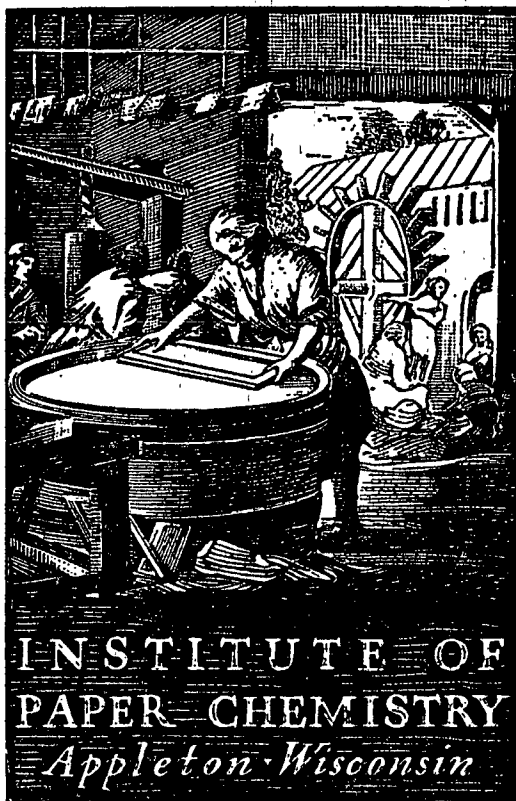




**CONTINUOUS EVALUATION OF
CORRUGATING MEDIUM**

Project 1108-17

Report 117

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

February 1, 1966

CODE LETTERS FOR PROJECT 1108-17
Report 117

<u>Company - Mill</u>	<u>Machine No.</u>	<u>Code Letter</u>
The Chesapeake Corporation - West Point	1	--
Container Corporation of America - Circleville	5	L
Continental Can Company - Hopewell	1	AA
- Hodge	1	W
Crown Zellerbach Corporation - Baltimore	1	Y
- Baltimore	2	E
- Bogalusa	4	N
- Lebanon	1	--
- Lebanon	2	S
Hoerner Boxes, Inc. - Ontonagon	1	Q
International Paper Company - Bastrop	1	C
- Bastrop	2	J
- Georgetown	1	F
The Mead Corporation - Harriman	1	B
- Knoxville	1	M
- Lynchburg	2	R
- Sylva	1	I
- Sylva	2	G
Olin Mathieson Chemical Corporation - West Monroe	1	U
- West Monroe	2	P
Owens-Illinois, Inc. - Big Island	3	--
- Tomahawk	1	A
- Tomahawk	2	T
- Tomahawk	3	D
Packaging Corporation of America - Filer City	1	O
- Filer City	2	K
St. Joe Paper Company - Port St. Joe	1	--
St. Regis Container Corporation - Coshocton	1	--
Union Bag-Camp Paper Corporation - Savannah	2	H
- Monroe	2	V
Waldorf Paper Products Company - St. Paul	5	X
West Virginia Pulp & Paper Company - Covington	6	--
- Covington	7	--
- Charleston	--	--
- Williamsburg	1	Z
- Williamsburg	2	--
Weyerhaeuser Company-N.C. Div. - Plymouth	3	BB

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
SUMMARY OF CURRENT MACHINE AVERAGES	3
GRAPHICAL PRESENTATIONS	4
SUMMARY OF TEST RESULTS FOR INDIVIDUAL MACHINES	6
DISCUSSION OF RESULTS	21
INSTITUTE AND MILL CONCORRA FLAT CRUSH TEST RESULTS	23

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS EVALUATION OF CORRUGATING MEDIUM

INTRODUCTION

As requested by the Technical Division of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous evaluation of corrugating medium have been prepared by The Institute of Paper Chemistry on a bimonthly instead of monthly basis since August 1, 1961. The current report presents results obtained during the months of December, 1965 and January, 1966, on 169 rolls of corrugating medium representing the production of twenty-eight machines. Each of these 169 rolls of corrugating medium was evaluated for basis weight, caliper, Concora flat crush (conditioned after fluting), H. and D. flat crush on single-faced board, and runnability. The evaluation of runnability was initiated by corrugating each roll under standardized conditions on the Institute's corrugator into A-flute board at 600 feet per minute with minimum tension and recording the draw factor at this condition if the roll ran satisfactorily. If unsatisfactory runnability occurred at this speed, the corrugator was slowed down in increments of 25 f.p.m. until satisfactory runnability was obtained, i.e., no ruptured flutes. In this latter case the draw factor was recorded for the highest speed below 600 f.p.m. at which the roll ran satisfactorily. If the medium fabricated satisfactorily at 600 f.p.m. with minimum tension, further runs were made at higher tensions to determine when cracking occurred. The higher tensions used were 0.5, 1.0 and 1.5 lb. per inch. Flat crush was determined on the single-faced board obtained at a speed of 600 f.p.m. with minimum tension. The flat crush results, in addition to supplying information about quality, provide data which may be used by each participant to evaluate the relationship between Concora flat crush and combined board flat crush.

For each participating machine, test data for the current period are shown in Table I and presented graphically in Fig. 1 to 4. A tabulation of the number of rolls and type of medium evaluated is also given in Table I for each machine. The current machine test averages given in Table I are the means for each test property of the averages obtained on all rolls of corrugating medium evaluated from a given machine during the current period. In addition to the current machine test averages, Table I also presents the current F.K.I. averages, cumulative F.K.I. averages, and the F.K.I. indexes. The current F.K.I. average for each test property is the mean of the current machine averages for all machines participating in the study during a given period (excluding the current machine averages based on the evaluation of fewer than three rolls of corrugating medium as requested by the Technical Division). The cumulative F.K.I. average for each test property is the mean of the current F.K.I. averages for the previous twelve-month period excluding the average for the current period. The F.K.I. index for each test property is obtained as follows:

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

The F.K.I. index for each test property provides a ready means of comparing the current quality with previous results. An index greater than 100% indicates that current quality is higher than the average result for the previous twelve periods; an index below 100% indicates that current quality is lower than the average result for the previous twelve periods.

The test results obtained on the rolls submitted from the production of individual machines during the current period are shown in Tables II through XXIX for Machines A through Z and Machines AA and BB, respectively. The maximum, minimum and average results obtained on each roll are shown for all test properties

TABLE I
SUMMARY OF CURRENT MACHINE AVERAGES

December, 1965 and January, 1966

Mill Code	No. of Rolls	Type of Medium	Basis Weight, lb.	Caliper, points	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.
A	8	Semichemical	27.0	10.2	37.9	34.0
B	8	Semichemical	27.5	10.7	32.8	29.6
C	5	Semichemical	27.2	10.2	40.0	36.8
D	8	Semichemical	27.4	11.1	35.8	30.9
E	8	Bogus	27.1	10.0	36.3	32.5
F	2	Semichemical	Note ^a	--	--	--
G	1	Semichemical	Note ^a	--	--	--
H	7	Semichemical	26.3	9.0	34.4	30.2
I	1	Semichemical	Note ^a	--	--	--
J	5	Semichemical	26.5	10.5	37.6	35.1
K	7	Semichemical	26.3	9.9	31.0	27.5
L	8	Semichemical	27.3	10.5	32.4	31.7
M	8	Semichemical	25.8	11.4	32.7	29.9
N	5	Semichemical	27.1	10.5	35.6	33.6
O	7	Semichemical	26.4	10.2	30.7	27.9
P	2	Semichemical	Note ^a	--	--	--
Q	8	Semichemical	27.7	10.6	36.1	31.6
R	10	Semichemical	26.5	10.4	34.5	29.8
S	6	Semichemical	26.4	9.8	33.6	31.3
T	8	Semichemical	26.1	10.6	36.0	32.5
U	2	Semichemical	Note ^a	--	--	--
V	8	Bogus	28.5	12.0	33.4	29.0
W	4	Semichemical	26.4	10.1	34.8	32.4
X	1	Semichemical	Note ^a	--	--	--
Y	8	Bogus	27.6	10.2	35.5	31.3
Z	8	Semichemical	26.5	11.0	31.4	29.6
AA	9	Semichemical	28.0	10.9	35.9	32.0
BB	<u>7</u>	Semichemical	26.7	10.7	37.2	33.8

Total 169

Current F.K.I. average	26.9	10.5	34.8	31.5
Cumulative F.K.I. average	27.0	10.3	35.3	32.1
F.K.I. index, %	99.7	101.6		

^aCurrent machine average has been omitted in compliance with the Technical Division's request that current machine averages based on evaluations of fewer than three rolls of medium should be excluded from the summary table and from the calculation of the current F.K.I. averages.

