

Schacht.

60-1-1-1-1



Contain Recent rock  
on Champion

AT  
875

AT875



TEST DATA.

C. R. Test # 3 - Sample # 1 taken March 18, 1941  
Tonnage, 126.5 T/Hr.  
Primary impeller, 700 R.P.M.  
Secondary " 500 R.P.M.  
Plus 1/4" equals 42%.

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R.R. Test # 3 - Sample # 2, taken March 18, 1941  
See sizing sheet and plotted graph.

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C. R. Test # 4 - Sample # 1, taken March 19, 1941.  
Tonnage 141 T/Hr.  
Primary impeller 700 R.P.M.  
Secondary " 500 R.P.M.  
No screen analysis.

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C.R. Test # 4 - Sample # 2, taken March 19, 1941.  
Tonnage 127 T/Hr.  
Primary impeller, 700 R.P.M.  
Secondary " 500 R.P.M.  
No screen analysis.

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C. R. Test # 4 - Sample # 3, taken March 19, 1941.  
See sizing sheet and plotted graph.

---

C. R. Test # 4 - Sample # 4, taken March 19, 1941  
Tonnage 214 T/Hr.  
Primary impeller 700 R.P.M.  
Secondary " 500 R.P.M.  
No screen analysis.

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White Pine test # 5 - Sample # 1, taken March 20, 1941  
Tonnage 179 T/Hr.  
This sample spilled over, Estimated tonnage 250 T/Hr.  
No screen analysis.

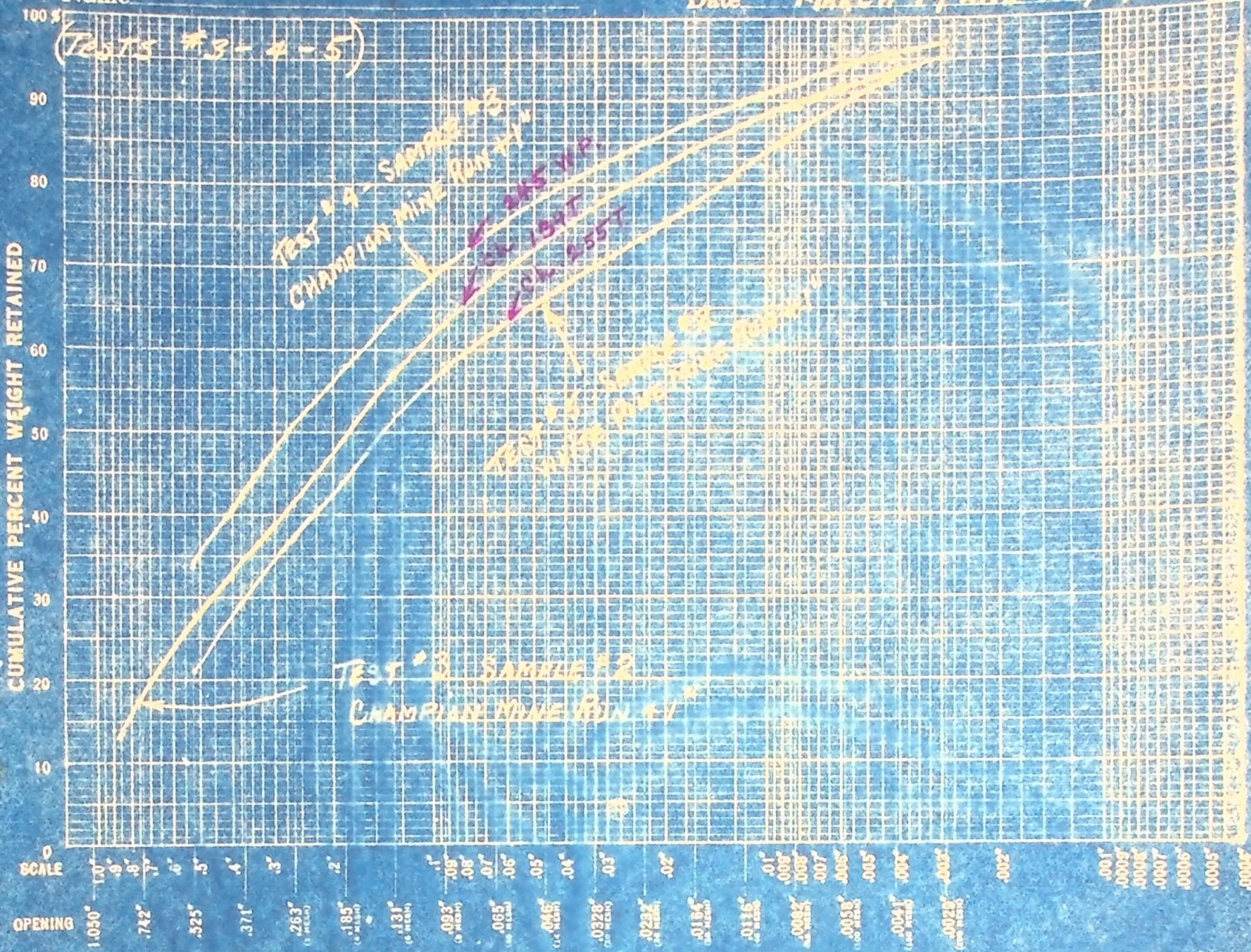
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White Pine test # 5 - Sample # 2, taken March 20, 1941.  
See sizing sheet and plotted graph.

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Name \_\_\_\_\_ Date MARCH 19 AND 20, 1941



Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				TEST #4		TEST #5		TEST #3	
	Openings				Per Cent CUM	Per Cent CUM	Per Cent CUM	Per Cent CUM	Per Cent CUM	
Retained on	Inches	Millimeters	Mesh	Diameter Wire Inches						
	1.000	25.40	1/4"	.125						
	.750	19.05	3/8"	.100						
	.500	12.70	1/2"	.075	33.9	21.4				
	.375	9.525	3/8"	.062						
	.283	7.180	8	.070	37.5	37.1				
	.185	4.699	4	.085	37.1	44.0				
	.131	3.327	6	.066	40.1	41.5				
	.098	2.482	8	.052	41.5	42.4				
	.066	1.651	10	.035	42.4	43.7				
	.046	1.168	14	.025	43.7	44.6				
	.0298	.753	20	.0172	44.6	45.7				
	.0222	.560	28	.0125	45.7	46.5				
	.0164	.417	35	.0122	46.5	47.1				
	.0116	.295	48	.0092	47.1	47.5				
	.0082	.208	65	.0072	47.5	48.3				
	.0058	.147	100	.0042	48.3	49.3				
	.0041	.104	150	.0026	49.3	50.7				
	.0029	.074	200	.0021	50.7	52.7				
	.0022	.056	300	.0017	52.7	54.6				
Pass					100.0	100.0			100.0	

