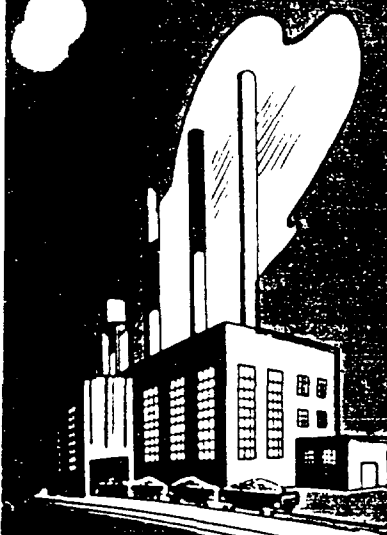


MODERN PLANT SURVEY

PLANTIFF'S EXHIBIT

WH-1043



Technical highlights of central-station and industrial-plant construction to meet postwar loads; tabulations of engineering features of steam, internal-combustion and hydro plants installed in war years and planned for current construction

AFTER FIVE YEARS' INTERRUPTION by wartime censorship, **POWER** here resumes publication of engineering data on steam, internal-combustion and hydro power plants. The following pages tabulate technical highlights of typical plants installed in the war years and planned for current construction. In these cold and formal figures is the record of a stirring achievement—the provision of power for a war-production effort such as the world has never known and for peaceful operation that holds the hope of the future.

A brief review of the war period serves as an object lesson in skillful planning by government and by an industry long used to foresighted preparation. In 1939, our national power plant had a total capacity just under 50 million kw—38.8 million in utility plants and 10.6 million in industrials. It generated, that year, 161.3 billion kwhr, of which utilities accounted for 79.1% and industry 20.9%. Industry used 79 billion kwhr, purchasing 61.7% and generating 38.3%.

At the end of 1944, national power capacity had grown to 81 million kw, 49.2 million in central stations and 12.9 in industry. This war-expanded power plant generated 279.5 billion kwhr in 1944, 81.6% coming from utilities and 18.4% from industry's plants. Industrial use grew to 158.8 billion kwhr in 1944, with 70.3% purchased from central stations and 29.7% privately generated. And in 1945, total industrial use reached close to 162 billion kwhr, more than total national generation in 1939 and more than twice entire industrial use in the prewar year.

This tremendous increase in "fighting" kilowatthours, more than 100%, came from a national power plant that grew only 5%, a result of careful planning that made maximum use of existing facilities and thus made available to the Navy and merchant marine the lion's share of the production of new boilers, turbines and auxiliary power equipment.

In this coordinated program, central stations absorbed the major share of increased power demand. Thus, while rela-

tive generating capacity of utility and industrial plants remained virtually unchanged from 1939 through 1944, the proportion of energy purchased by industry increased considerably in relation to the amount privately generated.

Added load on central stations resulting from this program would have required a capacity increase of about 34 million kw had kilowatthours output per kilowatt of capacity remained the same as in 1939. That the job was done with an actual increase of only 10 million kw can be credited to (1) high-load-factor "around-the-clock" industrial operation that accounted for about 12.5 million kw of capacity "saved" (2) slashing margins of reserve capacity from 14 to 9 million kw for a saving of 5 million (3) cutting line losses from 18 to 8% for a further saving of close to 4 million kw (4) reduction of about 1.5 million kw in peak loads by operation of wartime and (5) a saving of 1.25 million kw through "pooling."

Facilities for manufacturing power equipment operated at a record rate of about 12 million kw per year for the four war years. Of the approximately 50 million kw of equipment built, only 10 million went to central stations and 2 million to industry, leaving 30 million for the Navy and more than 7.5 million for the merchant marine—the fruit of realistic planning and wholehearted cooperation by power engineers.

We thus enter the postwar period with a national power plant adequate to immediate demands but carrying no excess fat. As reconversion reverses many of the wartime trends, the power industry faces a necessary building program equal to or greater than any of prewar years. This added capacity will be needed to meet expected increased peak loads, to restore margins of reserve to more conservative figures, and to increase over-all efficiency by permitting retirement of obsolete equipment. As the art of power-plant design follows its evolutionary pattern we can expect the plants of the immediate future to display many of the trends discernible in the plant-by-plant survey appearing on the following pages.