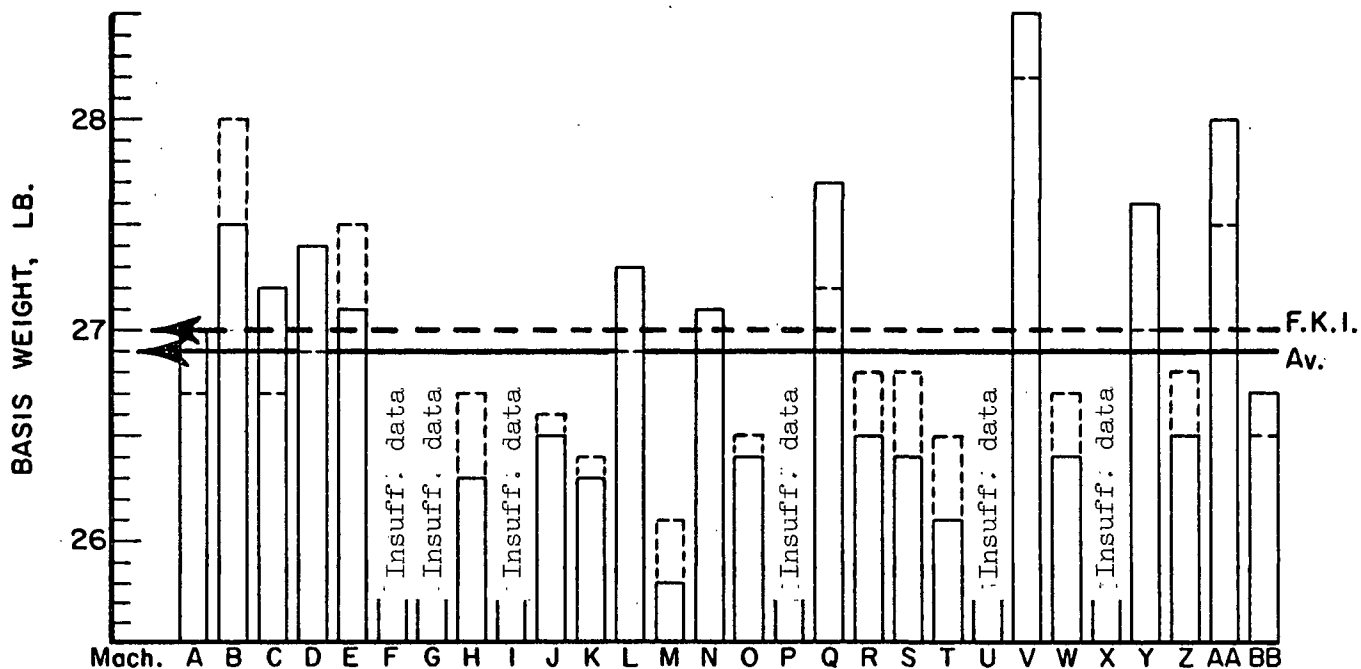


Figure 1. Comparison of Basis Weight Results

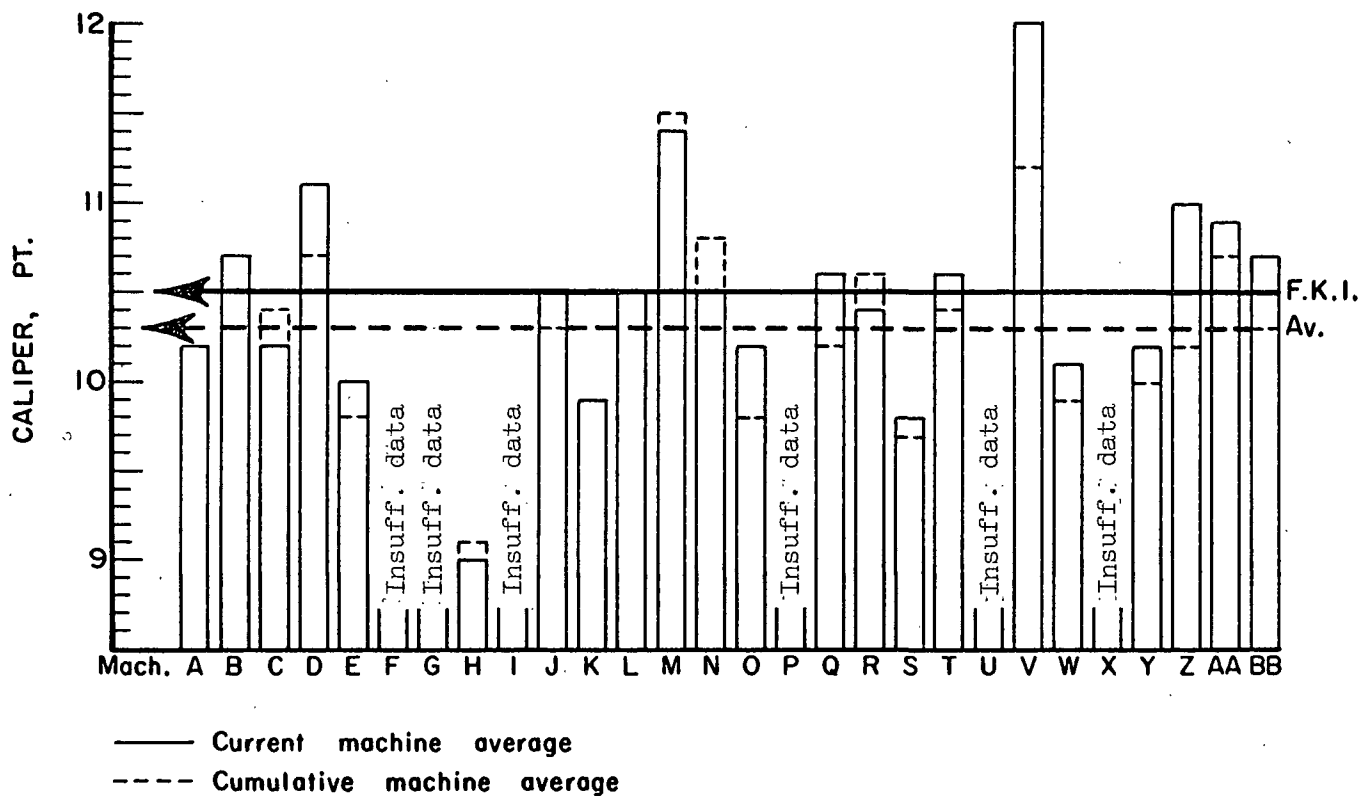


Figure 2. Comparison of Caliper Results

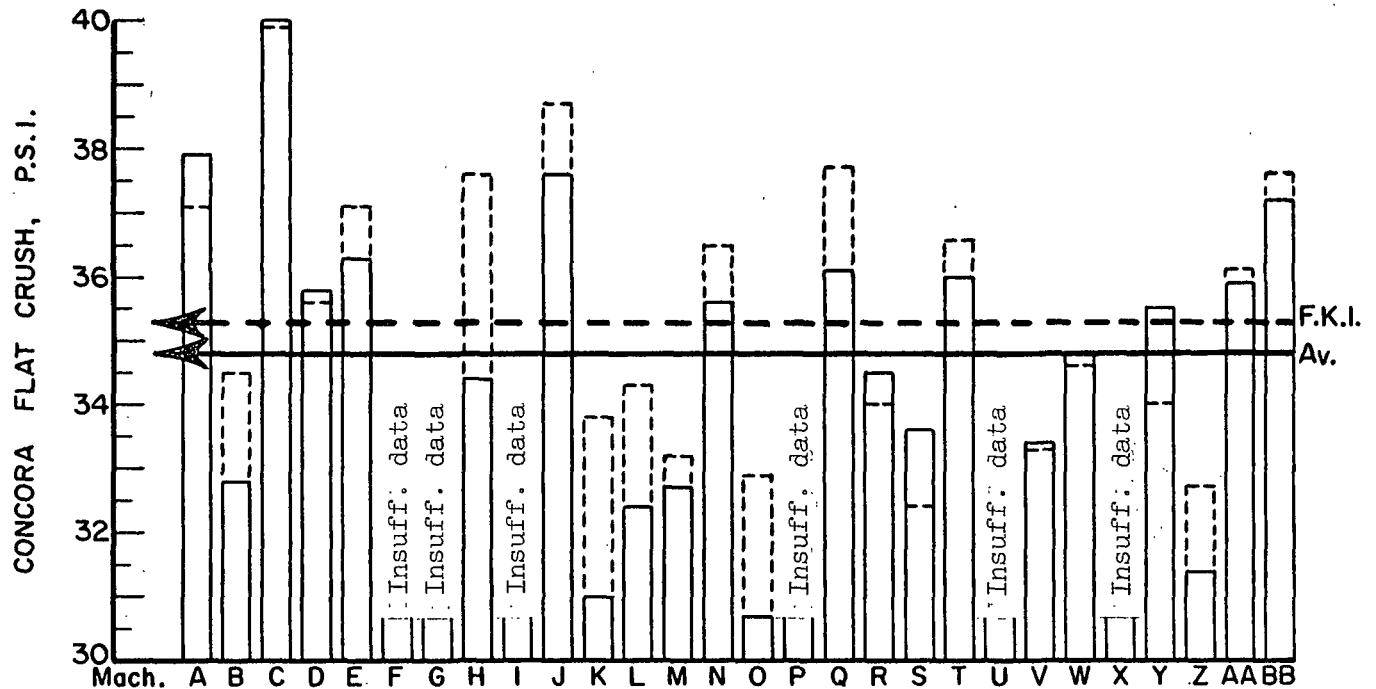


Figure 3. Comparison of Concora Flat Crush Results

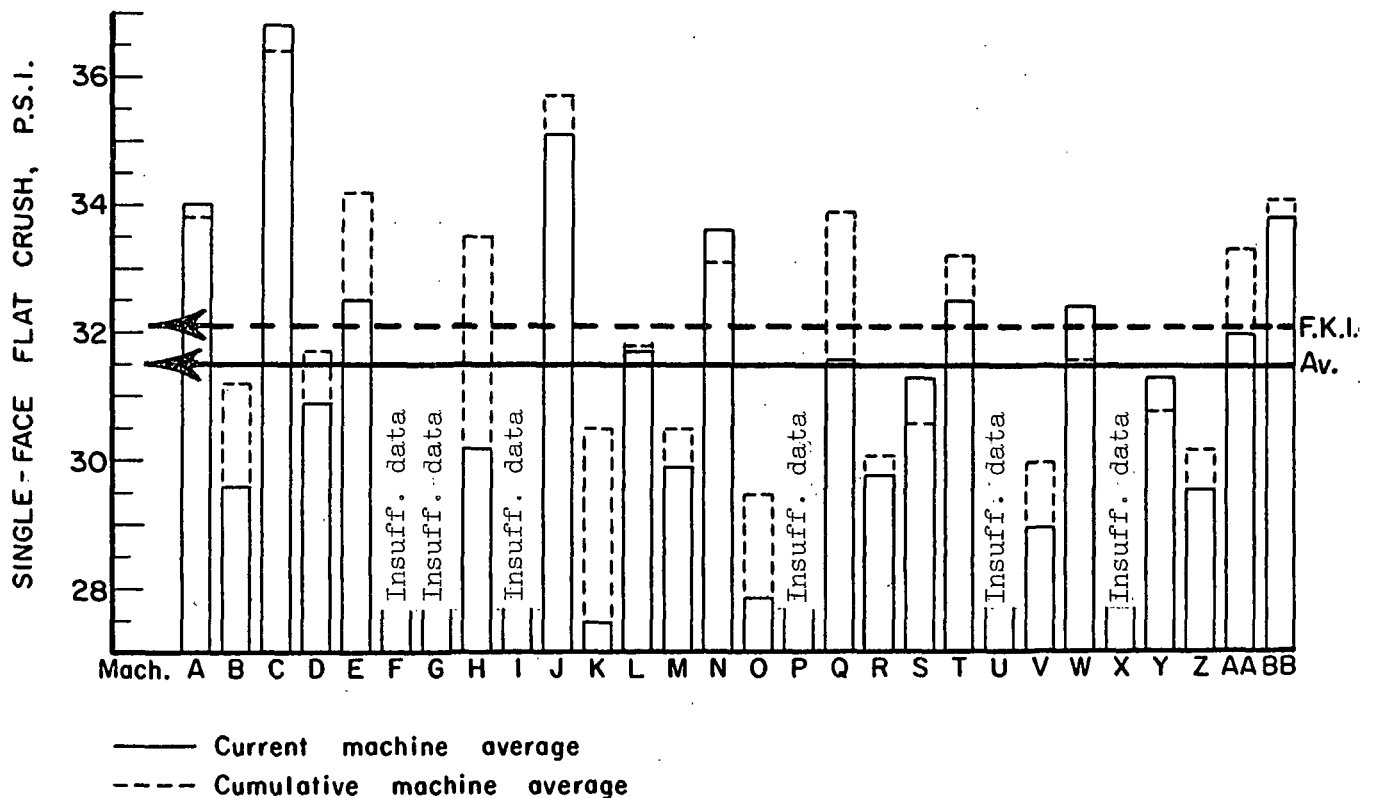


Figure 4. Comparison of Single-Face Flat Crush Results

TABLE II
SUMMARY OF TEST RESULTS FOR MACHINE A
December, 1965 and January, 1966
(Type of medium: semichemical)

Code	Date Made	Date Received	Mill' Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a	draw ^b factor		
					Max.	Min.	Max.	Min.	Max.	Min.				
A-1	12-14-65	12-28-65	--	27.3	10.5	10.1	10.3	40.2	37.8	39.1	32.6	33.6	1/2	1.561
A-2	12-15-65	12-28-65	--	26.5	10.2	9.9	10.1	38.4	34.2	36.4	33.2	34.0	1	1.565
A-3	12-17-65	12-28-65	--	26.2	10.8	9.9	10.1	40.2	36.0	37.3	30.6	32.0	1-1/2	1.565
A-4	12-18-65	12-28-65	--	27.6	10.5	10.1	10.3	39.0	36.6	37.6	33.4	34.6	1/2	1.564
A-5	1 - 4-66	1 - 24-66	--	26.9	10.3	10.0	10.1	40.2	37.2	38.8	37.0	35.5	1-1/2	1.570
A-6	1 - 5-66	1 - 24-66	--	27.1	10.8	10.3	10.5	39.0	37.2	38.3	36.6	34.9	1	1.569
A-7	1-14-66	1 - 24-66	--	26.8	10.5	10.0	10.2	40.8	34.8	38.0	34.4	33.6	1-1/2	1.574
A-8	1-18-66	1 - 24-66	--	27.4	10.2	10.0	10.1	39.0	36.6	37.7	35.4	33.7	1-1/2	1.565
Current machine average				27.0			10.2			37.9		34.0		1.567
Cumulative machine average				26.7			10.2			37.1		33.8		
Machine factor, %				101.1			100.0			102.2		100.4		
Machine index, %				100.0			99.0			107.3		105.8		

TABLE III
SUMMARY OF TEST RESULTS FOR MACHINE B
December, 1965 and January, 1966
(Type of medium: semichemical)

B-1	11-27-65	12-10-65	1460	26.5	10.8	9.5	10.2	30.6	29.4	29.9	28.8	27.0	28.2	1	1.559
B-2	11-27-65	12-10-65	1461	26.9	11.0	10.0	10.2	31.8	28.8	30.1	30.2	28.0	29.3	1 ^c	1.565
B-3	12-10-65	12-20-65	1468	29.4	11.9	11.2	11.7	40.8	36.0	38.8	34.0	31.8	33.2	Note ^c	1.548
B-4	12-10-65	12-20-65	1469	28.9	11.7	11.1	11.4	37.2	34.2	35.8	33.0	30.4	32.0	Note ^c	1.553
B-5	12-14-65	12-21-65	1476	27.1	11.6	10.3	10.9	34.2	28.8	31.3	29.4	27.0	28.1	Note ^d	1.550
B-6	12-14-65	12-21-65	1477	26.7	11.0	10.1	10.6	33.0	29.4	31.4	29.0	26.4	27.6	Min.	1.550
B-7	12-27-65	1 - 10-66	1484	27.4	10.8	10.3	10.6	34.8	28.8	32.2	28.8	27.4	28.1	Min. ^e	1.538
B-8	12-27-65	1 - 10-66	1485	27.4	10.7	9.5	10.2	34.8	30.6	33.2	31.0	30.0	30.5	Note ^e	1.541
Current machine average				27.5			10.7			32.8		29.6			1.550
Cumulative machine average				28.0			10.7			34.5		31.2			
Machine factor, %				98.4			100.0			95.3		94.8			
Machine index, %				102.0			104.0			92.9		92.2			

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 350 f.p.m.

^dMaximum speed at which this roll could be corrugated with minimum tension was 550 f.p.m.

^eMaximum speed at which this roll could be corrugated with minimum tension was 475 f.p.m.

TABLE IV

SUMMARY OF TEST RESULTS FOR MACHINE C
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a		draw factor ^b
					Max.	Min.	Max.	Min.	Max.	Min.	1	1/2	
C-1	11-29-65	12- 9-65	750	27.2	10.5	10.0	10.2	42.0	39.8	37.6	38.1	1/2	1.560
C-2	11-29-65	12- 9-65	751	27.4	10.6	9.8	10.1	43.2	40.6	36.4	37.2	1/2	1.563
C-3	12-22-65	1- 5-66	752	26.8	10.7	9.7	10.2	43.2	41.0	36.0	37.4	1	1.562
C-4	12-31-65	1-11-66	753	28.2	11.0	10.2	10.6	40.2	38.5	36.0	36.8	1/2	1.554
C-5	1- 3-66	1-11-66	754	26.5	10.4	9.8	10.1	41.4	40.1	35.6	34.4	1	1.564
Current machine average													
