18-63	2	WFLS	42.0	41.2	41.8	42.5	+0.7	13.9	13.0	13.4	12.3	-1.1	135	82	109	99	-10	336	256	295	300	+5	424	328	377 ^a	343	-34
10-25-63	2	WFLS	43.8	41.4	42.5	42.5	0.0	13.7	12.9	13.2	13.0	-0.2	130	91	113	102	-11	320	240	273	302	+25	376	288	333 ^a	368	+35
11-1-63	2	WFLS	43.8	42.2	42.8	42.8	0.0	14.1	13.0	13.6	12.4	-1.2	143	80	114	102	-12	352	264	305	358	+53	368	304	342 ^a	384	+42
11-5-63	2	WFLS	44.0	42.0	42.9	43.0	+0.1	14.1	13.1	13.6	12.5	-1.1	132	85	109	104	-5	400	256	319 ^a	319	0	360	312	335 ^a	361	+26
11-12-63	2	WFLS	43.8	42.0	42.6	43.0	+0.4	14.5	13.3	13.8	12.4	-1.4	132	79	109	107	-2	304	192	263 ^a	313	+50	384	304	347 ^a	392	+45
Current mill average:			42.5		42.7	+0.2	13.4		12.6	-0.6	111		102	-9	291		312	+21	351		376	+25					
Cumulative mill average:			42.8				13.3				115				305				358								
Mill factor, %			99.3				100.8				96.5				95.4				98.0								
Mill index, %			99.1				105.5				100.9				87.1				92.6								

^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 XV
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL 1
October and November, 1963

Date /	Mch. No.	Finish	Basis Weight, lb.			Caliber, points			Bursting Strength, P.S.I.			Elmendorf Tear, g./sheet			Elmendorf Tear, g./sheet		
			Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.

No samples submitted.

TABLE XVI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL 2

10- 9-63	W.B.	-	45.2	43.6	44.2	42.6	-1.4	13.5	12.8	13.1	12.9	-0.2	130	85	108	108	0	456	352	395	393	- 2	512	366	421 ^a	429	- 8
9-23-63	W.B.	-	44.0	43.0	43.6	42.6	-1.2	13.0	12.4	12.6	12.5	-0.3	127	92	112	106	-4	416	272	355	383	-26	456	366	415 ^a	415	0
10- 9-63	W.B.	-	45.6	42.2	44.0	42.6	-1.2	13.3	12.5	13.0	12.8	-0.2	139	83	110	110	0	400	336	366 ^a	436	-70	480	366	417 ^a	463	-46
Current mill average:			44.0	42.6	-1.2	13.0	12.6	-0.2	110	109	-1	372	404	-32	418	436	-18										
Cumulative mill average:			42.9			12.7			107			372			410												
Mill factor, %			102.6			102.4			102.8			100.0			102.0												
Mill index, %			102.6			102.4			100.0			111.4			110.3												

^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 XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

October and November, 1963

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	Diff.	Institute	Mill	Diff.	Institute	Mill	Diff.	Institute	Mill	Diff.	Institute	Mill	Diff.										
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.										
9-6-63	WFLS 1	44.0	42.2	43.5	42.1	-1.4	13.2	12.8	13.0	12.4	-0.6	134	93	110	112	+2	408	288	349	358	-9	406	352	387 ^a	395	-8
9-15-63	WFLS 1	44.0	42.2	43.4	42.5	-0.9	13.2	12.6	13.0	12.6	-0.4	130	99	114	109	-5	368	264	311	326	+15	424	352	361 ^a	380	-1
9-24-63	WFLS 1	43.8	42.2	43.1	42.9	-0.2	14.2	12.6	13.3	12.6	-0.7	130	96	113	114	+1	368	288	337	342	+5	408	336	378 ^a	393	+15
10-3-63	WFLS 1	44.0	43.0	43.6	42.2	-1.4	13.8	12.5	13.0	12.4	-0.6	138	97	116	115	-1	384	272	330	320	-10	440	336	390 ^a	383	-7
10-10-63	WFLS 1	43.6	42.0	42.6	42.0	-0.6	13.6	12.9	13.2	12.7	-0.5	126	92	114	111	-3	376	296	336	321	-15	480	368	411 ^a	370	-41
10-22-63	WFLS 1	43.0	41.8	42.6	42.0	-0.6	13.8	12.5	13.1	12.6	-0.5	130	95	115	107	-8	368	312	334	338	+4	496	352	398 ^a	396	-2
10-28-63	WFLS 1	42.8	41.4	42.1	42.0	-0.1	14.0	12.7	13.2	12.5	-0.7	126	99	113	109	-4	360	272	305	295	-10	400	312	360 ^a	356	-4
11-6-63	WFLS 1	43.6	42.0	42.3	42.2	-0.1	14.6	13.9	14.1	13.3	-0.8	134	93	114	108	-6	384	256	313	338	+25	384	336	366 ^a	384	+18
Current mill average:																	327	330	+3	384	382	-2				
Cumulative mill average:																	334			386						
Mill factor, %																	97.9			99.5						
Mill index, %																	97.9			101.3						