JUNE, 1946

POWER

P. W. SWAIN, EDITOR

391 TO 399 PSI												
✓ N. Y., N. H. & Hartford RR.	Coe Cob, Conn.	Gibbs & Hull.	1-44	375	600	1	180	RS	3.8	12.2	8.2	28.7
American Enka Corp.	Enka, N. C.		11-44	350	725	1	105	BW		9.1	6.9	21.6
✓ Colo. Fuel & Iron Corp.	Pueblo, Colo.	United Engrs.	4-44	330	750	1	150	RS	4.5	14.9	13.0	16.8
✓ Emery Industries Inc.	Cincinnati, Ohio	A M Kinney		300	Sat	1	32	BW	6.5	5.5	3.3	
Republic Steel Corp.	Chicago, Ill.	United Engrs.		300	650	3	100	BW	7.8	5.7	5.3	25.7
St. Regis Paper Co.	Trenton, N. J.	Gruenwald & Niemitz	9-46	300	Sat	1	100	Vo	0.9	11.6		
✓ Savannah Sugar Ref. Corp.	Port Wentworth, Ga.		6-45	300	600	1	60	RS	2.0	5.8	2.9	24.8
✓ Owens-Corning Fibreglas	Newark, Ohio		3-46	270	600	1	40	RS	1.8	3.5	3.0	
Amalgamated Sugar Co.	Nampa, Idaho	A J Forbes	1942	250	385	2	85	BW		13.1		
American Molasses Co.	Brooklyn, N. Y.	J G White	12-45	250	585	1	80	BW		9.7		22.8
Atlantic Seaboard Cork	Baldwin, Ky.		3-46	250	500	1	90	BW				
Atlas Powder	Newcastle, Del.		3-46	250	Sat	2	30	EM	0.4	4.6		30.0
				250	550	2	25	WT				
Cudahy Bros Co	Cudahy, Wis.	B Burbe		250	550	1	35	EM				
				250	550	1	50	EM				
✓ Diamond Wire & Cable Co	Chicago Hts., Ill.		2-45	250	Sat	1	5	BW		1.3	0.3	21.0
Gleason Works	Rochester, N. Y.	Beman & Candee	10-43	250	500	3	25	BW				
Glenyon Print Works	Phillipsdale, R. I.	Westcott & Mapes	11-46	250	550	1	60	RS	3.1	5.8	4.3	17.6
Goodyear Tire & Rubber Co.	Gadsden, Ala.		1-46	250	Sat	2	60	BW	1.2	5.9		
Gale Placid Club Co.	Lake Placid, N. Y.	Riley Corp	2-46	250	556	1	30	RS	0.7	2.4	1.05	
Matheson Alkali Works	Lake Charles, La.		7-44	250	610	1	260	BW		25.0		
✓ Pittsburgh Coke & Chem Co	Neville Island, Pa.			250	500	2	75	CE		10.4		
✓ Savel, Inc.	Evansville, Ind.		2-43	250	Sat	1	30	BW	0.5	6.8		
Winslow Bros & Smith	Norwood, Mass.		12-42	250		1	50	CE		5.7		
Worcester Cold Storage	Worcester, Mass.		3-46	250		2	23	CE	0	3.6	1.12	
✓ Raybestos-Manhattan	Manheim, Pa.		1-46	340	400	1	46	EM	0.3	0.7	1.7	
✓ General Electric Co.	Syracuse, N. Y.		10-42	235	436	3	60	RS	1.8	6.6		
✓ Boston Cons Gas Co.	Everett, Mass.		12-43	330	500	2	62.5	BW	1.25	6.7	3.2	28.0
✓ Atlas Powder Co.	Stamford, Conn.		9-46	225	500	1	60	CE	1.3	7.4		
Bath Iron Works Corp.	Bath, Me.		2-45	225		2	30	BW				
Cons Citrus Products	Tampa, Fla.	N C Ebaugh	4-46	225	390	1	28	BW	0.7	3.0		
✓ Cons Vultee Aircraft	Ft. Worth, Texas	Austin Co.	2-42	225		4	100	RS	2.1		3.8	38.8
Konier Co	Kohler, Wis.		3-46	225	397	1	100	WT	1.1	9.7	2.9	24.3
✓ Lake Shore Tire & Rubber Co	Des Moines, Ia.	E Patera		225	396	2	15	BW		4.3	1.1	
Ware Shoals Mfg Co.	Ware Shoals, S. C.	J E Sirrine	12-42	225	520	1	80	BW		8.9		
✓ Foster Wheeler Corp.	Danville, N. Y.		12-43	220	441	2	50	FW	1.5	3.6	2.2	23.0
✓ Standard Oil Co of N. J.	Baton Rouge, La.	E B Badger	4-43	220	520	5	150	RS	2.7	14.9	7.4	29.2
West Va. Coal & Coke	Chauncey, W. Va.		4-45	210		1	75	EC	1.07	11.2	4.6	

8.5	Tu	T	S, Da	I	S, Da	P	C	13.8	2800	T	S, R						600	36
11.0	Tu	M, T	S, Da	M, T	S, Da	P	C	14.0	2650	I	S, R						450	13
17.0	Tu	M	S, Da	M	S, Da	P	C	0.86		1M, 1T	S, R						1146	30
3.8	Pl	M	S, Da	M	S, Da	P	C	10.5	2902	2M, 1T	S, R	0.2	1800	WE	9.0	A	100	
11.9	Tu	T	S, Da	M	S, Da	P	C	10.5	2100	T	S, R						380	
7.3	Tu	T	S, Da	M	S, Da	P	C	12.3	2600	1M, 1T	S	1.0	3600	GL	25.0	1	150	
4.7	Tu	T	S, Da	M	S, Da	P	C	18.5		T	S						200	4
3.1	Tu	T	S, Da	I	S, Da	P	C	12.2	2050	1M, 1T	R	2.25	3600	MS	20.0		145	0.5
10.9	Tu	M	S, Da	V	M	P	C	12.6	2200	1M, 4T	R						170	2.25
	Tu	T	S, Da	M	S	P	C	14.5	2920	2M, 1T	S						150	2.5
	Tu	M	S, Da	M	S	P	C	13.0	2600	M	R						210	
	Tu	M	S, Da	M	S	P	C	11.5	2500	T	S						60	
	Tu	M	S, Da	M	S	P	C	11.3	2100	S	S	1	3600	MI	3.0	1	135	2.4
	Tu	M	S, Da	M	S	P	C	11.9	2600	2Du	R	2	3600	MS	1.0	1	75	
	Tu	M	S, Da	M	S	P	C	13.5		1M, 1T	R	0.8		TL	15.0	A	180	2.3
	Tu	M	S, Da	M	S	P	C	12.7	2900	1M, 1T	R						188	
	Tu	M	S, Da	M	S	P	C	14.6		1M, 1Du	R						50	0.55
	Tu	M	S, Da	M	S	P	C	11.1		2T	R						260	
	Tu	M	S, Da	M	S	P	C	13.2		T	S						450	15
	Tu	M	S, Da	M	S	P	C	11.5									150	
	Tu	M	S, Da	M	S	P	C	14.8	2400								130	0.65
	Tu	M	S, Da	M	S	P	C	18.1		Du	R						46	
	M, T	S, Da	M	S	TG, 222	Ca		11.0		2Du	S						70	
	2M, T	S, Da	M	S	P	C		13.6		1M, 3T	S, R						180	
	M, T	S, Da	M	S	P	C		14.3		T	S						150	0.5
	M, T	S, Da	M	S	TG, 240	Ca		11.5	2500	1M, 2T	R						170	1.75
	Tu	S, Da	M	S	UF	C		1.0		1M, 1T	R						60	
	Tu	S, Da	M	S	G	C		14.2	2400	3T	S	12		MS	1.0		28	
	Tu	S, Da	M	S	UF(199)	C		11.0		1M, 1T	R						400	
	Tu	S, Da	M	S	S	C		14.4		2Du	R						260	
	Tu	S, Da	M	S	P	C		13.5	2600	T	S						38	
	Tu	S, Da	M	S	G	C		1.05		T	S						200	7
	Tu	S, Da	M	S	SS(243)	C		13.0	2400	T	R						100	
																	750	
																	135	7
21.5	Pl	T, 2Mp	V	2M	S	P	C			T	R	7.5	3600	WE	15.0	2		
4.8	Pl	T, 2Mp	V	2M	S	P	C	10.6-14.0	1950	M	R							
7.6	Pl	T, 2Mp	V	2M	S	P	C	13.0	1900	T	S							140
5.6	Pl	T, 2Mp	V	2M	S	P	C	10.5	1900	M, T	S	3.5	3600	HB	165			
12.5	Pl	T, 2Mp	V	2M	S	P	C	13.6	2330	T	S	4.0	3600	WE	0.5	2	A	2.23
	Tu	T	V	T	S	P	C	11.5	2350	M	R	16	3600	CP	1.0	0	A	15
6.1	Tu	T	S, V	T	S, Da	TG	C	13.0	2370	T	S, R							180
4.4	Tu	T	S, Da	T	S, V	P, O	C	13.4	2200	M, Du	S, R							110
5.1	Tu	M, T	S, Da	M	S, Da	O, G	C	18.6		Du	R							200
	Tu	M	S, Da	M	S, Da	O, G	C	18.5		T	S							150
28.5	Re	2M, 3T	V, S	2M, 3T	Hy, S	P	C	13.1	2300	3M, 2T	S	20	1800	WE	0.75	0	A	13.4
												4	3600	WE	55.0	1	A	
	M	V	S, Da	M	S	CG	C	13.5	2500	2M	Du							60
	Pl	M	S, Da	M	S	UF	C	14.3	2650	2Du	S, R							51
	Pl	M	S, Da	M	S	P, L	C	7.4		T	S	10	1800	AC	0.5	1	A	200
	M	S, Da	M	S	SS	UF	C	13.3		T	S							17.5
	M	S, Da	M	S	SS	UF	C	13.2	1990									
	M, T	S, Da	M	S	SS	UF	C	14.5		1M, 2T	R							80
	Pl	M	S, Da	M	S	SS	C	13.1		M	R	5	3600	GE	0.5	1	A	120
	M, T	S, Da	M	S	TG, SS	UF	C	13.5	2520	1M, 1T	R							137
	M	S, Da	M	S	UF	UF	C	13.5	2400	1M, 1T, S, Hy	R	0.09	2000	WE	5.0			60
																		30
																		0.09