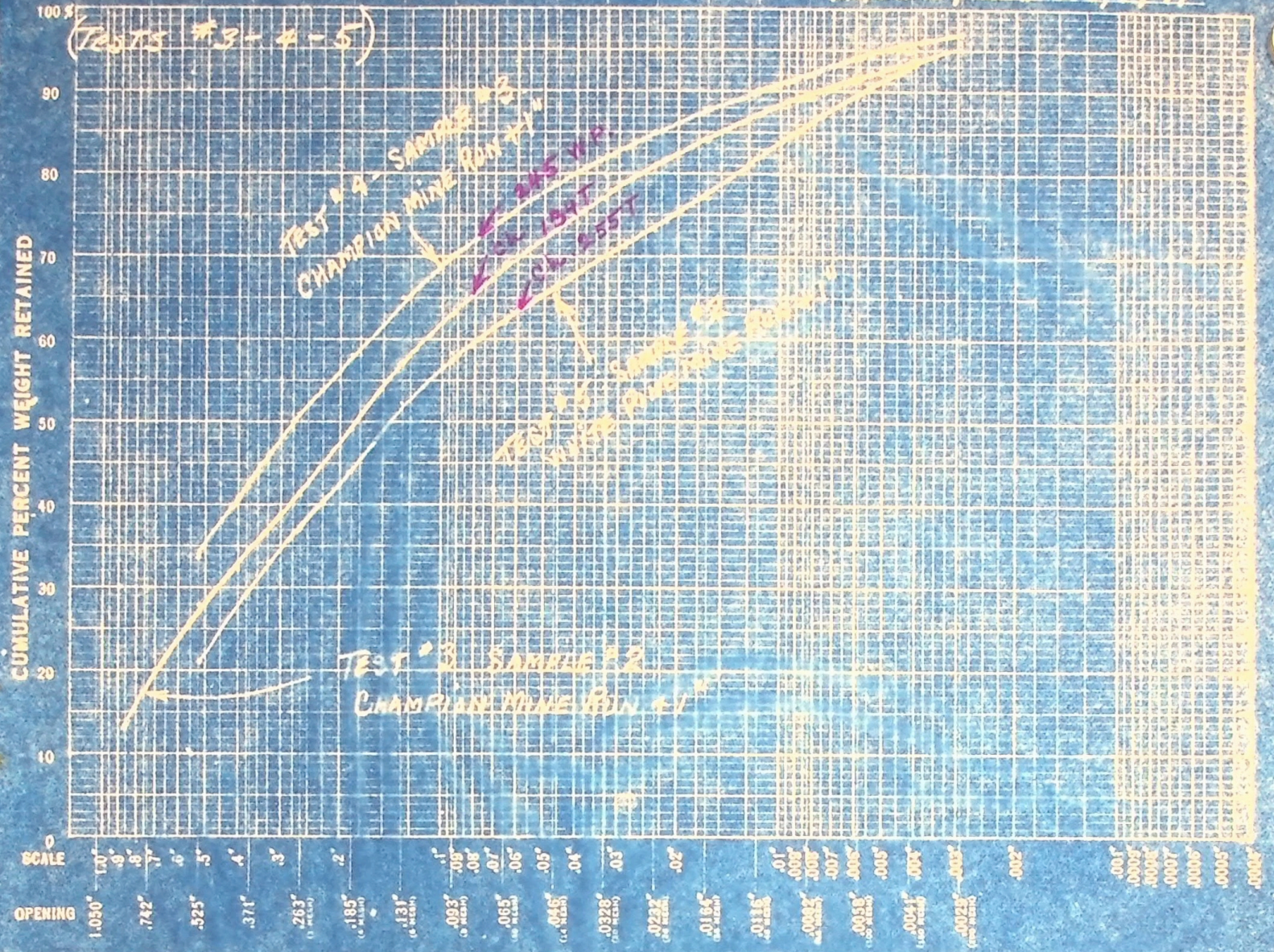


# The Tyler Standard Screen Scale CHAMPION VS WHITE PINE

Cumulative Logarithmic Diagram of Screen Analysis on Sample of CRUSHED BY DOUBLE IMPACT CRUSHER

Name \_\_\_\_\_

Date MARCH 19 AND 20, 1941



Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414			TEST #4		TEST #5		TEST #3	
	Openings			Per Cent CUM	Per Cent CUM	Per Cent Cumulative Weights			
	Inches	Millimeters	Mesh	Diameter Wire Inches					
Retained on	1.000	25.40		.125				90	
	.743	18.88		.100				CUM	
	.595	15.00	1/16"	.080	33.9	21.4		13.3	
	.475	12.00	3/16"	.063				20.1	
	.375	9.50	1/2"	.050				27.5	
	.298	7.50	3/8"	.039				32.3	
	.236	6.00	8	.025	51.5	37.1		41.1	
	.185	4.75	4	.019	57.7	43.0		49.2	
	.131	3.37	6	.013	60.1	51.5		52.9	
	.098	2.50	8	.009	69.1	62.4		63.7	
	.066	1.65	10	.007	73.7	66.3		68.6	
	.040	1.00	14	.005	78.7	69.7		73.3	
	.025	.63	20	.003	82.1	72.1		77.4	
	.016	.41	28	.002	84.9	74.5		80.3	
	.010	.25	35	.001	87.6	76.6		82.8	
	.006	.15	48	.001	90.1	78.7		84.5	
	.004	.10	65	.000	91.5	80.3		86.7	
	.002	.05	100	.000	93.5	82.3		89.0	
	.001	.025	150	.000	95.4	84.6		91.0	
	.000	.012	200	.000	97.2	87.1		92.9	
	.000	.006	300	.000	98.5	89.6		94.6	
					100.0	100.0		100.0	



# COPPER RANGE COMPANY

## LABORATORY

TEST # 3  
SAMPLE # 2.

### SIZING SHEET

CHAMPION MINE RUN PLUS 1", THROUGH DOUBLE IMPELLER CRUSHER.

REPORT OF SAMPLES FROM.....