^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 XVIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C
October and November, 1963

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.										
9-25-63	----	41.8	40.6	41.6	41.0	-0.6	12.8	12.2	12.5	12.4	-0.1	137	80	107	110	+3	384	296	330	302	-28	408	336	375 ^a	329	446
10-31-65	WFLS	44.2	42.2	43.3	43.1	-0.2	13.1	12.5	12.9	12.6	-0.3	140	88	116	115	-1	416	288	353	335	-18	472	352	397 ^a	378	419
11-14-63	----	42.6	41.6	42.2	42.5	+0.3	12.9	11.4	12.3	11.9	-0.4	144	96	116	119	+3	424	304	375	325	-50	504	368	428 ^a	377	51
Current mill average:		42.4	42.2	42.3	42.3	-0.2	12.5	12.3	12.3	12.3	-0.2	113	113	115	115	+2	353	353	351	351	-32	400	400	361	361	-39
Cumulative mill average:		42.0			42.0		12.6					109			109		357			357		396			396	
Mill factor, %		101.0			101.0		99.2					103.7			103.7		98.9			98.9		101.0			101.0	
Mill index, %		98.8			98.8		98.4					102.7			102.7		105.7			105.7		105.5			105.5	

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

TABIS XIX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F

October and November, 1953

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliber, points			Bursting Strength, p.s.i.g.			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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

^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 XX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