Under Construction Since September, 1941

10.6	Re	D	V	D	V	O, G	C	15.0		1M		21	3600	GE	1.0	4	H	16.0	600	40
2.93	Tu	D	S, Da	M	S	SS	C	12.2	2100	1T, 2D	S, R	2	3600	MS	0.75	1	A	3.0	80	3.75
0		2Mp	S, Da	M	S	UF, 212	C	12.5	2000										255	8
10.6	Tu	D	S, Da	M	S	UF	C	1.03		2M, 1T	S, R	5.0	3600	EL	1.0	3	A	7.5	190	10
	M	S, Hy	S, Da	M	S, V	TG	C	10.5	2950	1D, 1T	R	2.5	3600	EL	1.0	2	A	4.75	64	4
	M	S, Hy	S, Da	M	S, V	TG	C	10.5	2050	1M	R								125	8
5.5	Tu	M	S, Da	M	S, Da	G, O	C	10.5	2050	1M, 1T, 1Du	S, R	4.0	3600	EL	1.0	3	A	7.0	140	11
7.0	Tu	2Mp	S, Da	M	S, Da	G, O	C	1.0		2M, 1Du	S, R	6.0	3600	EL	1.0	3	A	8.0		
	M	V	S, Da	M	S	SS	C	11.25		2T	R	10.0		AC				20.0	100	
0	M	V	S, Da	M	S	SS	C	1.00		1M, 1T	R	5.0	3600	GE	0.75	3	A	6.0	160	8
9.20	Tu	M	S, Da	M	S	SS	C	11.1	2000	2M, 1T	R	6.0	3600	WE	0.75	3	A	7.5	140	13.6
9	Tu	M	S, Da	M	S	SS	C	11.1		1M, 1T	R	6.0	3600	EL	1.0	3	A		150	12.75
97	Tu	M	S, Da	M	S	SS	C	18.5		1M, 1T	R	5.0	3600	WE	1.2	3	A	8.0	213	9.0
	Tu	M	S, Da	M	S	SS	C	12.5	2100	2T	R	3.0	3600	AC	1.0	0	A	4.2	120	8
0	Tu	M	S, Da	M	S	SS	C	11.0	2100										96	
	Tu	M	S, Da	M	S	P	C	13.0	2400	1M, 1T	R	5.0	3600	WE		3	A	5.5	125	10.5
16.03	Tu	Du	V	Du	Hy	P, O	C	12.2	2100										425	43
16.06	Tu	Du	S, Da	M	S	TG, 540	C	8.6	2120	1M, 1T	R	15.0	3600	CP	0.6	2	A	16.0	440	44
	Pl	M	S, Da	M	S	G	C	0.98		2T	R	3.0	1800	GE	0.75	0	A	9.0	137	9.0
79		M	S, Da	M	S		C	11.38	1900	2T, 2Du	R	2.5		AC	0.50		A	6.25	70	3.86

Compiled by J. C. McCabe

Assistant Editor

Company

Location

Consulting Engineers

First Operation,
Year Units

Nominal Pressure, psi

Nominal Steam
Temperature, °F

Number

Capacity, tons
per hr. per sq. ft.Capacity, tons
per hr. per sq. ft.Capacity, tons
per hr. per sq. ft.Capacity, tons
per hr. per sq. ft.Capacity, tons
per hr. per sq. ft.Capacity, tons
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per hr. per sq. ft.