				27.2	10.2		40.0		36.8		36.8		1.561
Cumulative machine average				26.7	10.4		39.9		36.4				
Machine factor, %				102.2	98.9		100.3		101.0				
Machine index, %				100.9	99.4		113.2		114.6				

TABLE V

SUMMARY OF TEST RESULTS FOR MACHINE D
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a		draw factor ^b
					Max.	Min.	Max.	Min.	Max.	Min.	1	1/2	
D-1	11-27-65	12-28-65	--	26.8	11.2	10.8	11.0	39.6	37.3	34.6	32.3	Min.	1.556
D-2	12-22-65	1- 7-66	--	28.0	11.5	11.0	11.2	41.4	36.8	36.4	34.5	1/2	1.562
D-3	12-28-65	1- 7-66	--	26.7	11.9	10.8	11.1	36.6	35.6	32.6	31.8	1/2	1.569
D-4	1- 6-66	1-24-66	--	28.3	11.8	11.0	11.4	38.4	37.0	32.8	32.2	Min.	1.557
D-5	1- 7-66	1-24-66	--	28.4	12.2	10.7	11.2	38.4	36.7	33.0	32.4	Min.	1.558
D-6	1-18-66	1-24-66	--	27.4	11.4	10.7	11.0	36.0	34.6	29.6	27.8	1	1.568
D-7	1-19-66	1-24-66	--	26.8	11.1	10.5	10.8	37.2	33.8	28.8	26.4	1/2	1.569
D-8	1-20-66	1-24-66	--	27.1	11.5	10.8	11.1	39.6	34.3	28.8	27.3	1/2	1.569
Current machine average													
				27.4	11.1		35.8		30.9		30.9		1.564
Cumulative machine average				26.9	10.7		35.6		31.7				
Machine factor, %				101.8	103.7		100.4		97.3				
Machine index, %				101.6	107.6		101.3		96.1				

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

TABLE VI
SUMMARY OF TEST RESULTS FOR MACHINE E
December, 1965 and January, 1966

(Type of medium: bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a		draw factor ^b	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
E-1	11-17-65	12-14-65	400	26.3	10.5	9.2	9.8	35.4	31.2	34.0	31.6	33.4	1-1/2	1.564
E-2	11-18-65	12-14-65	401	26.6	10.2	9.1	9.7	43.2	34.8	39.6	34.4	35.6	1-1/2	1.560
E-3	11-22-65	12-14-65	402	28.7	11.0	9.7	10.2	44.4	39.6	41.3	37.6	35.4	1-1/2	1.568
E-4	12-1-65	12-14-65	403	27.3	10.4	9.2	9.9	39.6	34.2	36.1	32.8	28.8	1-1/2	1.559
E-5	12-14-65	1-10-66	404	27.4	10.4	9.0	9.8	40.2	33.6	36.0	32.6	30.4	1-1/2	1.564
E-6	12-21-65	1-10-66	405	26.5	10.5	9.4	10.2	39.0	30.6	35.2	32.4	29.2	1-1/2	1.562
E-7	12-22-65	1-10-66	406	27.3	11.0	10.0	10.5	35.4	31.2	33.2	31.4	30.4	1-1/2	1.565
E-8	1-3-66	1-10-66	407	26.8	10.2	9.5	9.9	38.4	32.4	35.4	30.6	29.0	1-1/2	1.563
Current machine average				27.1			10.0		36.3		32.5			1.563
Cumulative machine average				27.5			9.8		37.1		34.2			
Machine factor, %				98.7			101.8		97.9		94.8			
Machine index, %				100.4			97.0		102.9		101.1			

TABLE VII
SUMMARY OF TEST RESULTS FOR MACHINE F
December, 1965 and January, 1966

(Type of medium: semichemical)

F-1	11-15-65	1-12-66	614	27.8	10.5	9.9	10.3	37.8	31.8	35.3	33.6	33.0	33.2	Min.	1.553
F-2	11-18-65	1-12-66	615	28.1	10.3	10.0	10.1	41.4	38.4	39.5	39.0	37.6	38.3	1-1/2	1.563
Current machine average				27.9			10.2		37.4		35.8		35.8		1.558
Cumulative machine average				27.6			10.4		40.7		36.9		36.9		
Machine factor, %				101.1			97.9		91.9		96.8		96.8		
Machine index, %				103.5			98.9		105.8		111.3		111.3		

TABLE VIII
SUMMARY OF TEST RESULTS FOR MACHINE G
December, 1965 and January, 1966

(Type of medium: semichemical)

G-1	11-17-65	11-29-65	38	27.1	10.5	10.0	10.2	36.0	33.6	35.3	30.6	28.6	29.7	Note ^c	1.557
Current machine average				27.1			10.2		35.3		35.3		29.7		1.557
Cumulative machine average				27.0			10.3		33.8		30.7		30.7		
Machine factor, %				100.1			99.1		104.4		96.9		96.9		
Machine index, %				100.3			99.1		100.0		92.5		92.5		

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 475 f.p.m.