October and November, 1963

Date Made	Veh. No.	Finish	Basis Weight, lb.			Caliber, 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.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.										
9-23-63	W.F.	1	43.0	42.0	42.4	42.7	+0.3	12.5	12.0	12.3	12.2	-0.1	130	90	106	106	0	368	272	326	295	-31	408	352	373 ^a	354	-19
9-26-63	W.F.	1	44.0	42.4	43.0	43.3	+0.3	12.5	12.2	12.5	12.6	+0.1	120	81	105	108	+3	360	272	327	301	-26	456	352	391 ^a	398	+7
9-27-63	W.F.	1	43.0	42.0	42.3	42.5	+0.2	12.8	12.0	12.3	12.1	-0.2	122	84	107	108	+1	336	256	291	262	-29	400	336	369 ^a	345	-24
9-29-63	W.F.	1	43.2	42.0	42.3	42.5	+0.2	12.8	12.2	12.5	12.4	-0.1	125	93	108	107	-1	336	256	301	312	+11	400	320	356 ^a	379	+23
10-4-63	W.F.	1	43.6	42.0	42.7	42.6	-0.1	13.4	12.6	13.0	12.5	-0.5	133	96	110	109	-1	384	288	330	289	-41	408	360	383 ^a	376	-7
10-6-63	W.F.	1	42.6	41.6	42.2	42.6	+0.4	13.2	11.9	12.4	12.1	-0.3	120	87	104	104	0	328	240	290	281	-9	392	320	356 ^a	360	+4
10-14-63	W.F.	1	42.2	41.4	41.8	42.2	+0.4	12.9	11.9	12.4	12.1	-0.3	116	87	104	104	0	352	272	305 ^a	271	-34	424	336	365 ^a	325	-40
10-15-63	W.F.	1	42.4	41.6	42.0	42.7	+0.7	13.1	12.2	12.8	12.6	-0.2	119	93	106	104	-2	360	288	315	276	-39	432	336	384 ^a	346	-38
10-16-63	W.F.	1	44.2	42.6	43.5	43.7	+0.2	13.1	12.1	12.7	12.6	-0.1	131	94	113	112	-1	400	264	328 ^a	302	-26	432	336	380 ^a	389	+9
10-18-63	W.F.	1	43.8	42.2	43.1	43.5	+0.4	13.2	12.3	12.7	12.3	-0.4	121	93	110	109	-1	376	320	345	313	-32	432	352	381 ^a	396	+15
10-7-63	W.F.	1	42.6	41.4	42.0	42.4	+0.4	13.0	12.0	12.3	12.1	-0.2	120	94	107	108	+1	384	232	285 ^a	277	-8	392	304	334 ^a	340	+6
10-27-63	W.F.	1	43.2	42.0	42.2	42.4	+0.2	13.3	12.0	12.6	12.8	0.0	128	98	110	107	-3	400	256	327	288	-39	448	336	389 ^a	372	-17
11-5-63	W.F.	1	42.0	41.4	41.8	42.0	+0.2	13.0	12.0	12.4	12.2	-0.2	133	95	111	110	-1	400	264	321 ^a	290	-31	416	328	369 ^a	362	-7
11-6-63	W.F.	1	43.6	42.0	42.6	43.2	+0.6	13.1	12.0	12.7	12.6	-0.1	126	84	110	111	+1	416	256	331	288	-43	432	328	368 ^a	372	+4
11-10-63	W.F.	1	42.8	41.6	42.0	42.0	0.0	13.1	12.1	12.8	12.5	-0.3	121	79	107	108	+1	384	248	305	274	-31	368	312	340 ^a	345	-5
11-11-63	W.F.	1	43.4	41.8	42.4	42.8	-0.4	13.4	12.3	13.1	12.9	-0.2	124	86	103	104	+1	368	224	302 ^a	302	0	432	320	359 ^a	360	+1
Current mill average:			42.4	42.7	-0.3			12.6	12.4	-0.2			108	107	-1			314	289	-25			369	364	-5		
Cumulative mill average:			42.4					12.4					107					307					362				
Mill factor, %			100.0					101.6					100.9					102.3					101.9				
Mill index, %			98.8					99.2					98.2					94.0					97.4				

^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 XXI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S

October and November, 1963

Date Face	Mch. No.	Basis Weight, lb.			Caliber, 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.

No samples submitted.

TABLE XXII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T

Date Face	Mch. No.	Basis Weight, lb.			Caliber, 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.
10-2-63	A.B.	43.6	42.4	42.9	42.4	42.4	42.9	11.6	11.0	11.4	10.9	10.9	10.9	432	384	411 ^a
10-20-63	A.B.	43.8	42.0	43.2	41.9	41.9	41.3	11.7	11.0	11.4	11.2	10.8	10.8	432	384	428 ^a
10-21-63	A.B.	44.2	42.4	43.9	42.8	42.8	41.1	11.6	11.0	11.4	11.0	11.1	11.1	432	384	427 ^a
10-25-63	A.B.	43.8	42.0	43.1	42.6	42.6	41.3	12.2	11.0	11.6	11.3	10.9	10.9	432	384	428 ^a
10-31-63	A.B.	43.8	42.0	42.6	42.3	42.3	41.3	12.1	11.0	11.6	11.3	10.9	10.9	432	384	428 ^a
11-10-63	A.B.	44.0	42.2	43.4	43.1	43.1	41.3	12.0	11.0	11.5	11.1	10.7	11.1	432	384	428 ^a
11-17-63	A.B.	43.6	42.0	42.8	42.4	42.4	41.4	12.1	11.3	11.9	11.4	10.5	11.0	432	384	428 ^a
Current mill average:		43.1	42.5	42.5	42.5	42.5	41.2	11.5	11.2	11.6	10.8	10.9	10.9	432	384	428 ^a
Cumulative mill average:		43.0						11.6			10.8			432	384	428 ^a
Mill factor, %		100.2						99.1			100.0			100.2		
Mill index, %		100.5						98.6			98.2			100.6		

^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 XXIII
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U
October and November, 1963