700 PSI AND ABOVE

Utah Copper Co.	Magna, Utah	E J Franklin	950	900	2	350	BW	5.5	12.7	16.4	9	49.3
Wyandotte Chemical Corp.	Wyandotte, Mich.	Burns & Roe	925	870	1	200	BW	16.71	9.9	24.3	25.0	12.24
Firestone Tire & Rubber Co.	Memphis, Tenn.		900	725	1	125	BW	1.6	12.4	5.55	29.0	
Pittsburgh Plate Glass Co.	New Martinsville, W. Va.		7-43	850	750	3	150	BW	2.4	15.0	8.6	22.9
Socony-Vacuum Oil Co.	Paulsboro, N. J.		4-44	850	750	4	125	CE	2.27	10.5	6.9	24.3
Averton Steel Co.	Weirton, W. Va.		1-47	850	800	1	325	BW	20.5	16.8		
Cities Service Refining Corp.	Lake Charles, La.	Gibbs & Hill	3-44	825	825	2	325	BW	21.3	14.6	32.6	
General Rubber, Inc.	Houston, Texas		10-43	750	750	6	300	CE	3.2	17.7	11.1	39.0
Dairyland Power Co-op.	Genoa, Wis.			700	850	2	50	RS	2.0	4.5	2.75	23.4
Military Chemical Wks. Inc.	Pittsburgh, Kan.	Chem Constr. Co.	1-43	700	700	5	200	RS	5.9	13.1	10.0	21.0
Monsanto Chemical Co.	Springfield, Mass.	C T Main	4-42	700	750	1	80	FW		7.91		

500 TO 699 PSI

Standard Oil Co. of N. J.	Landen, N. J.		4-46	685	740	1	300	RS	3.9	21.0	21.3	20.8
Hammermill Paper Co.	Erne, Pa.	C T Main	10-46	675	750	2	150	CE	2.9	12.9	8.9	23.0
R J Reynolds Tobacco Co.	Winston-Salem, N. C.	J E Strrine & Co.	12-46	675	750	1	200	CE	4.5	15.4		18.7
Celanese Corp. of Am.	Newark, N. J.		9-45	650	650	1	60	CE				
Port Paper Co.	Cincinnati, Ohio	W I Barrows	8-43	650	650	1	65	BW		6.7		24.1
Industrial Rayon Corp.	Painesville, Ohio		8-44	650	750	1	90	CE	2.6	9.2		
Shell Oil Co.	Deer Park, Texas		6-42	650	750	1	125	RS	6.1	8.5	8.1	22.3
C. S. Sugar Corp.	Clewiston, Fla.	Rust Engrs.	1943	650	750	2	175	FW	3.2	18.5	12.6	20.0
General Aniline & Film Corp.	Binghamton, N. Y.	Baker & Spencer	1945	650	750	1	175	BW	12.5	15.8	17.5	15.0
Utah Oil Refining Co.	Salt Lake City, Utah	Sargent & Lundy	1946	650	750	3	250	BW	3.5	17.8	12.2	25.0
Humble Oil & Refining Co.	Baytown, Texas			615	715	1	100	CE	4.0	8.9	6.4	
St. Joe Paper Co.	Port St. Joe, Fla.	G F Hardy		610	750	2	175	CE	2.5	14.3		29.9
Southland Paper Mills, Inc.	Lufkin, Texas	G F Hardy	7-47	610	750	2	80	RS	3.9	7.3	4.6	21.5
Bryant Paper Co.	Kalamazoo, Mich.		1-47	600	750	2	134	BW	4.9	10.6	8.8	22.7
Carbide & Carbon Chem Corp.	Texas City, Texas	Ford, Bacon & Davis	5-42	600	800	1	150	RS	7.2	14.7	13.0	20.6
Celanese Corp. of Am.	Narrows, Va.		11-46	600	800	1	200	RS	2.5	2.5	3.8	23.4
De Laval Steam Turbine Co.	Trenton, N. J.	Gibbs & Hill	1943	600	850	1	75	BW	0.66	10.2	4.8	
Detroit Sulphate Pulp & Paper	Detroit, Mich.			600	740	2	90	BW				
Lederle Laboratories	Pearl River, N. Y.		9-46	600	750	1	80	RS	1.9	9.9	5.25	
Richfield Oil Corp.	Wilmington, Calif.	R Johnson	6-44	600	625	2	250	CE	3.2	17.5	11.4	32.0
Sherwin Williams Co.	Chicago, Ill.	Schmidt, Garden & Erickson	2-47	600	750	3	75	EM	1.8	7.8		26.4
The Texas Co.	Lockport, Ill.			600	700	9	70	FW		8.71	3.2	27.5
U. S. Engineers	Pryor, Okla.	E T Du Pont	7-42	600	700	6	170	CE	3.5	10.0		18.0
Gulf Oil Corp.	Port Arthur, Texas		1-43	550	630	1	250	BW	2.8	16.7	11.5	28.4
			6-44	550	630	1	250	BW	2.8	16.7	11.5	28.4