TABLE IX
SUMMARY OF TEST RESULTS FOR MACHINE H
December, 1965 and January, 1966
(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M	ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		lb./in. ^a	Runnability, draw ^b factor			
						Max.	Min.	Max.	Min.	Max.	Min.					
H-1	11-20-65	11-29-65	664	26.5		9.6	8.8	9.0	37.8	34.2	36.1	31.4	30.6	30.9	1	1.566
H-2	11-29-65	12- 9-65	665	26.6		9.2	8.7	9.0	37.2	30.0	33.0	32.4	29.6	31.4	1-1/2	1.569
H-3	12- 9-65	12-22-65	666	25.8		9.0	8.4	8.8	36.6	35.4	35.9	30.8	29.6	30.2	1-1/2	1.572
H-4	12-13-65	12-29-65	667	25.6		9.3	8.1	8.7	35.4	32.4	33.5	31.4	29.4	30.5	1-1/2	1.575
H-5	12-18-65	12-29-65	668	24.7		9.1	8.1	8.6	34.2	30.6	31.9	28.2	27.0	27.6	1-1/2	1.576
H-6	1 - 5-66	1 -17-66	669	27.2		9.8	9.1	9.4	36.0	32.4	34.3	31.0	28.8	30.0	1-1/2	1.572
H-7	1 - 9-66	1 -18-66	670	27.4		10.0	8.5	9.2	37.2	33.0	35.9	32.8	28.8	30.4	1-1/2	1.575
Current machine average				26.3				9.0			34.4			30.2		1.572
Cumulative machine average				26.7				9.1			37.6			33.5		
Machine factor, %				98.3				98.6			91.3			90.0		
Machine index, %				97.2				87.0			97.3			94.0		

TABLE X
SUMMARY OF TEST RESULTS FOR MACHINE I
December, 1965 and January, 1966
(Type of medium: semichemical)

I-1	11-17-65	11-29-65	46	27.6		10.8	10.0	10.4	34.8	30.6	32.9	30.4	29.2	29.6	Min.	1.552
Current machine average				27.6				10.4						29.6		1.552
Cumulative machine average				27.4				10.3						30.3		
Machine factor, %				100.6				100.6						98.0		
Machine index, %				102.1				100.4						92.3		

^aMaximum tension at 600 f.p.m.
^b600 f.p.m., minimum tension.

TABLE XI

SUMMARY OF TEST RESULTS FOR MACHINE J
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in. ^a	draw factor ^b
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
J-1	11-23-65	12-2-65	434	26.7	12.0	8.5	10.4	39.6	35.4	38.2	36.4	35.2	35.7	1/2	1.558
J-2	12-15-65	1-5-66	435	26.5	11.1	9.8	10.4	39.0	34.8	36.7	36.0	33.0	34.4	1/2	1.559
J-3	12-17-65	1-5-66	436	26.5	11.4	10.5	10.9	40.8	34.2	36.1	35.4	33.4	34.8	1/2	1.558
J-4	12-20-65	1-5-66	437	26.1	10.4	9.7	10.1	41.4	36.6	37.9	36.0	34.8	35.3	1/2	1.563
J-5	12-22-65	1-5-66	438	26.8	11.3	10.0	10.7	40.8	37.8	39.2	36.4	34.2	35.5	1/2	1.561
Current machine average				26.5			10.5			37.6			35.1		1.560
Cumulative machine average				26.6			10.3			38.7			35.7		
Machine factor, %				99.7			102.0			97.3			98.5		
Machine index, %				98.2			101.9			106.5			109.4		

TABLE XII

SUMMARY OF TEST RESULTS FOR MACHINE K
December, 1965 and January, 1966

(Type of medium: semichemical)

K-K-1	12- 1-65	12- 7-65	192	26.6	10.9	9.9	10.3	31.8	27.6	30.4	27.8	26.0	27.3	1-1/2	1.572	
K-K-2	12- 8-65	12-15-65	193	26.2	10.6	9.5	10.0	34.2	28.8	31.2	28.4	26.6	27.3	1-1/2	1.576	
K-K-3	12-14-65	12-17-65	194	26.0	10.0	9.2	9.7	34.8	30.0	33.0	28.0	27.0	27.6	1/2	1.563	
K-K-4	12-17-65	12-22-65	195	26.2	9.9	9.3	9.7	31.8	28.2	29.8	28.0	26.4	27.2	1	1.568	
K-K-5	12-26-65	12-29-65	196	26.4	10.7	9.9	10.2	32.4	28.2	29.5	28.2	25.6	26.9	1/2	1.568	
K-K-6	1 - 1-66	1 - 5-66	197	25.9	10.0	8.8	9.5	32.4	31.2	31.8	28.8	27.2	28.0	1-1/2	1.576	
K-K-7	1 -13-66	1 -19-66	198	26.6	11.0	9.1	10.0	34.8	30.0	31.4	29.0	27.4	28.4	1-1/2	1.580	
Current machine average															27.5	1.572
Cumulative machine average															30.5	
Machine factor, %															90.2	
Machine index, %															85.7	

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

TABLE XIII

SUMMARY OF TEST RESULTS FOR MACHINE L
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a	draw factor ^b			
					Max.	Min.	Av.	Max.	Min.	Av.			Max.	Min.	Av.
L-1	11-16-65	12-13-65	110	26.9	11.3	10.4	10.9	32.4	31.2	32.0	32.4	30.6	31.4	Min.	1.560
L-2	11-16-65	12-13-65	111	26.8	11.4	10.2	11.0	32.4	30.6	31.3	32.0	29.4	31.0	1/2	1.556
L-3	11-16-65	12-13-65	112	27.1	11.1	9.9	10.5	34.8	31.2	32.9	32.8	30.0	31.7	Min.	1.557
L-4	11-16-65	12-13-65	113	26.8	11.4	10.1	10.8	34.2	28.8	32.0	33.4	31.4	31.9	Min.	1.554
L-5	12-22-65	1-10-66	114	27.1	10.7	9.6	10.1	34.8	30.6	31.8	32.6	31.4	31.9	1	1.564
L-6	12-22-65	1-10-66	115	27.2	10.6	9.3	9.8	34.8	30.6	32.4	32.4	30.8	32.0	1	1.564
L-7	12-23-65	1-10-66	116	27.9	10.9	10.0	10.4	35.4	32.4	34.3	32.4	31.4	32.0	1/2	1.560
L-8	12-23-65	1-10-66	117	28.2	10.8	10.1	10.4	34.2	31.2	32.6	33.4	31.2	32.1	1/2	1.561
Current machine average				27.3			10.5			32.4			31.7		1.560
Cumulative machine average				26.9			10.5			34.3			31.8		
Machine factor, %				101.2			100.0			94.5			99.7		
Machine index, %				100.9			101.5			91.8			98.8		

TABLE XIV

SUMMARY OF TEST RESULTS FOR MACHINE M
December, 1965 and January, 1966

(Type of medium: semichemical)

M-1	12- 6-65	12-14-65	239	26.0	13.0	11.1	11.8	39.6	32.4	31.6	29.4	30.6	1	1.565
M-2	12- 6-65	12-14-65	240	26.1	12.0	11.2	11.6	36.0	30.0	32.2	30.0	31.2	1	1.565
M-3	12-12-65	12-22-65	247	26.4	11.9	11.1	11.5	36.0	30.6	32.2	29.6	31.0	1	1.561
M-4	12-12-65	12-22-65	248	26.4	10.3	9.8	10.0	34.2	31.2	31.8	29.6	30.5	1	1.563
M-5	1 - 1-66	1 -11-66	255	25.2	12.0	11.0	11.4	31.8	26.4	29.6	26.8	28.3	1-1/2	1.567
M-6	1 - 1-66	1 -11-66	256	25.8	12.0	11.1	11.7	34.8	29.4	30.4	28.2	29.0	1-1/2	1.569
M-7	1 -12-66	1 -25-66	263	25.3	12.2	11.2	11.8	34.8	30.0	31.0	27.0	28.8	1-1/2	1.568
M-8	1 -12-66	1 -25-66	264	25.2	12.5	10.9	11.8	33.0	30.0	31.8	28.2	30.2	1-1/2	1.562
Current machine average				25.8			11.4					29.9		1.565
Cumulative machine average				26.1			11.5					30.5		
Machine factor, %				98.9			99.1					98.2		
Machine index, %				95.5			111.0					93.2		

^aMaximum tension at 600 f.p.m.
^b600 f.p.m., minimum tension.