March 18, 1941 ~~xxx~~

1M. 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights	
	Openings		Mesh	Diameter Wire Inches				
	Inches	Milli-meters						
<del>1.050</del>	<del>26.67</del>	11/16"	<del>1.41</del>	217.6	13.3	13.3		
<del>.875</del>	<del>22.23</del>	5/8"	<del>1.25</del>	111.1	6.8	20.1		
<del>.750</del>	<del>19.05</del>	1/2"	<del>1.00</del>	120.1	7.4	27.5		
<del>.675</del>	<del>17.16</del>	3/8"	<del>.875</del>	77.6	4.8	32.3		
Actual = 1/4" opening .263	6.680	3	.070	142.6	8.8	41.1		
.185	4.699	4	.065	132.0	8.1	49.2		
.131	3.327	6	.036	119.9	7.4	56.6		
.093	2.362	8	.032	100.1	6.1	62.7		
.065	1.651	10	.035	95.8	5.9	68.6		
.046	1.168	14	.025	75.9	4.7	73.3		
.0328	.833	20	.0172	66.9	4.1	77.4		
.0232	.589	28	.0125	49.7	3.1	80.5		
.0164	.417	35	.0122	54.0	3.3	83.8		
.0116	.295	48	.0092	44.5	2.7	86.5		
.0082	.208	65	.0072	35.9	2.2	88.7		
.0058	.147	100	.0042	38.1	2.3	91.0		
.0041	.104	150	.0026	31.6	1.9	92.9		
.0029	.074	200	.0021	28.4	1.7	94.6		
Pass	.0029	200	.0021	88.2	5.4			
Totals,				1630.0	100.0	100.0		

*with Intermediary*  
160 ton  
Plus .374 x 160 = 60  
Plus .375 x 60 = 22  
Cum (Total Turn) 2.51

13470  
12.1 37.4  
-58.9 90 ton/hr -62.6

**REMARKS:** Tonnage, 134 T/Hr.  
Primary impeller, 700 R.P.M.  
Secondary " 500 R.P.M.  
Some losses resulted from impeller windage, dust collectors and leakage.  
Sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

TEST # 4.  
SAMPLE # 3.

### SIZING SHEET

CHAMPION MINE RUN PLUS 1", through double Impeller crusher.

REPORT OF SAMPLES FROM

March 19, 1941. ~~1941~~

1M 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Millimeters					
	1.050	26.67		.149			
	.742	18.85		.135			
	.525	13.33		.105			
Retained on	<del>.371</del>	<del>9.428</del>	Plus 1"	<del>.092</del>	386.2	33.9	33.9
	.263	6.680	3	.070	194.2	17.1	51.0
	.185	4.699	4	.065	76.9	6.8	57.8
	.131	3.327	6	.036	80.3	7.0	64.8
	.093	2.362	8	.032	57.9	5.0	69.8
	.065	1.651	10	.035	55.6	4.9	74.7
	.046	1.168	14	.025	46.1	4.0	78.7
	.0328	.833	20	.0172	40.9	3.6	82.3
	.0232	.589	28	.0125	29.2	2.6	84.9
	.0164	.417	35	.0122	31.3	2.7	87.6
	.0116	.295	48	.0092	24.4	2.1	89.7
	.0082	.208	65	.0072	20.8	1.8	91.5
	.0058	.147	100	.0042	22.9	2.0	93.5
	.0041	.104	150	.0026	21.5	1.9	95.4
	.0029	.074	200	.0021	12.3	1.1	96.5
Pass	.0029	.074	200	.0021	39.5	3.5	
			Totals,		1140.0	100.	100.0

REMARKS: Tonnage, 245 T/Hr.

Instruments on secondary impeller

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Plus 1/2" and minus 1/2" plus 1/4" computed from results obtained

by hand screening.

Some losses resulted from impeller windage, dust collector and leakage.

Sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

TEST # 5  
SAMPLE # 2.

### SIZING SHEET

WHITE PINE MINE RUN PLUS 1" THROUGH DOUBLE IMPELLER CRUSHER.

REPORT OF SAMPLES FROM

March 20, 1941

IM 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights	
	Openings		Mesh	Diameter Wire Inches				
	Inches	Milli-meters						
	1.050	26.67		.149				<i>Multi Imp. with Intermediate Bl.</i> 132 tons = 132 132 x 32 = 43 43 x 32 = 14 14 x 32 = 5 Total = 195 15.8 15.8 ton
	.742	18.85		.135				
	.525	13.33		.105				
RETAINED ON	<del>xxx</del>	<del>xxx</del> Plus 1/2"	<del>xxx</del>		267.0	21.4	21.4	5.8 21.6
	.263	6.680	3	.070	196.0	15.7	37.1	10.4 32.0
	.185	4.699	4	.065	86.2	6.9	44.0	- 62.9 - 68.0
	.131	3.327	6	.036	97.2	7.8	51.8	
	.093	2.362	8	.032	71.2	5.7	57.5	
	.065	1.651	10	.035	61.8	4.9	62.4	
	.046	1.168	14	.025	48.7	3.9	66.3	
	.0328	.833	20	.0172	43.1	3.4	69.7	
	.0232	.589	28	.0125	34.7	2.8	72.5	
	.0164	.417	35	.0122	51.8	4.1	76.6	
	.0116	.295	48	.0092	63.6	5.1	81.7	
	.0082	.208	65	.0072	57.2	4.6	86.3	
	.0058	.147	100	.0042	49.5	4.0	90.3	
	.0041	.104	150	.0026	29.5	2.4	92.7	
	.0029	.074	200	.0021	24.3	1.9	94.6	
Pass	.0029	.074	200	.0021	68.2	5.4		
				Totals,	1250.0	100.0	100.0	

REMARKS: Tonnage, 255 T/Hr.

Instruments on secondary impeller.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Plus 1/2" and minus 1/2" plus 1/4" computed from results obtained by hand screening.

Some losses resulted from impeller windage, dust collector and leakage.

Sized and retapped for 30 minutes.

Est. Cap. Total Ton 275  
 new feed = 180 Ton per hour  
 all through 1/4 mesh.

Primary 400  
 Secondary 600  
 180 / 1000 (5 1/2 HP per ton  
 = 4.15 KW (motor) = 5 KVA  
 at 101 = 580 ft ton thro 1/4"

180 tons = 180  
 180 x 35% = 63  
 63 x 35 = 22  
 22 x 35 = 8  
 3



AT875



EXPLANATION OF CURVES, FOR SAMPLES NO. 1 and NO. 2.

Line 1, represents White Pine Mine product, (Size 7"x8"x 11" to plus 1" ). crushed by a single pass in the double impeller, Impact crusher, with 700 R.P.M. for primary impeller and 500 R.P.M. for the secondary impeller.

117 tons per hour applies to sample # 2.  
No tonnage was taken for sample # 1, but it was considerably less.

Line 2, represents 2nd. pass of plus 1/4" of line 1 product.  
Windage blew off considerable amount of the fines.  
Dust collector not in operation.