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliber, points			Bursting Strength, P.S.I.G.			Elmendorf Tear, g./sheet In Machine			Elmendorf Tear, g./sheet Gross 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.															
10- 2-63	N.F.	1	44.0	42.2	43.4	43.1	-0.3	12.9	12.1	12.4	12.2	-0.2	131	100	117	0	360	280	322 ^a	291	-31	432	336	365 ^a	369	-16					
10- 6-63	N.F.	1	44.2	42.6	43.6	43.4	-0.2	13.0	12.0	12.4	12.1	-0.3	135	92	118	123	+5	384	280	325 ^a	312	-15	384	336	367 ^a	377	+10				
10-23-63	N.F.	1	44.6	42.2	43.4	43.0	-0.4	12.8	12.0	12.4	12.0	-0.4	136	95	114	116	+2	360	280	325	307	-18	408	360	385 ^a	383	- 2				
Current mill average:																	43.5	43.2	-0.3	12.4	12.1	-0.3	117	119	+2	324	303	-21	379	376	- 3
Cumulative mill average:																	43.3			12.4			110			308			360		
Mill factor, %																	100.5			100.0			106.4			105.2			105.3		
Mill index, %																	101.4			97.6			106.4			97.0			100.0		

^aThis average includes the readings for one or more specimens which were 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
October and November, 1963

Date Made	Mch. Finish No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.g.			Elmendorf Tear, g./sheet																
		Institute	Mill		Institute	Mill		Institute	Mill		Institute	Mill															
		Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.														
9-26-63	----	1	44.0	42.6	43.3	44.1	-0.3	12.9	12.1	12.5	12.4	-0.1	120	77	103	105	+2	376	264	303	288	-15	376	320	343 ^a	343	0
10-2-63	----	1	43.5	42.2	42.8	42.6	0.0	13.0	12.0	12.6	12.2	-0.4	126	81	104	103	-1	352	272	305	312	-7	384	320	363 ^a	364	+1
10-9-63	----	1	43.0	42.0	42.3	42.7	-0.4	13.0	12.4	12.7	12.6	-0.1	120	85	102	102	0	368	256	303	319	-16	416	320	362 ^a	368	+6
10-19-63	----	1	43.0	41.4	42.0	42.2	-0.2	12.9	12.0	12.3	11.7	-0.6	124	89	104	110	-6	320	248	281	280	-1	352	288	319 ^a	337	-18
11-3-63	----	1	44.0	42.0	43.0	43.1	+0.1	13.1	12.1	12.6	12.4	-0.2	120	93	108	108	0	360	304	323	317	-6	392	336	368 ^a	379	+11
11-6-63	----	1	42.0	41.0	41.7	41.6	+0.1	13.5	12.1	12.6	12.6	-0.2	121	80	99	101	-2	344	224	291	289	-2	384	304	343 ^a	351	-6
Current mill average:			42.5	42.6	-0.3			12.6	12.3	-0.3			103	105	+2			301	301	0			350	357	-7		
Cumulative mill average:			43.0					13.0					106					323					357				
Mill factor, %			98.6					96.9					97.2					93.2					96.0				
Mill index, %			99.1					99.2					93.6					90.1					92.3				

^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 XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