TABLE XV

SUMMARY OF TEST RESULTS FOR MACHINE N
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in. ^a		draw factor ^b
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Min.	Max.	
N-1	11-10-65	12-10-65	26	26.7	10.9	10.2	10.6	38.4	36.0	37.6	37.6	34.2	35.8	1/2	1.560	
N-2	11-29-65	12-10-65	27	25.9	11.5	9.8	10.4	34.2	30.6	32.3	33.4	31.4	32.1	Min. ^c	1.556	
N-3	12-7-65	12-29-65	28	27.7	11.8	11.1	11.4	37.8	33.0	35.2	33.4	31.6	32.8	Note ^d	1.548	
N-4	12-14-65	12-29-65	29	28.4	10.7	10.1	10.3	39.0	34.8	36.7	37.0	34.4	35.2	Note	1.550	
N-5	12-21-65	1-17-66	30	27.0	9.9	9.0	9.6	39.6	34.2	36.4	33.8	31.0	32.3	Min.	1.557	
Current machine average																
Cumulative machine average																
Machine factor, %																
Machine index, %																
Current machine average																
Cumulative machine average																
Machine factor, %																
Machine index, %																

TABLE XVI

SUMMARY OF TEST RESULTS FOR MACHINE O
December, 1965 and January, 1966

(Type of medium: semichemical)

O-1	11-30-65	12-7-65	192	27.0	10.6	9.8	10.1	36.0	30.0	32.6	31.6	29.4	30.6	1-1/2	1.573
O-2	12-8-65	12-15-65	193	26.5	11.1	10.0	10.5	30.0	28.2	29.4	27.6	25.0	26.3	1-1/2	1.574
O-3	12-14-65	12-17-65	194	26.4	10.8	9.9	10.2	36.0	27.0	31.8	29.4	28.8	29.1	1/2	1.563
O-4	12-18-65	12-22-65	195	26.3	9.9	9.1	9.5	33.6	28.8	31.4	31.0	29.8	30.4	1-1/2	1.567
O-5	12-27-65	12-29-65	196	25.7	10.1	9.8	10.0	30.0	26.4	28.2	26.4	24.6	25.2	1-1/2	1.572
O-6	1-1-66	1-5-66	197	26.7	11.1	10.3	10.7	30.6	27.0	28.3	26.0	23.6	24.9	1-1/2	1.573
O-7	1-13-66	1-19-66	198	26.5	10.7	10.0	10.4	36.0	31.2	33.4	30.4	27.6	29.0	1-1/2	1.574
Current machine average															
Cumulative machine average															
Machine factor, %															
Machine index, %															
1.571															
27.9															
29.5															
94.6															
87.0															

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 400 f.p.m.

^dMaximum speed at which this roll could be corrugated with minimum tension was 450 f.p.m.

TABLE XVII

SUMMARY OF TEST RESULTS FOR MACHINE P
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a	draw ^b factor
					Max.	Min.	Av.	Max.	Min.	Av.		
P-1	11-26-65	12-10-65	105	29.4	10.5	10.2	10.3	32.4	28.8	30.2	25.3	1.564
P-2	11-26-65	12-10-65	106	28.4	10.4	10.0	10.2	29.4	25.8	27.4	24.9	1.569
Current machine average												
Cumulative machine average				28.9			10.3			28.8	25.1	1.557
Machine factor, %				--			--			--	--	
Machine index, %				107.0			100.0			81.5	78.1	

TABLE XVIII

SUMMARY OF TEST RESULTS FOR MACHINE Q
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a	draw ^b factor
					Max.	Min.	Av.	Max.	Min.	Av.		
Q-1	11-23-65	12-1-65	58	27.9	10.5	9.4	10.0	42.6	36.0	39.2	35.4	1.562
Q-2	11-29-65	12-6-65	59	27.7	11.6	10.9	11.2	40.2	33.6	37.0	33.0	1.564
Q-3	12-7-65	12-13-65	60	27.8	11.0	10.1	10.5	40.2	34.2	36.6	31.7	1.557
Q-4	12-13-65	12-20-65	61	27.8	11.0	10.2	10.6	40.8	36.0	38.3	32.8	1.556
Q-5	12-21-65	12-27-65	62	27.0	10.6	9.9	10.2	34.8	30.6	33.4	27.8	1.561
Q-6	12-31-65	1-7-66	63	27.0	11.3	10.3	10.8	37.2	32.4	34.8	29.0	1.561
Q-7	1-6-66	1-11-66	64	27.7	11.2	10.3	10.7	34.8	31.8	34.1	30.8	1.571
Q-8	1-11-66	1-17-66	65	28.3	11.1	10.3	10.9	39.6	33.6	35.4	31.6	1.564
Current machine average												
Cumulative machine average				27.7			10.6			36.1	31.6	1.562
Machine factor, %				27.2			10.2			37.7	33.9	
Machine index, %				101.7			104.7			95.7	93.3	
				102.4			103.0			102.2	98.4	

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 225 f.p.m.

^dMaximum speed at which this roll could be corrugated with minimum tension was 550 f.p.m.

TABLE XIX

SUMMARY OF TEST RESULTS FOR MACHINE R
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a	draw factor ^b		
					Max.	Min.	Av.	Max.	Min.	Av.				
R-1	11-19-65	12-1-65	225	26.5	11.2	10.6	11.0	34.8	32.4	33.2	27.6	28.4	1-1/2	1.571
R-2	11-19-65	12-1-65	226	26.4	11.2	10.6	10.9	35.4	31.2	33.5	26.0	27.5	1-1/2	1.574
R-3	11-24-65	12-3-65	233	26.6	10.8	10.0	10.5	37.8	33.6	35.8	29.0	29.8	1-1/2	1.570
R-4	11-24-65	12-3-65	234	26.5	10.9	10.3	10.6	37.2	34.2	35.0	28.2	29.0	1-1/2	1.566
R-5	12-26-65	1-4-66	241	25.7	10.3	9.2	10.0	35.4	30.6	33.1	27.6	29.4	1-1/2	1.566
R-6	12-26-65	1-4-66	242	25.9	10.0	9.3	9.8	36.6	29.4	32.0	30.0	31.2	1-1/2	1.569
R-7	1-10-66	1-20-66	249	27.4	10.5	10.0	10.2	39.6	34.8	36.8	31.6	32.5	1-1/2	1.570
R-8	1-10-66	1-20-66	250	26.5	10.8	10.2	10.5	37.2	34.2	35.6	26.0	28.9	1-1/2	1.571
R-9	1-10-66	1-20-66	257	26.0	10.8	10.0	10.3	35.4	31.8	33.8	27.4	28.8	1-1/2	1.565
R-10	1-10-66	1-20-66	258	27.2	10.7	10.0	10.3	38.4	34.8	36.2	31.4	32.4	1-1/2	1.567
Current machine average				26.5			10.4			34.5		29.8		1.569
Cumulative machine average				26.8			10.6			34.0		30.1		
Machine factor, %				98.7			97.8			101.5		99.1		
Machine index, %				98.0			100.9			97.7		92.8		

TABLE XX

SUMMARY OF TEST RESULTS FOR MACHINE S
December, 1965 and January, 1966

(Type of medium: semichemical)

S-1	11-22-65	1-20-66	K-1	26.9	10.0	9.0	9.5	33.6	30.0	31.9	32.4	29.8	31.4	1-1/2	1.570
S-2	11-22-65	1-20-66	K-2	26.8	10.2	9.5	9.9	34.2	30.6	32.6	30.8	28.4	29.6	1	1.563
S-3	12-9-65	1-20-66	L-2	26.9	10.9	10.0	10.3	37.2	30.6	33.6	31.0	28.2	29.8	1-1/2	1.571
S-4	12-27-65	1-20-66	L-3	25.7	10.8	9.2	9.8	35.4	31.8	33.5	34.0	31.0	31.9	Note ^c	1.554
S-5	12-27-65	1-20-66	L-4	26.0	9.8	9.0	9.3	36.6	33.0	35.0	34.0	30.0	32.6	Note ^d	1.547
S-6	12-27-65	1-20-66	L-5	26.4	11.1	9.2	10.1	36.6	31.8	35.2	33.2	31.2	32.2	Min.	1.555
Current machine average															1.560
Cumulative machine average															31.3
Machine factor, %															30.6
Machine index, %															102.2
															97.3

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 400 f.p.m.

^dMaximum speed at which this roll could be corrugated with minimum tension was 475 f.p.m.

^aMaximum tension at 600 f.p.m.
^b600 f.p.m., minimum tension.

TABLE XXIII

SUMMARY OF TEST RESULTS FOR MACHINE V
December, 1965 and January, 1966

(Type of medium: bogus)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.			Concora Flat Crush, p.s.i.			Single-Face Flat Crush, p.s.i.			Runnability, lb./in. ^a	draw ^b factor
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.		
V-1	10-15-65	12-2-65	71	28.9	12.1	10.7	11.4	40.8	37.8	39.1	37.0	33.0	34.4	1-1/2	1.569
V-2	10-19-65	12-2-65	72	28.8	12.3	11.3	11.7	37.8	33.6	35.5	35.4	32.8	34.0	1-1/2	1.558
V-3	10-26-65	12-2-65	73	28.0	12.4	11.2	11.8	36.0	34.2	35.3	33.4	31.4	32.0	1-1/2	1.564
V-4	11-22-65	12-2-65	74	28.4	12.7	11.4	12.0	36.0	31.2	33.4	28.6	25.8	27.5	1-1/2	1.569
V-5	12-6-65	12-31-65	75	29.6	12.8	11.4	12.0	33.6	28.8	31.0	27.2	24.4	25.8	1-1/2	1.564
V-6	12-13-65	12-31-65	76	28.1	13.4	11.5	12.6	33.0	28.2	30.0	27.0	25.4	26.0	1-1/2	1.564
V-7	12-16-65	12-31-65	77	27.6	12.8	11.3	12.1	30.6	27.6	29.0	24.8	22.6	23.2	1-1/2	1.565
V-8	12-18-65	12-31-65	78	28.9	12.8	11.4	12.3	36.0	31.8	34.0	29.2	27.6	28.6	1-1/2	1.563
Current machine average				28.5			12.0			33.4			29.0		1.564
Cumulative machine average				28.2			11.2			33.3			30.0		
Machine factor, %				101.1			106.7			100.4			96.4		
Machine index, %				105.6			116.3			94.6			90.2		

TABLE XXIV

SUMMARY OF TEST RESULTS FOR MACHINE W
December, 1965 and January, 1966

(Type of medium: semichemical)

W-1	12-12-65	1-3-66	151	26.3	11.2	9.1	10.4	36.6	31.8	33.8	33.6	31.0	32.4	1	1.564
W-2	12-12-65	1-3-66	152	25.8	11.0	9.0	9.7	33.0	31.8	32.5	32.6	29.6	31.6	1-1/2	1.568
W-3	12-19-65	1-3-66	153	26.7	10.8	10.0	10.2	38.4	35.4	36.6	34.8	31.2	33.0	1-1/2	1.568
W-4	12-19-65	1-3-66	154	26.6	11.0	9.7	10.1	37.8	34.8	36.2	34.2	31.6	32.9	1-1/2	1.568
Current machine average				26.4	10.1		10.1		34.8		32.4		1.567		
Cumulative machine average				26.7	9.9		9.9		34.6		31.6				
Machine factor, %				98.6	101.8		100.5		98.5		102.6				
Machine index, %				97.7	97.9										

^aMaximum tension at 600 f.p.m.
^b600 f.p.m., minimum tension.