Line 3, represents 3d. pass of plus 1/4" of line 2 products and was not plotted, being erroneous, due to windage of impeller, which blew away considerable amount of the fines.  
Dust collector not in operation.  
See enclosed sizing sheet.

Line 4, represents the minus 1/4" finished products of the 1st., 2nd. and all of the third pass product, the latter containing some plus 1/4".

NOTE: Due to windage of impellers, dust collecting system and crusher leakage, it is obvious that all of the plotted curves above would be somewhat lower, especially in the finer meshes.

After successive screenings of the plus 1/4", the sample became smaller and smaller and the leakage losses increased correspondingly from a range of 25 to approximately 50 %.

Hence an absolute true picture cannot be shown.

Tested at Copper Range Co. Concentrator, Freda, Michigan.

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# COPPER RANGE COMPANY

## LABORATORY

### SIZING SHEET

Sample # 2.

Sheet # 2.

WHITE PINE MINE RUN (MINE RUN TO PLUS 1")

REPORT OF SAMPLES FROM 1st. pass thru double impact crusher.

March 8, 1941

9220- THE MINING GAZETTE CO.

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights <i>gram</i>	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Milli-meters					
Retained on	<del>050</del>	<del>20.67</del>	11/16"	<del>119</del>	84.5	3.39	3.39
	<del>.112</del>	<del>28.35</del>	5/8"	<del>116</del>	18.5	.75	4.14
	<del>.125</del>	<del>31.75</del>	1/2"	<del>100</del>	98.0	3.94	8.08
	<del>.175</del>	<del>44.28</del>	3/8"	<del>100</del>	145.0	5.84	13.92
	.263	6.680	3/4 3	.070	223.20	9.00	22.92
	.185	4.699	4	.065	171.30 <sup>569</sup>	6.90	29.82
	.131	3.327	6	.036	165.45	6.68	36.50
	.093	2.362	8	.032	145.42	5.87	42.37
	.065	1.651	10	.035	146.02	5.90	48.27
	.046	1.168	14	.025	130.07	5.23	53.50
	.0328	.833	20	.0172	123.42	4.97	58.47
	.0232	.589	28	.0125	110.24	4.44	62.91
	.0164	.417	35	.0122	189.57	7.67	70.58
	.0116	.295	48	.0092	205.95	8.29	78.87
	.0082	.208	65	.0072	245.40	9.91	88.78
	.0058	.147	100	.0042	70.25	2.82	91.60
	.0041	.104	150	.0026	72.87	2.93	94.53
	.0029	.074	200	.0021	57.57	2.32	96.85
Pass	.0029	.074	200	.0021	78.27	3.15	
Totals,					2481.00	100.00	100.00

REMARKS: First pass, All product produced was minus 2".

Primary impeller, 700 R.P.M

Secondary " 500 R.P.M.

Some losses resulted from impeller windage, dust collector and leakage.

Refer to attached plotted curve of Sample # 2, sheet # 1.

Sample sized and retapped for thirty minutes.



# COPPER RANGE COMPANY

## LABORATORY

Sample # 2.

SIZING SHEET

Sheet # 3.

White Pine Mine run.

REPORT OF SAMPLES FROM 2nd. pass thru double impeller impact crusher. Mar. 8, 1941.

92222-THE MINING GAZETTE CO.

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Milli-meters					
<del>1.050</del>	<del>26.67</del>		<del>.100</del>				
Retained on	.742	<del>18.83</del>	5/8"	.33	8.90	.99	.99
	<del>.565</del>	<del>14.33</del>	1/2"	.105	16.50	1.81	2.80
	<del>.301</del>	<del>7.621</del>	3/8"	.002	30.40	3.34	6.14
	.263	6.680	3	.070	49.40	5.43	11.57
	.185	4.699	4	.065	74.03	8.12	19.69
	.131	3.327	6	.036	74.07	8.13	27.82
	.093	2.362	8	.032	70.65	7.75	35.57
	.065	1.651	10	.035	75.77	8.32	43.89
	.046	1.168	14	.025	66.20	7.26	51.15
	.0328	.833	20	.0172	64.70	7.10	58.25
	.0232	.589	28	.0125	50.02	5.49	63.74
	.0164	.417	35	.0122	64.57	7.08	70.82
	.0116	.295	48	.0092	64.92	7.12	77.94
	.0082	.208	65	.0072	58.55	6.43	84.37
	.0058	.147	100	.0042	52.05	5.72	90.09
	.0041	.104	150	.0026	36.75	4.03	94.12
	.0029	.074	200	.0021	20.27	2.23	96.35
Pass	.0029	.074	200	.0021	33.25	3.65	
			Totals,		911.	100.00	100.00

used partial sample for screening

**REMARKS:** 2nd. pass of plus 1/4" product of sheet # 2.  
 Primary impeller, 700 R.P.M.  
 Secondary " 500 R.P.M.  
 Some losses resulted from Impeller windage, dust collector and leakage.  
 Refer to attached plotted curve of sample # 2, Sheet # 1.  
 Sample sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

Sample # 2.

### SIZING SHEET

Sheet # 4.

White Pine Mine run.

3d. pass thru double impact crusher.

March 8, 1941

REPORT OF SAMPLES FROM 3d. pass thru double impact crusher. MILL

92285-THE MINING GAZETTE CO.

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights	
	Openings		Mesh	Diameter Wire Inches				
	Inches	Milli-meters						
Pass	<del>1.061</del>	<del>26.977</del>	11/16"	<del>.140</del>				
Retained	<del>.707</del>	<del>17.935</del>	5/8"	<del>.315</del>	6.30	.62	.62	
	<del>.521</del>	<del>13.338</del>	1/2"	<del>.505</del>	10.20	1.01	1.63	
	.371	9.423	3/8"	.092	33.80	3.34	4.97	(Approx. 50% C.R. Cu. Nuggets.)
	.263	6.680	3	.070	56.00	5.54	10.51	
	.185	4.699	4	.065	89.10	8.80	19.31	
	.131	3.327	6	.036	104.60	10.35	29.66	
	.093	2.362	8	.032	100.32	9.91	39.57	
	.065	1.651	10	.035	107.32	10.62	50.19	
	.046	1.168	14	.025	96.42	9.52	59.71	
	.0328	.833	20	.0172	93.18	9.20	68.91	
	.0232	.589	28	.0125	69.42	6.86	75.77	
	.0164	.417	35	.0122	71.08	7.02	82.79	
	.0116	.295	48	.0092	50.12	4.95	87.74	
	.0082	.208	65	.0072	32.86	3.24	90.98	
	.0058	.147	100	.0042	25.53	2.52	93.50	
	.0041	.104	150	.0026	17.92	1.77	95.27	
	.0029	.074	200	.0021	11.13	1.11	96.38	
Pass	.0029	.074	200	.0021	36.70	3.62		
	Totals,				1012.00	100.00	100.00	

REMARKS: 3d. pass of plus 1/4" product, of sheet # 3.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Some losses resulted from impeller windage, dust collector and leakage.