October and November, 1963

Date Made	Mch. 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.											
Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.	Diff.												
9-9-63	WFLS	2	44.0	42.6	43.4	43.3	-0.1	13.2	12.4	12.8	12.7	-0.1	126	89	109	113	-4	384	288	335	329	-6	440	344	397 ^a	399	+2
9-16-63	WFLS	2	43.2	42.0	42.4	42.9	+0.5	13.4	12.7	13.1	12.9	-0.2	121	80	102	108	+6	376	304	337	368	-31	464	336	383 ^a	399	+16
9-20-63	WFLS	2	42.4	41.2	41.9	41.7	-0.2	13.8	12.7	13.1	12.8	-0.3	114	81	96	109	+13	376	256	322 ^a	332	+10	432	328	377 ^a	408	+31
9-21-63	WFLS	2	43.0	41.2	42.0	41.8	-0.2	13.9	12.4	13.1	12.9	-0.2	110	76	97	107	+10	352	280	315 ^a	319	+4	432	344	384 ^a	411	-27
9-21-63	W.F.	2	44.8	42.0	43.4	42.8	-0.6	13.7	13.0	13.4	13.3	-0.1	123	86	101	104	+3	384	296	326 ^a	356	+30	432	352	391 ^a	412	+21
9-29-63	WFLS	2	44.0	42.0	42.8	42.9	+0.1	13.3	12.0	12.7	12.8	+0.1	118	85	102	103	+1	376	296	334	326	-8	432	336	385 ^a	410	+25
10-2-63	WFLS	2	43.8	41.6	42.5	42.6	+0.3	13.9	12.9	13.4	13.0	-0.4	122	82	97	100	+3	360	272	312 ^a	340	-28	400	336	371 ^a	411	+40
Current mill average:			42.6	42.6	0.0			13.1	12.9	-0.2			101	106	+5			326	338	-12			384	407	+23		
Cumulative mill average:			42.7					13.4					107					339					392				
Mill factor, %			99.8					97.8					94.4					96.2					98.0				
Mill index, %			99.3					103.1					91.8					97.6					101.3				

^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 XXVI
SUMMARY OF INSTITUTE AND MILL DATA FOR MILL X
October and November, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.			Caliber, 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.
9-19-63	W.F.	1	42.2	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0	42.0
9-27-63	W.F.	1	43.0	42.2	42.6	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
10-3-63	W.F.	1	43.8	42.2	43.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
10-12-63	W.F.	1	42.4	42.0	42.1	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2	42.2
10-19-63	W.F.	1	43.0	41.8	42.3	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7	42.7
10-24-63	W.F.	1	43.4	42.2	42.9	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2
Current mill average:			42.5	42.4	-0.1	42.5	42.4	-0.1	42.5	42.4	-0.1	42.5	42.4	-0.1	42.5	42.4	-0.1
Cumulative mill average:			42.6			42.6			42.6			42.6			42.6		
Mill factor, %			99.8			99.8			99.8			99.8			99.8		
Mill index, %			99.1			99.1			99.1			99.1			99.1		

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.

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

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

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

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

TABLE XXVII
SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS) FOR OCTOBER AND NOVEMBER, 1963

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	0	8	14	12	8	0	4	2	4	3	8	0	3	8	3	8	16	0	7	3	6	7	6
Institute		43.3	42.9	43.6	42.6		43.6	42.1	43.5	43.3	42.5		44.0	42.9	42.4	43.4	42.4		43.1	43.5	42.5	42.6	42.5
Mill		42.9	43.0	42.7	42.5		43.9	41.8	43.3	43.1	42.7		42.8	42.2	42.2	42.9	42.7		42.5	43.2	42.8	42.6	42.4
Av. diff. ^b		-0.4	+0.1	-0.9	-0.1		+0.3	-0.3	-0.2	-0.2	+0.2		-1.2	-0.7	-0.2	-0.5	+0.3		-0.6	-0.3	+0.3	0.0	-0.1
Max. diff. ^c		-0.8	-0.6	-1.4	+0.5		+0.7	-0.3	-0.4	+0.9	+0.7		-1.4	-1.4	-0.6	-1.1	+0.7		-1.3	-0.4	+0.8	-0.6	-1.0
Institute		13.4	12.7	12.5	12.3		12.7	13.3	12.9	11.4	13.4		13.0	13.2	12.5	12.6	12.6		11.5	12.4	12.6	13.1	12.8
Mill		13.1	12.6	12.5	12.1		12.6	12.9	12.9	11.1	12.6		12.8	12.7	12.3	12.4	12.4		11.2	12.1	12.3	12.9	13.0
Av. diff. ^b		-0.3	-0.1	0.0	-0.2		-0.1	-0.4	0.0	-0.3	-0.8		-0.2	-0.5	-0.2	-0.2	-0.2		-0.3	-0.3	-0.3	-0.2	+0.2
Max. diff. ^c		-0.5	-0.2	-0.3	-0.4		-0.4	-0.6	-0.3	-0.4	-1.4		-0.3	-0.8	-0.4	-0.5	-0.5		-0.5	-0.4	-0.6	-0.4	+0.6
Institute		115	113	112	113		110	113	108	111	111		110	113	113	112	108		108	117	103	101	113
Mill		114	111	111	112		109	116	106	115	102		109	111	115	109	107		109	119	105	106	116
Av. diff. ^b		-1	-2	-1	-1		-1	+3	-2	+4	-9		-1	-2	+2	-3	-1		+1	+2	+2	+5	+3
Max. diff. ^c		-5	-7	-8	-7		-4	+8	-5	+10	-14		-4	-8	+3	-8	+3		+5	+5	+6	+13	+9
Institute		298	337	363	311		350	374	360	324	291		372	327	353	326	314		371	324	301	326	299
Mill		291	330	--	289		352	--	336	313	312		404	330	321	331	289		346	303	301	338	266
Av. diff. ^b		-7	-7	--	-22		+2	--	-24	-11	+21		+32	+3	-32	+5	-25		-25	-21	0	+12	-33
Max. diff. ^c		-36	-28	--	-53		+36	--	-38	-14	+61		+70	+25	-50	+22	-43		-45	-31	+16	+31	-53
Institute		359	393	412	370		401	376	374	366	351		418	384	400	385	369		419	379	350	384	351
Mill		370	390	--	348		399	--	372	352	376		436	382	361	406	364		402	376	357	407	352
Av. diff. ^b		+11	-3	--	-22		-2	--	-2	-14	+25		+18	-2	-39	+21	-5		-17	-3	+7	+23	+1
Max. diff. ^c		+34	-24	--	-57		-22	--	+20	-21	+51		+46	-41	-51	+35	-40		-28	-16	+18	+40	+30