TABLE XXV

SUMMARY OF TEST RESULTS FOR MACHINE X
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, Av. lb./in. ^a		draw factor ^b		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.			
X-1	12-13-65	12-30-65	--	26.7	10.1	9.0	9.8	33.6	29.4	31.8	30.6	27.6	28.6	1/2	1.566
Current machine average															
				26.7			9.8			31.8			28.6	1.566	
Cumulative machine average				--			--			--			--		
Machine factor, %				--			--			--			--		
Machine index, %				99.1			95.2			90.0			89.1		

TABLE XXVI

SUMMARY OF TEST RESULTS FOR MACHINE Y
December, 1965 and January, 1966

(Type of medium: bogus)

Y-1	11-16-65	12-14-65	300	27.0	10.2	9.4	9.7	36.0	33.6	34.4	33.0	30.4	31.8	1-1/2	1.574
Y-2	11-18-65	12-14-65	301	27.2	10.5	9.5	10.0	37.8	34.2	35.6	35.0	29.4	32.2	1-1/2	1.565
Y-3	11-23-65	12-14-65	302	27.4	10.5	9.0	9.7	40.2	36.0	38.4	35.2	33.0	34.5	1-1/2	1.572
Y-4	12-1-65	12-14-65	303	29.0	11.5	10.0	10.7	39.0	37.2	38.0	33.6	29.8	31.8	1-1/2	1.577
Y-5	12-14-65	1-10-66	304	26.4	11.0	9.4	10.0	34.2	30.0	32.0	29.6	27.2	28.1	1-1/2	1.574
Y-6	12-15-65	1-10-66	305	28.7	11.3	10.0	10.7	43.2	42.0	42.6	37.2	33.6	35.4	1-1/2	1.572
Y-7	12-16-65	1-10-66	306	26.5	11.0	9.1	10.2	37.2	29.4	33.0	33.6	28.8	31.0	1-1/2	1.576
Y-8	1-3-66	1-10-66	307	28.9	11.3	10.0	10.6	31.8	28.2	29.9	26.4	24.2	25.3	1-1/2	1.576
Current machine average															
Cumulative machine average															
Machine factor, %															
Machine index, %															
				27.6			10.2			35.5			31.3		1.573
				27.0			10.0			34.0			30.8		
				102.5			101.8			104.4			101.7		
				102.3			98.9			100.5			97.4		

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

TABLE XXVII

SUMMARY OF TEST RESULTS FOR MACHINE Z
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.		Concora Flat Crush, p.s.i.		Single-Face Flat Crush, p.s.i.		Runnability, lb./in. ^a		draw ^b factor
					Max.	Min.	Max.	Min.	Max.	Min.	Av.	Min.	
Z-1	11-2-65	12-9-65	81	26.8	12.5	11.8	12.0	32.4	29.4	31.2	29.2	Min.	1.553
Z-2	11-11-65	12-9-65	82	26.0	10.2	9.8	10.0	31.2	28.2	29.8	28.5	1/2	1.563
Z-3	11-19-65	12-9-65	83	27.2	12.4	10.5	11.5	36.0	31.8	33.0	31.3	1/2	1.555
Z-4	11-29-65	12-9-65	84	26.6	10.6	10.2	10.4	33.0	29.4	31.1	30.7	1/2	1.556
Z-5	12-3-65	1-12-66	85	27.1	10.6	10.0	10.1	31.8	31.8	31.8	29.4	1/2	1.560
Z-6	12-9-65	1-12-66	86	26.2	12.0	11.0	11.7	31.8	28.8	30.5	29.4	Min.	1.554
Z-7	12-16-65	1-12-66	87	25.1	11.7	10.3	10.9	32.4	28.2	30.4	26.9	Min.	1.554
Z-8	12-23-65	1-12-66	88	26.8	12.7	10.8	11.7	36.6	31.8	33.2	31.4	1/2	1.558
Current machine average													
				26.5			11.0			31.4	29.6		
Cumulative machine average				26.8			10.2			32.7	30.2		
Machine factor, %				98.6			108.5			96.0	98.1		
Machine index, %				98.0			107.1			88.8	92.2		

^aMaximum tension at 600 f.p.m.
^b600 f.p.m., minimum tension.

TABLE XXVIII

SUMMARY OF TEST RESULTS FOR MACHINE AA
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.	Runnability, lb./in.	draw ^b factor ^a
					Max. Min. Av.	Max. Min. Av.	Max. Min. Av.	1b./in. a	
AA-1	11-9-65	12-8-65	529	27.6	10.7 9.7 10.1	40.8 37.8 39.5	35.6 33.6 34.7	1-1/2	1.571
AA-2	11-17-65	12-8-65	530	29.0	11.8 10.7 11.1	38.4 35.4 37.2	33.0 31.4 32.5	1	1.565
AA-3	11-24-65	12-8-65	531	28.9	11.8 11.2 11.3	36.6 31.2 34.8	33.6 28.8 31.8	1	1.567
AA-4	12-1-65	12-22-65	532	28.7	11.5 10.9 11.1	38.4 36.0 37.2	34.6 32.4 33.6	1/2	1.564
AA-5	12-8-65	12-22-65	533	28.1	10.8 10.1 10.5	39.0 37.2 37.9	33.8 31.6 32.6	1/2	1.564
AA-6	12-14-65	1-10-66	534	27.4	11.2 10.9 11.1	34.8 32.4 33.4	31.8 31.0 31.5	1	1.559
AA-7	12-22-65	1-10-66	535	28.0	11.7 10.9 11.2	34.2 31.8 32.5	29.4 28.6 29.0	1/2	1.562
AA-8	12-28-65	1-24-66	536	27.1	11.0 10.5 10.8	39.6 35.4 36.7	32.8 31.4 32.1	1	1.568
AA-9	1-5-66	1-24-66	537	27.4	11.5 10.9 11.2	35.4 32.4 34.3	30.8 29.6 30.4	1/2	1.567
Current machine average									
				28.0	10.9	35.9	32.0		1.565
Cumulative machine average				27.5	10.7	36.1	33.3		
Machine factor, %				101.9	101.7	99.5	96.2		
Machine index, %				103.8	105.9	101.7	99.7		

TABLE XXIX

SUMMARY OF TEST RESULTS FOR MACHINE BB
December, 1965 and January, 1966

(Type of medium: semichemical)

Code	Date Made	Date Received	Mill Roll No.	Basis Weight, lb./M ft. ²	Caliper, pt.	Concora Flat Crush, p.s.i.	Single-Face Flat Crush, p.s.i.	Runnability, lb./in.	draw ^b factor ^a
					Max. Min. Av.	Max. Min. Av.	Max. Min. Av.	1b./in. a	
BB-1	11-15-65	12-2-65	463	26.8	11.5 10.7 11.0	38.4 33.0 35.9	33.4 30.2 32.0	Note ^c	1.543
BB-2	11-19-65	12-2-65	608	27.4	11.0 10.0 10.4	39.0 36.6 37.8	36.8 34.6 35.8	Min. ^d	1.560
BB-3	12-2-65	12-22-65	87	27.7	11.5 10.8 11.0	37.8 34.2 35.8	34.8 32.0 33.6	Note ^e	1.542
BB-4	12-7-65	12-22-65	282	26.0	10.9 10.1 10.3	39.0 36.0 37.7	33.6 31.4 32.8	Note ^e	1.551
BB-5	12-17-65	1-17-66	564	25.9	10.6 9.5 10.0	38.4 36.6 37.3	36.4 33.6 35.4	1/2	1.561
BB-6	12-31-65	1-17-66	766	27.0	11.3 10.2 10.8	42.0 36.6 39.2	35.4 32.6 34.1	1/2	1.566
BB-7	1-5-66	1-17-66	137	26.4	11.4 10.6 11.0	37.8 36.6 37.0	34.0 32.0 33.0	Min.	1.555
Current machine average									
				26.7	10.7	37.2	33.8		1.554
Cumulative machine average				26.5	10.3	37.6	34.1		
Machine factor, %				100.9	102.9	98.9	99.1		
Machine index, %				99.0	103.3	105.4	105.2		

^aMaximum tension at 600 f.p.m.

^b600 f.p.m., minimum tension.

^cMaximum speed at which this roll could be corrugated with minimum tension was 450 f.p.m.

^dMaximum speed at which this roll could be corrugated with minimum tension was 550 f.p.m.

^eMaximum speed at which this roll could be corrugated with minimum tension was 500 f.p.m.

except basis weight for which only the average is shown; in addition, the overall average result for all rolls submitted for a given machine is shown for each test property. The latter overall averages are reported as "current machine averages." A cumulative machine average for each test property is also shown and represents the mean of the current machine averages for the previous twelve periods (excluding the current period). Also shown for each machine and for each test property in Tables II to XXIX are the machine factor and machine index which are defined as follows:

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

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

The machine factor and machine index provide a means for comparing the current machine average for each test property with either the previous results for the particular machine or with the cumulative results for all machines, i.e., the cumulative F.K.I. average.

DISCUSSION OF RESULTS

Shown below from Table I are the maximum and minimum current machine averages noted for each test property during the current period (December, 1965 and January, 1966). Also shown below for each test property is the current F.K.I. average which represents the mean of the current machine averages for the current period and, hence, is indicative of the test level being maintained by the industry as a whole to the extent that the industry is represented by the participating machines. Also given below for each test property is the cumulative F.K.I. average which represents the mean of the current F.K.I. averages for the previous twelve months.