Refer to attached plotted curve of sample # 2, sheet # 1.

Sample sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

SAMPLE # 2.

SIZING SHEET

Sheet # 5.

REPORT OF SAMPLES FROM White Pine finished crusher product  
( 3 passes ).

March 8, 1948

IM 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Milli-meters					
	1.050	26.67		.149			
	.742	18.85		.135			
	.525	13.33		.105			
	.371	9.423		.092			
Pass	.263	6.680	3	.070			
Retained on	.185	4.699	4	.065	81.30	8.10	8.10
	.131	3.327	6	.036	99.85	9.94	18.04
	.093	2.362	8	.032	80.87	8.03	26.07
	.065	1.651	10	.035	84.75	8.41	34.48
	.046	1.168	14	.025	71.27	7.05	41.53
	.0328	.833	20	.0172	68.47	6.77	48.30
	.0232	.589	28	.0125	56.02	6.53	54.83
	.0164	.417	35	.0122	86.17	8.56	63.39
	.0116	.295	48	.0092	95.52	9.50	72.89
	.0082	.208	65	.0072	82.40	8.18	81.07
	.0058	.147	100	.0042	69.00	6.94	88.01
	.0041	.104	150	.0026	44.93	4.52	92.53
	.0029	.074	200	.0021	27.30	2.74	95.27
Pass	.0029	.074	200	.0021	47.15	4.73	
					995.00	100.00	100.00
			Totals,				

**REMARKS:** Above results represents the minus 1/4" finished product of the 1st., 2nd and all of the 3d. pass which includes some plus 1/4" product.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Refer to attached plotted curve of sample # 2, sheet # 1.

Sample sized and retapped for 30 minutes.



Sample No. 1

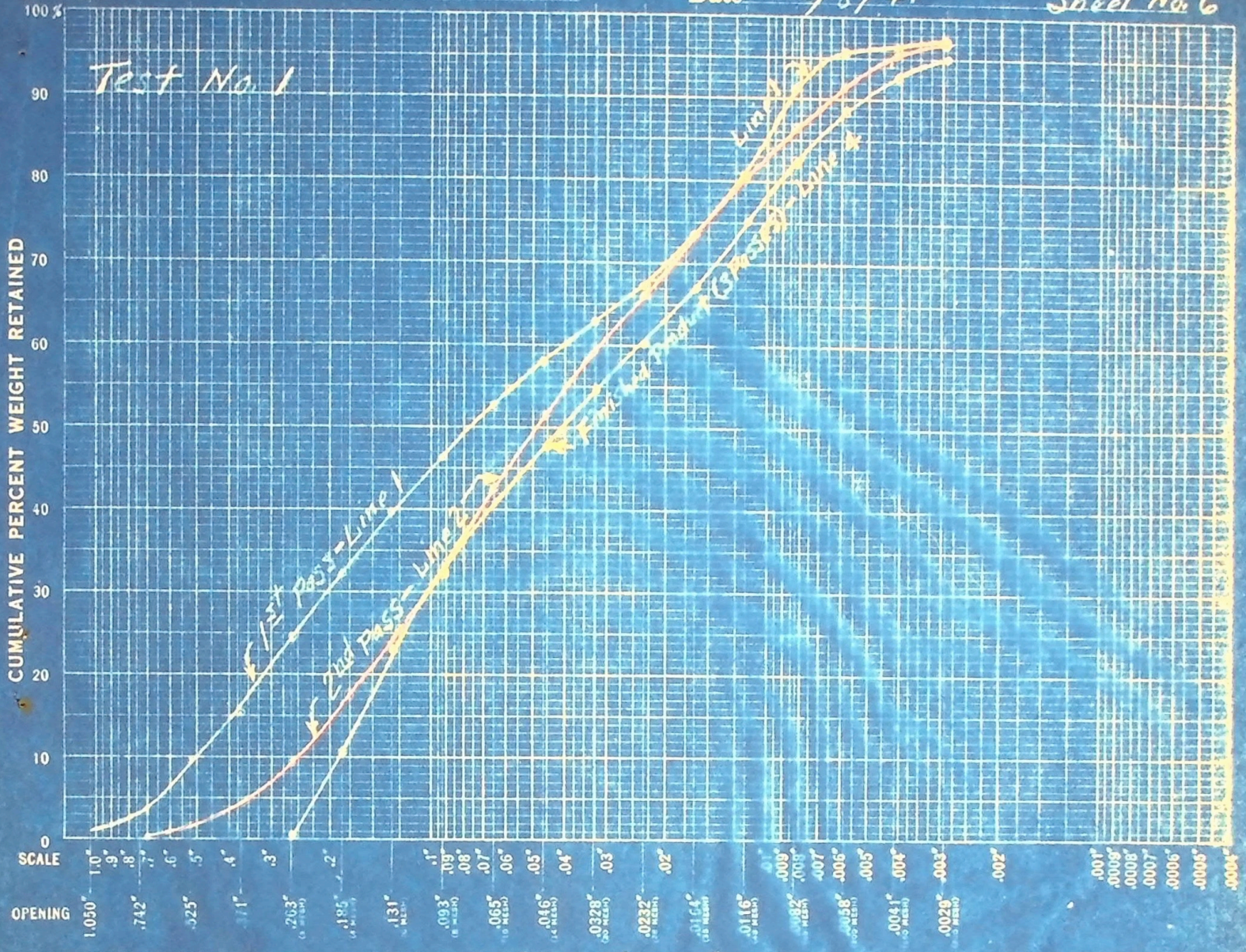
# The Tyler Standard Screen Scale *Double Impeller*

Cumulative Logarithmic Diagram of Screen Analysis on Sample of *White Pine Crusher Products*.