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

^b Average difference is the difference between the Institute mill average and the mill average based on mill test data.

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

TABLE XXVIII
COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR OCTOBER AND NOVEMBER, 1963
(Average Difference, Per Cent)

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

TABLE XXIX
SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS FOR OCTOBER AND NOVEMBER, 1963^a

		Average Percentage Difference Between Institute and Mill Test Results									
		+0.5	+1	+2	+3	+4	+5	+7.5	+10	+11	
Basis weight	Number of mills	8	16	18	19						
	Percentage of mills	42.1	84.2	94.7	100.0						
Caliper	Number of mills	2	4	14	17	18	18	19			
	Percentage of mills	10.5	21.1	73.7	89.5	94.7	94.7	100.0			
Bursting strength	Number of mills	0	7	13	16	17	18	18	19		
	Percentage of mills	0.0	36.8	68.4	84.2	89.5	94.7	94.7	100.0		
Tearing strength, in	Number of mills	1	3	6	7	8	8	13	16	17	
	Percentage of mills	5.9	17.6	35.3	41.2	47.1	47.1	76.5	94.1	100.0	
Tearing strength, cross	Number of mills	4	7	8	9	12	13	16	17		
	Percentage of mills	23.5	41.2	47.1	52.9	70.6	76.5	94.1	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

October and November, 1963

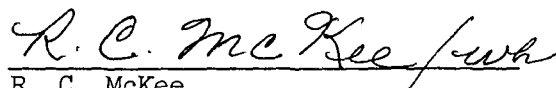
Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A ^a						
B	50	73	48-96	50	73	48-96
C	50	73	24	50	73	24
D	----	----	----	50	72-73	24-264
E ^a	33-34	77-78	8	48-52	71-73	16
F ^a						
G	----	----	----	50	73	24
H	----	----	----	52-60	72	1-2
I	----	----	----	50	73	24
J	50-62	72-74	24	49-62	72-74	24
K ^a	50	72	24	----	----	----
L ^a						
M	----	----	----	50	73	48
N	50	73	24	50	73	24
O	50	72-73	24-240	----	----	----
P	----	----	----	55	71-72	----
Q ^a	30-35	73	48	50	73	48
S ^a						
T	----	----	----	44-76	42-75	48
U	30-38	84-86	0.5	50	70-73	24
V	50	71-76	3-96	50	71-76	3-48
W	50	70-72	120	50	70-72	120
X	----	----	----	30-62	68-85	----

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

THE INSTITUTE OF PAPER CHEMISTRY



W. N. Hubert, Research Aide



R. C. McKee
Senior Research Associate
Chairman, Container Section