400 TO 499 PSI

Atmos. Board Co.	Wilmington, N. C.		11-44	475	740	1	100	RS	6.05	9.6	9.0	15.8
Gulf States Paper Corp.	Tuscaloosa, Ala.		4-46	475	650	1	100	BW				
Lee Rubber & Tire Corp.	Conshohocken, Pa.		10-43	475	700	2	40	RS	1.6	3.7	2.8	24.8
Federal Paper Board Co.	Bogota, N. J.	K A Letren	1946	465	700	1	70	BW	0.2	7.7	2.8	34.0
Berst-Forster-Dixie	Pharmacia, N. Y.	H F Hallock	8-46	460	940	1	30	BW	0	4.9		
General Aniline & Film Corp.	Grassell, N. J.		3-44	460	700	1	70	BW	1.5	7.2	4.5	22.0
Bakelite Corp.	Bound Brook, N. J.	Francisco, Jacobus	11-46	450		1	125	BW	0.7	15.9	5.3	29.8
Clinton Industries, Inc.	Clinton, Iowa	Sargent & Lundy	4-46	450	550	2	100	BW	1.1	10.8	4.2	32.0
Congoleum Nairn Corp.	Maricus Hook, Pa.		12-46	450	485	2	75	BW		8.5	2.9	26.2
Hercules Powder Co.	Bradford, Va.	N G Haag	3-43	450	750	1	175	CE	2.9	14.1		26.5
Keystone Steel & Wire Co.	Bartonsville, Ill.		9-46	450	750	1	150	CE	2.3	12.0		
Minnesota, Ontario Paper Co.	Int'l Falls, Minn.		3-42	450	580	1	35	CE	2.5	8.3	4.5	
Publicker Industries	Philadelphia, Pa.	United Engrs.	1945	450	750	6	100	RS	2.6	9.4	6.4	18.5
Alphubine Rubber Co.	Youngstown, Ohio	R R Jones	1945	450	650	1	65	BW		7.2		
Wauworth Co. Inc.	Kewanee, Ill.		5-45	450		1	60	EM	1.1	6.3	3.4	28.0
Blanton Paper Co.	Grand Rapids, Minn.	Heinick, Lideskuty & Lutz	2-42	425	650	1	100	BW		11.01	5.6	24.1
Calvert Distilling Co.	Relay, Md.	Smith, Hinchman & Grylls	9-46	425	600	1	75	BW	1.9	19.2		17.5
Magnolia Petroleum Co.	Chisholm, Texas		2-43	425	675	2	175	CE	2.4	12.9		35.0
Omenia Ltd.	Sherrill, N. Y.		3-46	425		1	70	BW		7.0	1.7	43.0
Pittsburgh Steel Co.	Monessen, Pa.	Freyh Engrs.		425	700	2	175	CE	4.2	19.3		20.8
Joseph E. Seagram & Sons	Lawrenceburg, Ind.	Smith, Hinchman & Grylls	5-46	425	540	1	125	CE	3.7	11.6	9.1	18.0
Socony-Vacuum Oil Co.	St. Louis, Ill.		1943	425		2	80	Vo				
Paralene Co. Inc.	Emeryville, Calif.	L S Rosener	1-47	420	650	1	100	BW				
Union Bag & Paper Corp.	Savannah, Ga.	Rust Engrs.	9-45	420	750	1	200	BW				
American Viscose Corp.	Front Royal, Va.	F Mayne	1945	415	750	1	225	CE	3.6	11.7	9.9	27.5
Holly Sugar Corp.	Colorado Springs, Colo.		1947	410	575	1	180	RS	2.6	16.7	7.8	26.5
Naval Department	Bremerton, Wash.		9-45	405	705	1	75	EM	1.4	9.0	3.5	25.6
U. S. Naval Gun Factory	Washington, D. C.	H A Kuljian	1-42	405	700	1	120	EM	2.0	10.0	4.1	40.0
Aluminum Ore Co.	Rosiclare, Ill.	W S Steels	1-43	405	700	1	120	EM	2.0	10.0	4.1	40.0
Champion Ind. Co.	Lawrence, Miss.	C T Main	12-42	400	750	1	40	BW		3.1	1.6	32.3
			1-47	400	600	1	70	RS	2.6	6.7	3.7	24.8
Franklin Board & Paper Co.	Franklin, Ohio		1-46	400	600	1	55	BW	0.3	7.4	1.9	35.0
Waver Co. Inc.	Fontana, Calif.			400	700	1	105	BW		7.3	3.1	31.9
National Lead Co.	Savannah, N. J.	J G White	7-46	400	657	2	165	BW		12.9	6.0	31.9
Ponobosc Chem Fibre Corp.	Great Works, Me.	H S Ferguson	1946	400	750	1	200	RS	5.9	16.1	13.5	22.0
Rocky Mountain Arsenal	Lafayette, Colo.	Whitman, Requaardt & Smith	1943	400	700	2	115	BW	5.3	12.5	10.5	25.5
Song Paper Co.	Middletown, Ohio	H A Kuljian		400	700	1	120	BW	1.4	10.9	5.5	

300 TO 399 PSI

Atmos. Board Co.	Wilmington, N. C.		11-44	475	740	1	100	RS	6.05	9.6	9.0	15.8
Gulf States Paper Corp.	Tuscaloosa, Ala.		4-46	475	650	1	100	BW				
Lee Rubber & Tire Corp.	Conshohocken, Pa.		10-43	475	700	2	40	RS	1.6	3.7	2.8	24.8
Federal Paper Board Co.	Bogota, N. J.	K A Letren	1946	465	700	1	70	BW	0.2	7.7	2.8	34.0
Berst-Forster-Dixie	Pharmacia, N. Y.	H F Hallock	8-46	460	940	1	30	BW	0	4.9		
General Aniline & Film Corp.	Grassell, N. J.		3-44	460	700	1	70	BW	1.5	7.2	4.5	22.0
Bakelite Corp.	Bound Brook, N. J.	Francisco, Jacobus	11-46	450		1	125	BW	0.7	15.9	5.3	29.8
Clinton Industries, Inc.	Clinton, Iowa	Sargent & Lundy	4-46	450	550	2	100	BW	1.1	10.8	4.2	32.0
Congoleum Nairn Corp.	Maricus Hook, Pa.		12-46	450	485	2	75	BW		8.5	2.9	26.2
Hercules Powder Co.	Bradford, Va.	N G Haag	3-43	450	750	1	175	CE	2.9	14.1		26.5
Keystone Steel & Wire Co.	Bartonsville, Ill.		9-46	450	750	1	150	CE	2.3	12.0		
Minnesota, Ontario Paper Co.	Int'l Falls, Minn.		3-42	450	580	1	35	CE	2.5	8.3	4.5	
Publicker Industries	Philadelphia, Pa.	United Engrs.	1945	450	750	6	100	RS	2.6	9.4	6.4	18.5
Alphubine Rubber Co.	Youngstown, Ohio	R R Jones	1945	450	650	1	65	BW		7.2		
Wauworth Co. Inc.	Kewanee, Ill.		5-45	450		1	60	EM	1.1	6.3	3.4	28.0
Blanton Paper Co.	Grand Rapids, Minn.	Heinick, Lideskuty & Lutz	2-42	425	650	1	100	BW		11.01	5.6	24.1
Calvert Distilling Co.	Relay, Md.	Smith, Hinchman & Grylls	9-46	425	600	1	75	BW	1.9	19.2		17.5
Magnolia Petroleum Co.	Chisholm, Texas		2-43	425	675	2	175	CE	2.4	12.9		35.0
Omenia Ltd.	Sherrill, N. Y.		3-46	425		1	70	BW		7.0	1.7	43.0
Pittsburgh Steel Co.	Monessen, Pa.	Freyh Engrs.		425	700	2	175	CE	4.2	19.3		20.8
Joseph E. Seagram & Sons	Lawrenceburg, Ind.	Smith, Hinchman & Grylls	5-46	425	540	1	125	CE	3.7	11.6	9.1	18.0
Socony-Vacuum Oil Co.	St. Louis, Ill.		1943	425		2	80	Vo				
Paralene Co. Inc.	Emeryville, Calif.	L S Rosener	1-47	420	650	1	100	BW				
Union Bag & Paper Corp.	Savannah, Ga.	Rust Engrs.	9-45	420	750	1	200	BW				
American Viscose Corp.	Front Royal, Va.	F Mayne	1945	415	750	1	225	CE	3.6	11.7	9.9	27.5
Holly Sugar Corp.	Colorado Springs, Colo.		1947	410	575	1	180	RS	2.6	16.7	7.8	26.5
Naval Department	Bremerton, Wash.		9-45	405	705	1	75	EM	1.4	9.0	3.5	25.6
U. S. Naval Gun Factory	Washington, D. C.	H A Kuljian	1-42	405	700	1	120	EM	2.0	10.0	4.1	40.0
Aluminum Ore Co.	Rosiclare, Ill.	W S Steels	1-43	405	700	1	120	EM	2.0	10.0	4.1	40.0
Champion Ind. Co.	Lawrence, Miss.	C T Main	12-42	400	750	1	40	BW		3.1	1.6	32.3
			1-47	400	600	1	70	RS	2.6	6.7	3.7	24.8
Franklin Board & Paper Co.	Franklin, Ohio		1-46	400	600	1	55	BW	0.3	7.4	1.9	35.0
Waver Co. Inc.	Fontana, Calif.			400	700	1						