Name \_\_\_\_\_

Date *3/8/41*

Sheet No. *6*



Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414			1st Pass	2nd Pass	3rd Pass	Finished Product
	Openings Inches	Millimeters	Mesh	Diameter Wire Inches	Per Cent Cum.	Per Cent Cumulative Weight	% Cumulative
<i>Retained on</i>	<del>1.050</del>	<del>26.6</del>	<del>14</del>	<del>.140</del>	<i>3.25</i>		
	<del>.742</del>	<del>18.86</del>	<del>18</del>	<del>.106</del>	<i>5.43</i>	<i>.42</i>	
	<del>.625</del>	<del>15.88</del>	<del>20</del>	<del>.085</del>	<i>7.60</i>	<i>1.46</i>	
	<del>.500</del>	<del>12.70</del>	<del>25</del>	<del>.063</del>	<i>15.40</i>	<i>4.20</i>	<i>16.99</i>
	.263	6.680	3	.070	<i>24.53</i>	<i>9.53</i>	<i>33.01</i>
	.186	4.690	4	.066	<i>32.12</i>	<i>17.01</i>	<i>42.77</i>
	.131	3.327	6	.066	<i>39.72</i>	<i>25.38</i>	<i>52.54</i>
	.098	2.362	8	.052	<i>46.36</i>	<i>33.57</i>	<i>62.63</i>
	.066	1.661	10	.036	<i>52.75</i>	<i>42.77</i>	<i>71.52</i>
	.046	1.168	14	.026	<i>58.00</i>	<i>51.27</i>	<i>77.40</i>
	.0328	.833	20	.0172	<i>62.78</i>	<i>59.57</i>	<i>82.21</i>
	.0232	.589	28	.0126	<i>67.16</i>	<i>66.19</i>	<i>85.68</i>
	.0164	.417	36	.0122	<i>73.47</i>	<i>73.27</i>	<i>89.02</i>
	.0116	.295	48	.0092	<i>80.22</i>	<i>80.72</i>	<i>91.21</i>
	.0082	.208	65	.0072	<i>91.37</i>	<i>86.67</i>	<i>93.91</i>
	.0066	.147	100	.0042	<i>95.55</i>	<i>91.77</i>	<i>96.61</i>
	.0041	.104	150	.0026	<i>96.09</i>	<i>95.11</i>	<i>97.80</i>
	.0029	.074	200	.0021	<i>97.03</i>	<i>96.89</i>	<i>98.42</i>
	.0029	.074	200	.0021			
Totals					<i>100.00</i>	<i>100.00</i>	<i>100.00</i>



# COPPER RANGE COMPANY

## LABORATORY

SAMPLE # 1.

SIZING SHEET

SHEET # 7.

White Pine Mine run ( Mine run to plus 1" )

REPORT OF SAMPLES FROM 1st. pass thru double impact crusher.

March 8, 1941.

1M 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Millimeters					
Retained on	<del>1.050</del>	<del>26.67</del>	11/16"	<del>.142</del>	55.30	3.25	3.25
	<del>.750</del>	<del>18.85</del>	5/8"	<del>.156</del>	37.20	2.18	5.43
	<del>.500</del>	<del>12.70</del>	1/2"	<del>.125</del>	71.00	4.17	9.60
	<del>.375</del>	<del>9.53</del>	3/8"	<del>.109</del>	99.80	5.80	15.40
	.263	6.680	3	.070	155.40	9.13	24.53
	.185	4.699	4	.065	129.10	7.59	32.12
	.131	3.327	6	.036	129.61	7.60	39.72
	.093	2.362	8	.032	112.98	6.64	46.36
	.065	1.651	10	.035	108.71	6.39	52.75
	.046	1.168	14	.025	89.32	5.25	58.00
	.0328	.833	20	.0172	84.79	4.98	62.98
	.0232	.589	28	.0125	71.23	4.18	67.16
	.0164	.417	35	.0122	107.39	6.31	73.47
	.0116	.295	48	.0092	123.52	7.25	80.72
	.0082	.208	65	.0072	181.36	10.65	91.37
	.0058	.147	100	.0042	71.29	4.18	95.55
	.0041	.104	150	.0026	9.27	.54	96.09
	.0029	.074	200	.0021	16.05	.94	97.03
Pass	.0029	.074	200	.0021	50.68	2.97	
			Totals,		1704.00	100.00	100.00

*75.47 thru 1/4*

REMARKS: All product, first pass, approx. minus 2 ".

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Some losses resulted from impeller windage, dust collector and leakage.

Refer to attached plotted curve of sample # 1, sheet # 6.

Sized and rotapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

SAMPLE # 1.

SIZING SHEET

SHEET # 8.

White Pine Mine run

REPORT OF SAMPLES FROM 2nd. pass thru double impeller impact crusher. March 8, 1941

1M 6-31 GPC.

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Millimeters					
	1.050	26.67		.149			
Retained on	<del>7/4</del>	<del>18.85</del>	5/8"	<del>.125</del>	4.80	.42	.42
	<del>5/8</del>	<del>12.32</del>	1/2"	<del>.100</del>	11.90	1.04	1.46
	<del>3/4</del>	<del>19.05</del>	3/8"	<del>.090</del>	31.40	2.74	4.20
	.263	6.680	3	.070	61.00	5.33	9.53
	.185	4.699	4	.065	85.60	7.48	17.01
	.131	3.327	6	.036	95.82	8.37	25.38
	.093	2.362	8	.032	93.77	8.19	33.57
	.065	1.651	10	.035	105.34	9.20	42.77
	.046	1.168	14	.025	97.32	8.50	51.27
	.0328	.833	20	.0172	95.07	8.30	59.57
	.0232	.589	28	.0125	75.76	6.62	66.19
	.0164	.417	35	.0122	86.77	7.58	73.77
	.0116	.295	48	.0092	79.60	6.95	80.72
	.0082	.208	65	.0072	68.18	5.95	86.67
	.0058	.147	100	.0042	58.34	5.10	91.77
	.0041	.104	150	.0026	38.28	3.34	95.11
	.0029	.074	200	.0021	20.39	1.78	96.89
Pass	.0029	.074	200	.0021	35.66	3.11	
			Totals,		1145.00	100.00	100.00

REMARKS: 2nd. pass of plus 1/4" product of sheet # 7.  
 Primary impeller, 700 R.P.M.  
 Secondary " 500 R.P.M.  
 Some losses resulted from impeller windage, dust collector and leakage.  
 Refer to attached plotted curve of sample # 1, sheet #6.  
 Sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

SAMPLE # 1.

SIZING SHEET

SHEET # 9.