	Max. Current Machine Av.	Min. Current Machine Av.	Current F.K.I. Average	Cumulative F.K.I. Average
Basis wt., lb.	28.5	25.8	26.9	27.0
Caliper, pt.	12.0	9.0	10.5	10.3
Concora flat crush, p.s.i.	40.0	30.7	34.8	35.3
Single-face flat crush, p.s.i.	36.8	27.5	31.5	32.1

The runnability data for the 169 rolls evaluated during the current period are summarized as follows:

Runnability	Number of Rolls	Percentage of Total Rolls	Cumulative Percentage
Less than 600 f.p.m. with minimum tension	14	8.3	100.0
600 f.p.m. - minimum tension	27	16.0	91.7
600 f.p.m. - 1/2 lb. per in. tension	40	23.7	75.7
600 f.p.m. - 1 lb. per in. tension	23	13.6	52.0
600 f.p.m. - 1-1/2 lb. per in. tension	65	38.5	38.5

Supplementary to the runnability data described above, draw factors were determined for each roll of medium at 600 f.p.m. with minimum tension (or, for rolls with poor runnability, at the maximum speed runnable with minimum tension) and are given in Tables II through XXIX for Machines A to Z and Machines AA and BB, respectively.

In Table XXX a comparison of Institute and mill Concora flat crush test results obtained on conditioned specimens is given for each machine for the current period. The inclusion of these comparisons is made possible by the fact that interested participants submit their Concora flat crush test results to The Institute of Paper Chemistry (on data sheets obtainable from the Institute). This affords each participant the opportunity to review the level of agreement noted for his data with the levels noted for the other participants. Comparisons of this kind are a helpful adjunct to other calibration procedures. Shown in Table XXX are (1) the Institute and mill Concora averages for each roll included in these comparisons, (2) the difference between the roll average based on Institute data and that based on mill data, (3) the Institute and mill averages based on all rolls included in the comparison, and (4) the difference between these overall averages.

The Concora flat crush data shown in Table XXX are summarized in Part I of Table XXXI where for each machine the following information is given: (1) Current machine average based on Institute data, (2) current machine average based on mill data, (3) the average differences - that is, the difference between the current machine average based on Institute data and that based on mill data, and (4) the maximum difference encountered in comparing Institute and mill test averages for individual rolls. In Part II of Table XXXI the average differences given in Part I have been converted to percent. Comparative data from the previous two reports are also included in Part II of Table XXXI.

TABLE XXX

INSTITUTE AND MILL CONCORDA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR DECEMBER, 1965 AND JANUARY, 1966

Machine A						Machine B						Machine C											
Concora Flat Crush,						Concora Flat Crush,						Concora Flat Crush,											
Mill Roll	Date Made	Insti- tute	p.s.i.	Differe- nce		Mill Roll	Date Made	Insti- tute	p.s.i.	Differe- nce		Mill Roll	Date Made	Insti- tute	p.s.i.	Differe- nce							
Code	No.					Code	No.					Code	No.										
A-1	--	12-14-65	39.1	38.5	-0.6	B-1	1460	11-27-65	29.9	29.2	-0.7	C-1	750	11-29-65	39.8	40.6	+0.8						
A-2	--	12-15-65	36.4	35.6	-0.8	B-2	1461	11-27-65	30.1	31.8	+1.7	C-2	751	11-29-65	40.6	42.0	+1.4						
A-3	--	12-17-65	37.3	36.2	-1.1	B-3	1468	12-10-65	38.8	37.3	-1.5	C-3	752	12-22-65	41.0	39.6	-1.4						
A-4	--	12-18-65	37.6	35.9	-1.7	B-4	1469	12-10-65	35.8	39.4	+3.6	C-4	753	12-31-65	38.5	41.8	+3.3						
A-5	--	1-4-66	38.8	38.4	-0.4	B-5	1476	12-14-65	31.3	30.2	-1.1	C-5	754	1-3-66	40.1	38.9	-1.2						
A-6	--	1-5-66	38.3	36.8	-1.5	B-6	1477	12-14-65	31.4	31.6	+0.2												
A-7	--	1-14-66	38.0	37.3	-0.7	B-7	1484	12-27-65	32.2	30.1	-2.1												
A-8	--	1-18-66	37.7	36.7	-1.0	B-8	1485	12-27-65	33.2	34.4	+1.2												
Current machine av.					37.9	36.9	-1.0	Current machine av.					32.8	33.0	+0.2	Current machine av.					40.0	40.6	+0.6
Machine D						Machine E						Machine F											
D-1	--	11-27-65	37.3	36.8	-0.5	E-1	400	11-17-65	34.0	35.7	+1.7	F-1	614	11-15-65	35.3	38.4	+3.1						
D-2	--	12-22-65	36.8	36.7	-0.1	E-2	401	11-18-65	39.6	35.2	-4.4	F-2	615	11-18-65	39.5	40.2	+0.7						
D-3	--	12-28-65	35.6	35.4	-0.2	E-3	402	11-22-65	41.3	39.5	-1.8												
D-4	--	1-6-66	37.0	36.4	-0.6	E-4	403	12-1-65	36.1	33.6	-2.5												
D-5	--	1-7-66	36.7	36.5	-0.2	E-5	404	12-14-65	36.0	34.1	-1.9												
D-6	--	1-18-66	34.6	35.2	+0.6	E-6	405	12-21-65	35.2	35.5	+0.3												
D-7	--	1-19-66	33.8	35.2	+1.4	E-7	406	12-22-65	33.2	32.5	-0.7												
D-8	--	1-20-66	34.3	35.8	+1.5	E-8	407	1-3-66	35.4	33.0	-2.4												
Current machine av.					35.8	36.0	+0.2	Current machine av.					36.3	34.9	-1.4	Current machine av.					37.4	39.3	+1.9
Machine G						Machine H						Machine I											
G-1	38	11-17-65	35.3	34.1	-1.2	H-1	664	11-20-65	36.1	36.0	-0.1	I-1	46	11-17-65	32.9	34.0	+1.1						
						H-2	665	11-29-65	33.0	35.2	+2.2												
						H-3	666	12-9-65	35.9	36.0	+0.1												
						H-4	667	12-13-65	33.5	35.0	+1.5												
						H-5	668	12-18-65	31.9	33.6	+1.7												
						H-6	669	1-5-66	34.3	34.6	+0.3												
						H-7	670	1-9-66	35.9	35.7	-0.2												
Current machine av.					35.3	34.1	-1.2	Current machine av.					34.4	35.2	+0.8	Current machine av.					32.9	34.0	+1.1

Please see end of table for footnote.

TABLE XXX (Continued)
INSTITUTE AND MILL CONCORRA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR DECEMBER, 1965 AND JANUARY, 1966

Machine J							Machine K							Machine L						
Concorra Flat Crush,							Concorra Flat Crush,							Concorra Flat Crush,						
Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence	
434	J-1	11-23-65	38.2	37.3	-0.9		K-1	192	12-1-65	30.4	28.7	-1.7		L-1	110	11-16-65	32.0	35.4	+3.4	
435	J-2	12-15-65	36.7	37.8	+1.1		K-2	193	12-8-65	31.2	30.8	-0.4		L-2	111	11-16-65	31.3	37.1	+5.8	
436	J-3	12-17-65	36.1	38.0	+1.9		K-3	194	12-14-65	33.0	31.7	-1.3		L-3	112	11-16-65	32.9	36.0	+3.1	
437	J-4	12-20-65	37.9	37.6	-0.3		K-4	195	12-17-65	29.8	31.3	+1.5		L-4	113	11-16-65	32.0	34.4	+2.4	
438	J-5	12-22-65	39.2	38.2	-1.0		K-5	196	12-26-65	29.5	31.6	+2.1		L-5	114	12-22-65	31.8	35.3	+3.5	
							K-6	197	1-1-66	31.8	32.8	+1.0		L-6	115	12-22-65	32.4	35.4	+3.0	
							K-7	198	1-13-66	31.4	32.5	+1.1		L-7	116	12-23-65	34.3	35.4	+1.1	
														L-8	117	12-23-65	32.6	34.6	+2.0	
Current machine av.			37.6	37.8	+0.2		Current machine av.			31.0	31.3	+0.3		Current machine av.			32.4	35.4	+3.0	
Machine M							Machine N							Machine O						
Concorra Flat Crush,							Concorra Flat Crush,							Concorra Flat Crush,						
Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence	
239	M-1	12-6-65	36.2	48.0	+11.8		N-1	26	11-10-65	37.6	38.6	+1.0		O-1	192	11-30-65	32.6	33.0	+0.4	
240	M-2	12-6-65	33.6	48.2	+14.6		N-2	27	11-29-65	32.3	32.1	-0.2		O-2	193	12-8-65	29.4	27.5	-1.9	
247	M-3	12-12-65	33.6	46.1	+12.5		N-3	28	12-7-65	35.2	35.4	+0.2		O-3	194	12-14-65	31.8	31.8	0.0	
248	M-4	12-12-65	32.6	44.6	+12.0		N-4	29	12-14-65	36.7	34.3	-2.4		O-4	195	12-18-65	31.4	32.2	+0.8	
255	M-5	1-1-66	29.0	37.9	+8.9		N-5	30	12-21-65	36.4	35.2	-1.2		O-5	196	12-27-65	28.2	28.1	-0.1	
256	M-6	1-1-66	32.8	41.5	+8.7								O-6	197	1-1-66	28.3	30.0	+1.7		
263	M-7	1-12-66	32.2	43.1	+10.9								O-7	198	1-13-66	33.4	32.4	-1.0		
264	M-8	1-12-66	31.4	41.2	+9.8															
Current machine av.			32.7	43.8	+11.1		Current machine av.			35.6	35.1	-0.5		Current machine av.			30.7	30.7	0.0	
Machine P							Machine R							Machine S						
Concorra Flat Crush,							Concorra Flat Crush,							Concorra Flat Crush,						
Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence		Code	Roll No.	Date Made	Insti- tute	p.s.i. Mill	Differ- ence	
105	P-1	11-26-65	30.2	31.2	+1.0		R-1	225	11-19-65	33.2	33.0	-0.2		S-1	K-1	11-22-65	31.9	31.2	-0.7	
106	P-2	11-26-65	27.4	28.8	+1.4		R-2	226	11-19-65	33.5	31.0	-2.5		S-2	K-2	11-22-65	32.6	31.8	-0.8	
							R-3	233	11-24-65	35.8	32.4	-3.4		S-3	L-2	12-9-65	33.6	31.8	-1.8	
							R-4	234	11-24-65	35.0	33.7	-1.3		S-4	L-3	12-27-65	33.5	31.6	-1.9	
							R-5	241	12-26-65	33.1	34.2	+1.1		S-5	L-4	12-27-65	35.0	34.9	-0.1	
							R-6	242	12-26-65	32.0	33.3	+1.3		S-6	L-5	12-27-65	35.2	31.6	-3.6	
							R-7	249	1-10-66	36.8	34.8	-2.0								
							R-8	250	1-10-66	35.6	33.3	-2.3								
							R-9	257	1-10-66	33.8	35.5	+1.7								
							R-10	258	1-10-66	36.2	35.2	-1.0								
Current machine av.			28.8	30.0	+1.2		Current machine av.			34.5	33.6	-0.9		Current machine av.			33.6	32.2	-1.4	

Please see end of table for footnote.