Core Steam Turbine Driv	ES	Riley Stoker Corp	Tu	Tubular	(150)	Stoker grate area, sq ft
Two motors per fan 4 ft	ES	Speed control	UF	Underfeed stoker		Includes water wall
One motor, one turbine per fan	ES	Simplex 4 ft	UI	Union Iron Works		Continuous ash discharge
Alumina metal 2 ft	ES	Spreader stoker	V	Vane control		Both fans on one shaft
Oil burner 2 ft	ES	Slag tap	VK	Vickers Keeler Boiler Co		Subbituminous
Underfeed fuel firing	T	Turbine drive	Vo	Henry Vogt Machine Co		1000 Btu per 1000 cu ft
Water 2 ft	TE	Terry Steam Turbine Co	WE	Westinghouse Electric Corp		High-pressure boilers for testing
Regulator 2 ft	TG	Traveling-grate stoker	WI	Wickes Boiler Co		purposes

200 PSI

Atlas Powder Co.	Stamford, Conn.	8-46	200	490	1	60	CE	TG (240)											60
Dewey Portland Cement Co.	Davenport, Iowa		200	480	4	30	EM	C	4.5	1800	GE								140
Exchange Orange Prod Co.	Ontario, Calif.		200	388	1	33	BW	O											33
General Electric Co.	Tiffin, Ohio	6-46	200	Sat	2	20	BW	SS (63)											231
Hinde & Dauch Co.	Cleveland, Ohio	7-46	200		1	18	BW	O											40
Hinde & Dauch Co.	Buffalo, N. Y.		200		1	18	BW	O											18
Hinde & Dauch Co.	Watertown, Mass.		200		1	18	BW	O											18
Neosho Valley Cooperative	Erie, Kan.	3-46	200		1	25	BW	CA, O											25
N. Y. & Richmond Gas Co.	Staten Island, N. Y.	11-45	200	450	1	13	BW	UF (85)											
Northwest Paper Co.	Brainerd, Minn.	10-45	200	Sat	1	60	CE	SS (129)											110
Pasco Packing Assn.	Dade City, Fla.	3-45	200	Sat	1	00	BW	O											180
Plainfield Union Water Co.	Plainfield, N. J.	5-46	200	388	1	19	BW	UF (63)											34
Todd Shipyards, Inc.	San Pedro, Calif.	2-46	200	Sat	4	5.5	OW	O											16

160 TO 199 PSI

Lake City Ordnance Plant	Independence, Mo.	10-41	190	Sat	3	75	BW	O, G											225
General Electric Co.	Danville, Ill.	6-46	185	Sat	2	15	BW	G											30
J. D. Grover & Sons, Co.	Philadelphia, Pa.	8-46	185	382	1	25	EM	O											50
Eastman Kodak Co.	Rochester, N. Y.	9-41	175	378	3	75	RS	C, O											250
Frontier Refining Co.	Cheyenne, Wyo.	9-41	175	378	1	25	RS	C, O											100
General Electric Co.	Fort Edward, N. Y.	1941	175	490	2	30	BW	UF (90)											30
Norfolk Shipbuilding Corp.	Norfolk, Va.	1941	175		2	15	BW	O											24
Abbott Laboratories	North Chicago, Ill.	11-45	175	377	1	20	RS	UF (59)											25.5
Chambers Mfg. Co.	Springfield, Ill.	3-42	175		2	15.5	CE	SS (38)											31
Chambers Mfg. Co.	West Plains, Mo.	1944	160	370	1	40	EM	C											101
Continental Distilling Corp.	Philadelphia, Pa.	4-45	160	420	2	60	RS	C											120
Continental Distilling Corp.	Philadelphia, Pa.		160	470	3	150	RS	P	7.4	3600	AC	0.75	0						672
Continental Distilling Corp.	Philadelphia, Pa.		160	500	2	125	RS	O, G											19.4
Continental Distilling Corp.	Philadelphia, Pa.		160	500	2	80	BW	O											1936
Continental Distilling Corp.	Philadelphia, Pa.		160	500	3	13.6	CE	WG											33
Continental Distilling Corp.	Philadelphia, Pa.	1944	160	Sat	2	75	CE	UF (236)											300
Int'l Bus Machines Corp.	Endicott, N. Y.	11-44	160	360	1	80	BW	UF (204)	1.3	1320	MS	2.0	1						160
Northern Pacific Rwy Co.	Livingston, Mont.	8-45	160	364	2	35	BW	SS (184)											130
Peoples Natural Gas	Brave, Pa.	7-46	160	385	1	65	RS	TG (215)											240
Peoples Natural Gas	Brave, Pa.	1944	160	420	3	80	BW	P	2	3600	EL	1.25	0						100
Seattle Gas Co.	Seattle, Wash.	7-46	160	Sat	2	100	RS	P, O											1260
Seattle Gas Co.	Seattle, Wash.	7-46	160	Sat	2	50	BW	O											100
Skelly Oil Co.	Eldorado, Kan.		160	Sat	3	65	VO	O											
Southern Calif. Gas Co.	Los Angeles, Calif.	8-43	160	Sat	3	70	BW	O	0.1	3600	GE	15.0	0						295
Spokane, Portland & Seattle Rwy.	Portland, Ore.	10-43	160	370	3	110	RS	P											330
Spokane, Portland & Seattle Rwy.	Portland, Ore.	5-46	160	370	2	7.5	BW	O											15