REPORT OF SAMPLES FROM 3d. pass thru double impeller impact crusher. Mar. 8, 1941

IM 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights	
	Openings		Mesh	Diameter Wire Inches				
	Inches	Millimeters						
	1.050	26.67		.149				
	.742	18.85		.135				
	.525	13.33		.105				
Retained on	<del>3/4</del>	<del>9.428</del>	3/8"	<del>.092</del>	13.50	11.99	11.99	3/4 of wt. C.R. Cu. Nuggets
	.263	6.680	3	.070	23.80	21.02	33.01	
	.185	4.699	4	.065	11.00	9.76	42.77	
	.131	3.327	6	.036	11.01	9.77	52.54	
	.093	2.362	8	.032	11.36	10.09	62.63	
	.065	1.651	10	.035	10.02	8.89	71.52	
	.046	1.168	14	.025	6.60	5.88	77.40	
	.0328	.833	20	.0172	5.50	4.89	82.29	
	.0232	.589	28	.0125	3.82	3.39	85.68	
	.0164	.417	35	.0122	3.74	3.34	89.02	
	.0116	.295	48	.0092	3.01	2.69	91.71	
	.0082	.208	65	.0072	2.48	2.20	93.91	
	.0058	.147	100	.0042	2.02	1.70	95.61	
	.0041	.104	150	.0026	1.57	1.39	97.00	
	.0029	.074	200	.0021	1.59	1.42	98.42	
Pass	.0029	.074	200	.0021	1.78	1.58		
				Totals,	112.00	100.00	100.00	

REMARKS: 3d. pass of plus 1/4" product of sheet # 8.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Some losses resulted from impeller windage, dust collector and leakage.

Refer to attached plotted curve of sample #1, sheet #6.

Sized and retapped for 30 minutes.



# COPPER RANGE COMPANY

## LABORATORY

SAMPLE # 1.

SIZING SHEET

SHEET # 10.

White Pine Mine finished crusher product of 3 passes.

REPORT OF SAMPLES FROM Thru double impact crusher.

Mar. 8, 1941

IM 6-31 GPC.

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Milli-meters					
	1.050	26.67		.149			
	.742	18.85		.135			
	.525	13.33		.105			
	.371	9.423		.092			
<b>Retained on</b>	.263	6.680	3	.070	1.70	.26	.26
	.185	4.699	4	.065	72.30	11.20	11.46
	.131	3.327	6	.036	76.32	11.60	23.06
	.093	2.362	8	.032	59.20	9.05	32.11
	.065	1.651	10	.035	57.20	8.63	40.74
	.046	1.168	14	.025	46.28	7.06	47.80
	.0328	.833	20	.0172	44.77	6.83	54.63
	.0232	.589	28	.0125	34.44	5.27	59.90
	.0164	.417	35	.0122	46.85	7.15	67.05
	.0116	.295	48	.0092	53.48	8.15	75.20
	.0082	.208	65	.0072	47.37	7.23	82.43
	.0058	.147	100	.0042	41.30	6.30	88.73
	.0041	.104	150	.0026	26.25	4.01	92.74
	.0029	.074	200	.0021	14.80	2.26	95.00
Pass	.0029	.074	200	.0021	32.74	5.00	
				Totals,	655.00	100.00	100.00

**REMARKS:** Above results represent the minus 1/4" finished product of the 1st., 2nd and all of the 3d. pass, which includes some plus 1/4" product.  
 Primary impeller, 700 R.P.M.  
 Secondary " 500 R.P.M.  
 Refer to attached plotted curve of sample #1, sheet #6.  
 Sized and retapped for 30 minutes.



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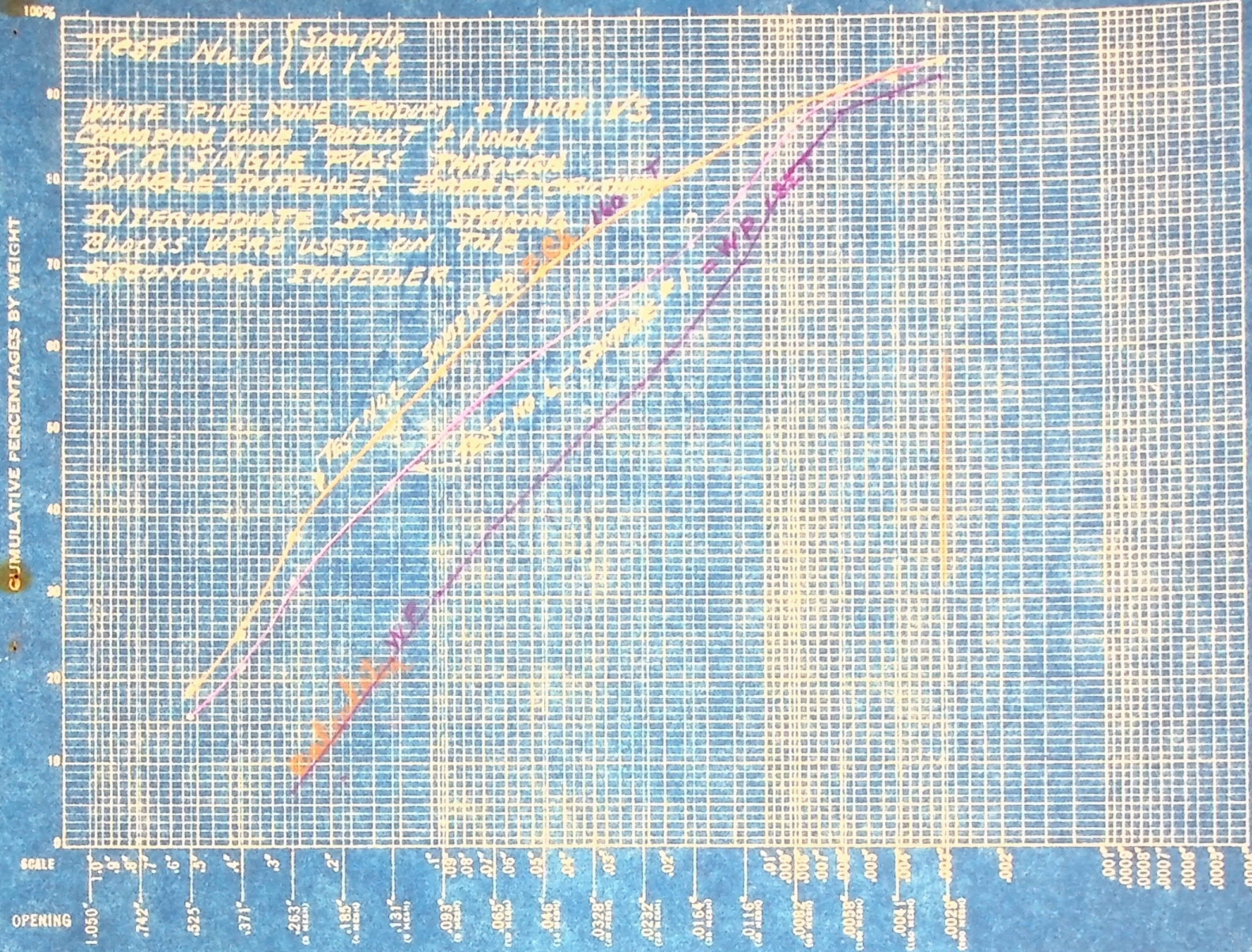
AT875