TABLE XXX (Continued)
INSTITUTE AND MILL CONCORA FLAT CRUSH TEST RESULTS ON INDIVIDUAL ROLLS FOR DECEMBER, 1965 AND JANUARY, 1966

Machine T										Machine U										Machine V											
Code		Mill Roll No.	Date Made	Concora Flat Crush,		Insti- tute	p.s.i.		Differ- ence	Code		Mill Roll No.	Date Made	Insti- tute	Concora Flat Crush,		Insti- tute	p.s.i.		Differ- ence	Code		Mill Roll No.	Date Made	Insti- tute	Concora Flat Crush,		Insti- tute	p.s.i.		Differ- ence
				Mill	Diff ^a		Mill	Diff ^a							Mill	Diff ^a		Mill	Diff ^a							Mill	Diff ^a		Mill	Diff ^a	
--	T-1	--	12-12-65	34.2	35.4	+1.2	U-1	107	11-23-65	44.5	43.6	-0.9	V-1	71	10-15-65	39.1	37.6	-1.5													
--	T-2	--	12-14-65	36.0	35.4	-0.6	U-2	108	11-23-65	40.0	42.1	+2.1	V-2	72	10-19-65	35.5	35.9	+0.4													
--	T-3	--	12-17-65	34.7	35.0	+0.3							V-3	73	10-26-65	35.3	36.1	+0.8													
--	T-4	--	12-18-65	36.1	35.3	-0.8							V-4	74	11-22-65	33.4	32.0	-1.4													
--	T-5	--	1-3-66	37.9	36.2	-1.7							V-5	75	12-6-65	31.0	33.2	+2.2													
--	T-6	--	1-5-66	35.4	34.8	-0.6							V-6	76	12-13-65	30.0	30.5	+0.5													
--	T-7	--	1-16-66	37.1	36.2	-0.9							V-7	77	12-16-65	29.0	30.8	+1.8													
--	T-8	--	1-18-66	36.6	35.5	-1.1							V-8	78	12-18-65	34.0	35.1	+1.1													
Current machine av.						36.0	35.5	-0.5	Current machine av.						42.2	42.8	+0.6	Current machine av.						33.4	33.9	+0.5					
Machine X										Machine Y										Machine Z											
--	X-1	--	12-13-65	31.8	31.7	-0.1	Y-1	300	11-16-65	34.4	31.1	-3.3	Z-1	81	11-2-65	31.2	29.2	-2.0													
							Y-2	301	11-18-65	35.6	33.4	-2.2	Z-2	82	11-11-65	29.8	29.0	-0.8													
							Y-3	302	11-23-65	38.4	33.9	-4.5	Z-3	83	11-19-65	33.0	28.8	-4.2													
							Y-4	303	12-1-65	38.0	33.5	-4.5	Z-4	84	11-29-65	31.1	30.2	-0.9													
							Y-5	304	12-14-65	32.0	30.8	-1.2	Z-5	85	12-3-65	31.8	35.3	+3.5													
							Y-6	305	12-15-65	42.6	38.8	-3.8	Z-6	86	12-9-65	30.5	34.1	+3.6													
							Y-7	306	12-16-65	33.0	32.1	-0.9	Z-7	87	12-16-65	30.4	35.3	+4.9													
							Y-8	307	1-3-66	29.9	29.2	-0.7	Z-8	88	12-23-65	33.2	33.8	+0.6													
Current machine av.						31.8	31.7	-0.1	Current machine av.						35.5	32.8	-2.7	Current machine av.						31.4	32.0	+0.6					
Machine AA										Machine BB																					
529	AA-1	529	11-9-65	39.5	38.8	-0.7	BB-1	463	11-15-65	35.9	35.3	-0.6																			
530	AA-2	530	11-17-65	37.2	38.9	+1.7	BB-3	87	12-2-65	35.8	36.5	+0.7																			
531	AA-3	531	11-24-65	34.8	36.0	+1.2	BB-4	282	12-7-65	37.7	37.3	-0.4																			
532	AA-4	532	12-1-65	37.2	38.0	+0.8	BB-5	564	12-17-65	37.3	36.5	-0.8																			
533	AA-5	533	12-8-65	37.9	37.4	-0.5	BB-6	766	12-31-65	39.2	38.3	-0.9																			
534	AA-6	534	12-14-65	33.4	37.8	+4.4	BB-7	137	1-5-66	37.0	35.3	-1.7																			
535	AA-7	535	12-22-65	32.5	37.1	+4.6																									
536	AA-8	536	12-28-65	36.7	35.9	-0.8																									
537	AA-9	537	1-5-66	34.3	37.0	+2.7																									
Current machine av.			35.9	37.4	+1.5	Current machine av.			37.2	36.5	-0.7																				

^aThis difference is the amount in p.s.i. units by which the mill result is higher or lower than the Institute result.

TABLE XXXI

PART I: A COMPARATIVE SUMMARY FOR EACH MACHINE OF THE CONCORDA FLAT CRUSH AVERAGES BASED ON INSTITUTE DATA AND THOSE BASED ON MILL DATA FOR THE CURRENT PERIOD (DECEMBER, 1965 AND JANUARY, 1966)

Machine Code	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	
Number of rolls compared	8	8	5	8	8	2	1	7	1	5	7	8	8	5	7	2	0	10	6	8	2	8	0	1	8	8	9	6	
Concorda flat crush, p.s.i.																													
Current machine av. (Institute) ^a	37.9	32.8	40.0	35.8	36.3	37.4	35.3	34.4	32.9	37.6	31.0	32.4	32.7	35.6	30.7	28.8	--	34.5	33.6	36.0	42.2	33.4	--	31.8	35.5	31.4	35.9	37.2	
Current machine av. (Mill) ^b	36.9	33.0	40.6	36.0	34.9	39.3	34.1	35.2	34.0	37.8	31.3	35.4	43.8	35.1	30.7	30.0	--	33.6	32.2	35.5	42.8	33.9	--	31.7	32.8	32.0	37.4	36.5	
Average difference ^c	-1.0	+0.2	+0.6	+0.2	-1.4	+1.9	-1.2	+0.8	+1.1	+0.2	+0.3	+3.0	+11.1	-0.5	0.0	+1.2	--	-0.9	-1.4	-0.5	+0.6	+0.5	--	-0.1	-2.7	+0.6	+1.5	-0.7	
Maximum difference	-1.7	+3.6	+3.3	+1.5	-4.4	+3.1	-1.2	+2.2	+1.1	+1.9	+2.1	+5.8	+14.6	-2.4	-1.9	+1.4	--	-3.4	-3.6	-1.7	+2.1	+2.2	--	-0.1	-4.5	+4.9	+4.6	-1.7	

PART II: A TABULATION FOR EACH MACHINE OF THE AVERAGE DIFFERENCE (PERCENT) BETWEEN THE CONCORDA FLAT CRUSH BASED ON INSTITUTE DATA AND THAT BASED ON MILL DATA

Average difference, % ^d	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB
Current report (Dec.-Jan.)	-2.6	+0.6	+1.5	+0.6	-3.9	+5.1	-3.4	+2.3	+3.3	+0.5	+1.0	+9.3	+33.9	-1.4	0.0	+4.2	--	-2.6	-4.2	-1.4	+1.4	+1.5	--	-0.3	-7.6	+1.9	+4.2	-1.9
116th report (Oct.-Nov.)	-2.3	+1.8	-2.0	+1.4	-6.3	-3.4	-4.3	+4.7	-1.8	-0.3	-0.9	+5.1	--	0.0	-1.5	--	--	+3.5	+1.0	-1.1	-0.3	+7.8	--	--	-5.0	-7.3	+0.8	-5.1
115th report (Aug.-Sept.)	+1.7	+2.9	+0.5	+3.4	-4.2	+3.4	-4.2	+8.2	-4.4	+0.3	-5.5	+5.1	--	-1.6	-4.9	--	--	-46.5	+8.0	-2.4	--	+12.9	--	--	-3.1	-1.7	-1.4	-4.4

^a Comparisons based on current machine average include only those rolls for which mill data were submitted.
^b Average difference is the difference between the current machine average based on Institute test results and that based on mill test results with the Institute test results used as the reference. See Table XXX.
^c Maximum difference is the greatest difference encountered in comparing Institute and mill test averages for individual rolls. See Table XXX.
^d Average difference (percent) is computed by dividing the average difference in p.s.i. (shown above in Part I of this table) by the Institute current machine average and multiplying the result by 100.

In Table XXXII a summary of the agreement between Institute and mill Concora flat crush data is given for the current period; comparative data from the previous bimonthly period are also included. The data shown for the current period indicate that agreement between Institute and mill Concora data was good and, at some levels of comparison, somewhat better than the agreement for the previous period.

TABLE XXXII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL
CONCORA FLAT CRUSH DATA

Average Percentage Difference Between Institute and Mill Concora Flat Crush Test Results ^a	Percentage of All Machines Included Within the Indicated Range	
	Previous Period ^b	Current Period ^c
± 1.0	23.1	23.1
± 2.5	53.8	53.8
± 5.0	73.1	84.6
± 10.0	92.3	96.2
Max.	100.0 ^d	100.0 ^e

^aThe average obtained at the Institute was used as the reference in the calculation of the percentage differences.

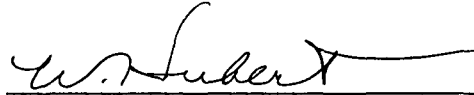
^bOctober and November, 1965.

^cDecember, 1965 and January, 1966.

^dMaximum percentage difference was 15.3.

^eMaximum percentage difference was 33.9.

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