150 PSI AND BELOW

Allis-Chalmers Mfg. Co.	Norwood, Ohio	12-41	150	365	1	40	BW	P											
Baldwin Locomotive Wks.	Burnham, Pa.	10-43	150	500	2	90	BW	P											360
Carstens Packing Co.	Spokane, Wash.		150	324	2	6	CE	SS											
Carstens Packing Co.	Spokane, Wash.	4-46	150	Sat	2	6	BW	O	1.25	3600	WE	5	1						159
Ed. J. du Pont de Nemours	Arlington, N. J.		150	366	1	50	BW	P											
Ed. J. du Pont de Nemours	Arlington, N. J.	3-45	150		1	25	RS	UF (75)											41
General Motors Corp.	Wilmington, Del.	5-46	150	366	1	15	RS	O											25
G. M. C. Frigidaire	Moraine City, Ohio	7-46	150	366	3	60	BW	O											180
Hooker Electrochemical Co.	Niagara Falls, N. Y.	10-40	150	Sat	1	00	BW	P											428
Knowlton Bros.	Watertown, N. Y.	1-44	150	366	1	50	EC	P											200
Miami Valley Coated Paper	Franklin, Ohio	1-46	150	366	1	25	BW	UF (82)											
Miami Valley Coated Paper	Franklin, Ohio	2-46	150		1	16.4	BW	TG											
Plywood Plastics Corp.	Hampton, S. C.		150	Sat	2	12	LI	O	0.5	3600	WE	1.0	0						49
Plywood Plastics Corp.	Hampton, S. C.		150	Sat	1	25	BW	O											13
R. J. Reynolds Tobacco Co.	Danville, Va.		150	Sat	1	18	O, W												90
Rubens & Horrmann Brewing	Staten Island, N. Y.	1-46	150	Sat	1	26.5	CE	SS (73)											26.5
Tantalum Defense Corp.	North Chicago, Ill.	1-43	150	Sat	1	20	EC	P											40
University of Missouri	Rolla, Mo.	6-42	150	366	3	40	BW	SS (150)											120
University of Missouri	Akron, Ohio	1946	150	366	2	18	BW	CG (75)											36
Upjohn Co.	Kalamazoo, Mich.	9-46	150	Sat	2	15	BW	UF (54)											30
Upjohn Co.	Kalamazoo, Mich.	1-45	150		1	45	UI	UF											
Canado Mission	Canado, Ariz.	12-42	140	Sat	1	7	LI	SS (40)											22
Canado Mission	Canado, Ariz.	3-46	140	Sat	1	15	BW	SS (54)											0.25
Mohawk Carpet Mills	Amsterdam, N. Y.		140	360	2	60	CE	P											120
Naval Air Station	Lakehurst, N. J.		135	350	3	35	BW	O											120
Alden Mills	New Orleans, La.	10-45	130	356	1	7	BW	G											
Virginia Hot Springs	Hot Springs, Va.		130	355	1	24.7	BW	UF (72)											55
Deep Sea Products Co.	Aberdeen, Wash.	2-46	125	Sat	1	10	RS	O											10
Diebold, Inc.	Canton, Ohio	1942	125		2	23	BW	C											
Diebold, Inc.	Canton, Ohio	1-43	125	462	1	23	RS	O											43
Excelsior Mill	Union, S. C.		125	353	1	32.5	BW	SS (90)											48.3
H. J. Heinz Co.	Medina, N. Y.	9-45	125	Sat	1	60	BW	P											
H. J. Heinz Co.	Tracy, Calif.	6-46	125		3	50	BW	O, G											150
Lloyd Mfg Co.	Menominee, Mich.	11-46	125	338	2	30	CE	SS (125)											60
Naval Air Station	Jacksonville, Fla.	9-46	125	Sat	2	12	RS	UF (50)											
Page Milk Co.	Merrill, Wis.	12-42	125	344	3	13.5	BW	O											40
Physical Culture Hotel	Danville, N. Y.	1944	125		1	25	UI	P											0.375
Physical Culture Hotel	Danville, N. Y.		125		1	10	BI	O											0.225
Washington Gas Light Co.	Washington, D. C.		125		1	10	CE	UF											20
Washington Gas Light Co.	Washington, D. C.	2-43	125	344	1	70	BW	P											366
Western Condensing Co.	Mishicot, Wis.	12-41	125	344	2	50	BW	P											
Wyman Gordon Co.	Harvey, Ill.	3-44	125	345	1	10	UI	P											
McGuire General Hosp.	Richmond, Va.	1943	120	350	3	80	BW	SS (192)											240
Naval Air Station	Olathe, Kan.	3-44	110	344	4	30	UI	SS											120
American Asphalt Roof	Kansas City, Mo.	9-42	110	Sat	3	40	BW	O, G											120
Boeing Aircraft Co.	Seattle, Wash.	3-46	100	330	1	13	CE	CA											9
Boeing Aircraft Co.	Seattle, Wash.	1942	100	338	2	14	KB	O											112
Boeing Aircraft Co.	Seattle, Wash.	1946	100	650	1	14	RS	O											

150 PSI

R C A Co.
U. S. Arm
Warumbe
Westingh
Winthrop

CANADA

Canadian
Canadian
Consumer
Kroehler
Rolland I

160 TO

British-A
Canadian
Dominion
Toronto
Truro El
Brompton
Building
Canada
E B Edd
Shawing
J R Boot
Booth L
Eldorado
Canadian
Dominion
Hamilton
Victoria

150 PSI

Alberta I
Alberta,
J A Y B
Canadian
Canadian
Donnac
Internat
J Lewis
National
N M C I
Nova S
Proctor
Swift Ca
Canadian
Gypsum
National
Canadian
Canadian
Consum
Sunnybr
Dominio
Dryden
W & A
Imperial
Royal A
Toronto
Electric
H J Hei
Federal
Fry-Cad
Laurent