# The Tyler Standard Screen Scale

Form No. L-5  
Please mention above  
when ordering

Cumulative Logarithmic Diagram of Screen Analysis on Sample of WHITE PINE VS CHAMPION MINE  
Name \_\_\_\_\_ Date APR. 28<sup>th</sup> 1941



Indicate the Screens Crashed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				TEST # 6 WEIGHTS		ASSAYS		CONTENTS		% of Total Contents
	Openings		Mesh	Diameter Wire Inches	Sample 2 Weights Per Cent	Sample 6 Per Cent Cumulative Weights					
	Inches	Milli-meters									
	1.050	26.67		.140							
	.742	18.88		.186							
RETAINED ON			1/2"	.400	19.0	15.8					
"			3/8"	.475	25.3	21.6					
"			1/4"	.600	37.4	32.0					
"	.185	4.699	4	.065	50.8	43.4					
"	.181	3.827	6	.086	57.5	49.3					
"	.093	2.362	8	.082	64.0	55.1					
"	.085	1.951	10	.085	69.2	59.7					
"	.046	1.198	14	.025	74.1	64.1					
"	.0326	.838	20	.0172	77.8	67.6					
"	.0232	.589	28	.0125	81.8	72.7					
"	.0164	.417	36	.0122	85.0	78.9					
"	.0116	.295	48	.0092	88.9	86.2					
"	.0082	.208	65	.0072	91.2	91.6					
"	.0058	.147	100	.0042	93.1	92.7					
"	.0041	.104	150	.0026	94.2	94.7					
"	.0029	.074	200	.0021							
"	.0029	.074	200	.0021							
Totals					100.0	100.0					



# COPPER RANGE COMPANY

## LABORATORY

Test #6  
Sample # 1.

### SIZING SHEET

\* WHITE PINE MINE PRODUCT , PLUS 1" , SINGLE PASS THROUGH  
REPORT OF SAMPLES FROM DOUBLE IMPELLER CRUSHER.

April 28, 1941

~~1951~~

IM 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights
	Openings		Mesh	Diameter Wire Inches			
	Inches	Millimeters					
	1.050	26.67		.149			
	.742	18.85		.135			
Retained on <del>222</del>	<del>18.85</del>	<del>18.85</del>	1/2"	<del>1.414</del>	209.0	15.8	15.8
<del>271</del>	<del>24.25</del>	<del>24.25</del>	3/8"	<del>2.002</del>	76.7	5.8	21.6
<del>222</del>	<del>18.85</del>	<del>18.85</del>	1/4"	<del>2.828</del>	137.6	10.4	32.0
	.185	4.699	4	.065			
	.131	3.327	6	.036	150.5	11.4	43.4
	.093	2.362	8	.032	78.0	5.9	49.3
	.065	1.651	10	.035	76.7	5.8	55.1
	.046	1.168	14	.025	60.4	4.6	59.7
	.0328	.833	20	.0172	58.3	4.4	64.1
	.0232	.589	28	.0125	46.7	3.5	67.6
	.0164	.417	35	.0122	68.1	5.1	72.7
	.0116	.295	48	.0092	82.0	6.2	78.9
	.0082	.208	65	.0072	103.5	7.8	86.7
	.0058	.147	100	.0042	65.0	4.9	91.6
	.0041	.104	150	.0026	14.6	1.1	92.7
	.0029	.074	200	.0021	26.3	2.0	94.7
Pass	.0029	.074	200	.0021	69.6	5.3	
			Totals,		1323.0	100.0	100.0

$-\frac{1}{4}'' = 68\%$

\* Remarks: Intermediate small striking blocks were used on secondary impeller.

Tonnage, 132 T/Hr.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Some losses resulted from dust collector and leakage.

Plus 1/2" , plus 3/8" and plus 1/4" computed from results obtained by hand screening.

Sized and retapped for thirty minutes.



# COPPER RANGE COMPANY

## LABORATORY

TEST # 6  
SAMPLE # 2.

### SIZING SHEET

\* CHAMPION MINE PRODUCT PLUS 1", SINGLE PASS THROUGH

REPORT OF SAMPLES FROM DOUBLE IMPELLER CRUSHER.

April 28, 1941 ~~1941~~

1M 6-31 GPC

Indicate the Screen Crushed through and also First Retaining Screen	SCREEN SCALE RATIO 1.414				Sample Weights	Per Cent	Per Cent Cumulative Weights	
	Openings		Mesh	Diameter Wire Inches				
	Inches	Milli-meters						
	1.050	26.67		.149				
	.742	18.85		.135				
Retained on	<del>.505</del>	<del>12.92</del>	1/2"	<del>.105</del>	182.0	19.0	19.0	
	<del>.371</del>	<del>9.422</del>	3/8"	<del>.092</del>	60.4	6.3	25.3	
	<del>.262</del>	<del>6.680</del>	1/4"	<del>.070</del>	115.9	12.1	37.4	
	.185	4.699	4	.065		7.0		$-\frac{1}{4} = 62.6\%$
	.131	3.327	6	.036	127.5	13.4	50.8	
	.093	2.362	8	.032	64.2	6.7	57.5	
	.065	1.651	10	.035	62.6	6.5	64.0	
	.046	1.168	14	.025	50.2	5.2	69.2	
	.0328	.833	20	.0172	47.2	4.9	74.1	
	.0232	.589	28	.0125	35.4	3.7	77.8	
	.0164	.417	35	.0122	38.5	4.0	81.8	
	.0116	.295	48	.0092	30.9	3.2	85.0	
	.0082	.208	65	.0072	37.0	3.9	88.9	
	.0058	.147	100	.0042	21.8	2.3	91.2	
	.0041	.104	150	.0026	18.4	1.9	93.1	
	.0029	.074	200	.0021	15.7	1.6	94.7	
Pass	.0029	.074	200	.0021	50.3	5.3		
				Totals	958.0	100.0	100.0	
				<del>XXXX</del>				

\* REMARKS: Intermediate small striking blocks were used on secondary impeller.

Tonnage, 160 T/Hr.

Primary impeller, 700 R.P.M.

Secondary " 500 R.P.M.

Some losses resulted from dust collector and leakage.

Plus 1/2" , plus 3/8" and plus 1/4" computed from results obtained by hand screening.

Sized and retapped for thirty minutes.