AC —
BI —
BL —
BW —
BWG —
C —
C1 —
CB —
CE —
CG —
CV —
DB —
EC —

Rockwell Corp.	Lancaster, Pa.	100	345	3	7	NB	UF (56)		30	
U. S. Army	Camp Butler, N. C.	9-42	100	340	5	7	BW	UF (36)		15.7
Varumt. Mfg. Co.	Lisbon Falls, Me.	9-46	100		4	88	BW	SS (56)		
Westinghouse Elec. Corp.	Attica, N. Y.	5-45	100	308	1	27	BW	UF (51)		45
Winthrop Mills	Winthrop, Me.	6-43	100		1	18	BW	UF		
		6-43	100		2	12	IR	UF		30 0.225

✓ Canadian Intl Paper Co.	Gatineau, Que.	12-46	200	455	1	200	CE	P	700	
Canadian Vickers, Ltd.	Maingoneville, Que.	6-41	200	388	3	18	VK	UF (54)	55	
Consumers Gas Co.	Toronto, Ont.	1946	200	453	1	45	DB	O. G		
✓ Kroehler Mfg. Co., Ltd.	Stratford, Ont.	7-46	200		1	18	BWG	UF (54)		0.4
Rolland Paper Co.	St Jerome, Que.	10-45	200		1	18	VK	SS	02 3690 BW 10 0	60
		3-46	200		1	18	VK	SS		

[illegible]

✓ Alberta Provincial Govt.	Ohver, Alta.	12-41	150	366	1	20	BWG	TG (77)							45	0.55
✓ Alberta, University of	Edmonton, Alta.	2-45	150	Sat	2	18	FW	C							98	
✓ I A Y Bouchard, Inc	Quebec City, Que.	9-45	150	Sat	2	9	CB	O							27	
✓ Canadian Copper Refiners	Montreal East, Que.		150	420	1	40	VK	O							150	
✓ Canadian Vickers Ltd.	Cartierville, Que.	8-44	150	366	1	10	CV	UF (42)							30	
✓ Donnacona Paper Co.	Donnacona, Que.	5-46	150	366	1	65	DB	Elec							360	
✓ International Harvester Co.	Hamilton, Ont.	4-46	150	441	3	40	FW	SS (110)							120	1.0
✓ J Lewis & Sons, Ltd.	Turro, N. S.		150	500	1	33	BWG	TG (124)							51	
✓ National Steel Car Corp	Hamilton, Ont.	1941	150	366	2	25	BW	UF (87)							71	
✓ N M C Dockyard	Halifax, N. S.	9-43	150	358	3	30	VK	UF (110)							90	
✓ Nova Scotia Lt & Pwr Co.	Halifax, N. S.	1942	150	500	1	35	BWG	TG (123)								5
✓ Procter & Gamble Co.	Hamilton, Ont.		150	Sat	2	40	BWG	TG (135)								
✓ Swift Canadian Co.	Edmonton, Alta.	7-42	150	366		45	BWG	UF							80	
✓ Canadian Duxit Abrasives	Brantford, Ont.	10-42	148	Sat		11	BWG	UF (40)							22	
✓ Gypsum Lime & Alabastine Co.	Caledonia, Ont.		145	360	2	30	CL	UF (66)							50	
✓ National Defense Dept.	Halifax, N. S.	10-42	145	363	2	35	BW									
✓ Canadian General Elec. Co.	Toronto, Ont.	10-42	145	363	1	15	BW								85	
✓ Canadian Industries, Ltd.	Brownburg, Que.	1941	140	Sat	2	25	BWG	TG (98)							45	
✓ Canadian Westinghouse, Ltd.	Hamilton, Ont.	1943	140	450	1	25	VK	UF (77)								
✓ Consumers Gas Co.	Toronto, Ont.	12-41	135	358	2	60	FW	UF (105)							120	
✓ Sunnybrook Hospital	Toronto, Ont.	1945	130	430	3	25	DB	TG (126)							75	
✓ Canadian Raybestos, Ltd.	Toronto, Ont.	11-45	130	350	3	30	FW	UF (92)	0.128	3750	BW	6			90	0.128
✓ Dominion Forge & Stamping Co.	Peterborough, Ont.	1-46	125	350	1	10	FW	O							15	
	Walkerville, Ont.	7-43	125		2	14	FW	SS (53)							60	
✓ Dryden Paper Co., Ltd.	Dryden, Ont.	7-45	125	353	1	50	CE	BL								
		2-43	125	353	1	30	LS	SS (96)							170	
✓ W & A Gibbey, Ltd.	New Toronto, Ont.	12-43	125	350	1	6.2	BW	O							12.4	
✓ Imperial Leaf Tobacco Co.	Aylmer, Ont.	11-46	125		2	5	FW	O							9.0	
✓ Nova: Alexandra Hospital	Edmonton, Alta.	11-46	125	353	3	10	FW	G	0.25	3600	K	20	0		30	0.25
✓ Toronto, University of	Ajax, Ont.	1-46	125	460	5	25	CV	UF (77)							125	
✓ Electric Reduction Co.	Buckingham, Que.	1941	120	Sat	1	20	FW	UF (65)							75	
✓ E J Heinz Co of Canada	Wallaceburg, Ont.															

AC	Allis-Chalmers Mfg Co	EL	Elliott Co	MS	Moore Steam Turbine Div
BL	Bigelow Boiler Co	Elec	Electric Boiler	O	Oil
BL	Black liquor	EM	Eagle Moor Iron Works	OW	Oil Well Supply Co
BW	Bacon & Wilcox Co	FW	Foster Wheeler Corp	P	Pulverized-fuel firing
BWG	Bacon-Wilcox & Goldie-McCullough Ltd	G	Gas	RS	Riley Stoker Corp
C	Coal bituminous	GE	General Electric Co	SS	Spreader stoker
CA	Coal anthracite	HBB	Heine Boiler Co	TG	Traveling grate
CB	Coke breeze	IB	International Boiler Co	UF	Underfeed stoker
CE	Combustion Engineering Co	K	Kerr Turbine Co	UI	Union Iron Works
CG	Chain grate	KB	Kewanee Boiler Co	VK	Vickers Keeler
CI	Canadian Vickers Co. Ltd	KE	Keeler Boiler Co	VV	Henry Vogt Machine Co
DB	Dominion Bridge Co. Ltd	L	Lignite	W	Wood waste
EC	Ene City Iron Works	LJ	Llewellyn Iron Wks	WGA	Stoker grate area, sq ft
		LS	E Leonard & Sons, Ltd		