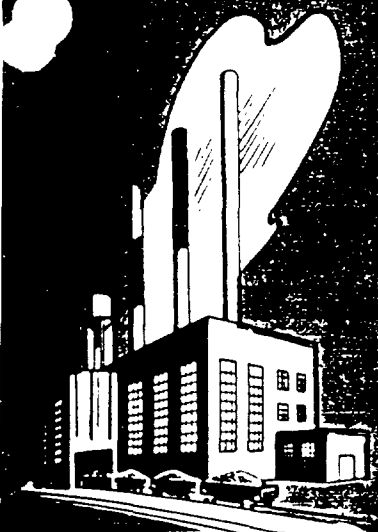


MODERN PLANT SURVEY

PLAINTIFF'S EXHIBIT

RS-186



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 production 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 61.1 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 23%, 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

Compiled by J. C. O'Neil
American Boiler
Company

Company

Location

Consulting
Engineer

Boiler
Capacity
(sq ft)

Boiler
Capacity
(sq ft)

Boiler
Capacity
(sq ft)

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Boiler
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(sq ft)

301 TO 399 PSI

Am. Y. N. H. & Hartford RR.	Cos 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.		1-44	350	725	1	105	BW		9.1	6.9	21.6
Colo. Fuel & Iron Corp.	Pueblo, Colo.	United Engrs.		330	750	1	150	RS	4.5	14.9	13.0	16.8
Emery Industries Inc.	Cincinnati, Ohio	A M Kinney		300	Sat	1	52	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 Refl Corp	Port Wentworth, Ga		9-45	300	600	1	60	RS	2.0	3.8	2.4	24.6
Dwens-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	35	BW		13.1		
American Mouscos Co	Brooklyn, N. Y.	J G White	12-45	250	385	1	30	BW		9.7		22.8
Atlantic Seaboard Cork	Baldwin, Ky.		3-46	250	300	1	30	BW				
Atlas Powder	Newcastle, Del.		3-46	250	350	2	30	EM	0.4	4.6		30.0
				250	350	2	25	RS				
Cudahy Bros Co	Cudahy, Wis	B Bugbe		250	350	1	35	EM				
				250	350	1	30	EM				
Diamond Wire & Cable Co.	Chicago Hts., Ill.		2-45	250	Sat	1	35	BW			1.3	0.3
Gleason Works	Rochester, N. Y.	Heman & Candee	10-43	250	300	3	25	BW				
Glendon Print Works	Philipsdale, Pa.	Westcott & Mapes	11-46	250	350	1	60	RS	3.1	3.8	4.3	17.6
Goodyear Tire & Rubber Co	Gadsden, Ala.		1-46	250	Sat	2	60	BW	1.2	3.9		
Lake Placid Club Co	Lake Placid, N. Y.	Riley Corp	2-46	250	350	1	30	RS	0.7	2.4	1.05	
Mathieson Alkali Works	Lake Charles, La.		7-44	250	610	1	260	BW		25.0		
Pittsburgh Coke & Chem Co	Neville Island, Pa			250	300	2	75	CE		10.4		
Servet, Inc.	Evansville, Ind.		2-43	250	Sat	1	30	BW	0.5	6.8		
Winslow Bros & Smith	Norwood, Mass		12-42	250	Sat	1	30	CE		5.7		
Worcester Cold Storage	Worcester, Mass		3-46	250		2	23	CE	0	3.6	1.12	
Laybester-Mannattian	Mannett, Pa		1-46	240	400	1	46	EM	0.3	6.7	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	230	300	2	62.5	BW	1.25	6.7	3.2	28.0
Atlas Powder Co	Stamford, Conn		7-46	225	300	1	60	CE	1.3	7.4		
Bath Iron Works Corp	Bath, Me		1-46	225		2	30	BW				
Cons Citrus Products	Tampa, Fla	N C Ebaugh	2-42	225	390	1	38	BW	0.7	3.0		
Cons Vultee Aircraft	Ft. Worth, Texas	Austin Co.	2-42	225		4	100	WT	2.1	3.7	3.8	38.8
Konier Co	Kohler, Wis		3-46	225	396	2	15	BW		4.3	1.1	
Lake Shore Tire & Rubber Co	Des Moines, Ia.	E Patera	12-42	225	520	1	80	BW		8.9		
Ware Shoals Mfg Co	Ware Shoals, S. C	J E Shirrine	12-43	220	441	2	50	FW	1.3	3.6		23.0
Foster Wheeler Corp	Danville, N. Y.		4-43	220	520	3	150	RS	2.7	14.9	7.4	29.2
Standard Oil Co of N. J.	Baton Rouge, La	E B Badger	4-43	210		1	75	EC	1.07	11.2	4.6	
West Va. Coal & Coke	Chauncey, W. Va			210								

TESTING BOILERS*

Kieley & Mueller, Inc.	North Bergen, N. J.		1943	2000	900	1	1.5	BS		0.0861	0.004	730
Josma Hendy Iron Wks	Sunnyvale, Calif		1943	1500	900	1	15	BS		0.3671	0.018	1260
Westinghouse Electric Corp	Emeryville, Calif		1943	2000	900	1	1.5	BS		0.0861	0.004	730

CANADA

300 PSI AND ABOVE

Marathon Paper Mills Co	Marathon, Ont	Stone & Webster	9-46	675	715	2	125	CE				
			9-46	675	715	2	65	BW				
Bathurst Pwr & Paper Co	Bathurst, N. B		1945	640	730	1	175	BWG	5.3	19.5		15.7
Alliance Paper Mills	Merriton, Ont		9-46	620	760	1	75	CE	1.6	6.98		27.1
Fraser Co, Ltd	Kinnundston, N. B	H G Acres	3-46	600	700	2	100	CE	1.77	9.0		23.0
Gaspera Sulphite, Ltd	Chandler, Que.		1945	600	710	2	65	CE	1.76	7.0		22.3
Dominion Steel & Coal Corp	Sydney, N. S.		1941	500	750	1	185	BWG	2.6	14.6	10.4	21.5

100 TO 399 PSI

Atlantic Sugar Ref Ltd	St. John, N. B.	H G Acres	7-46	450	600	2	60	BWG	1.6	6.4	2.7	28.7
Dominion Oils & Lumber Co	Montreal, Que		1-44	450		1	60	BWG		6.44	2.6	13.3
Imperial Oil Ltd	Montreal East, Que		2-46	450	650	1	50	BWG		5.2	1.9	29.3
Shell Oil Co of Canada	Montreal East, Que		12-43	450	601	1	75	FW	2.2	6.3	4.2	
Polymer Corp, Ltd	Sarnia, Ont.	H G Acres		430	650	3	308	BWG	8.9	19.2	25.7	14.5

301 TO 399 PSI

Barrett Co, Ltd.	Joliette, Que	Atwoods, Ltd	1946	250	Sat	1	40	DBR		5.4		
M F Goodrich Rubber Co	Kitchener, Ont		4-46	250	378	1	36	FW	1.3	3.7	1.9	21.4
Canadian Industries, Ltd	Kitchener, Ont			250	406	3	17	VK	0.5	2.7	0.5	
Grain Processing Co	Princeston, B. C	A R Yuill		250	600		89	CE	2.0	8.2		24.3
James MacLaren, Ltd	Mason, Que	H S Ferguson	1941	250	Sat	1	40	CE	2.6	9.6	11.6	15.7
Maritime Industries, Ltd	Napman, N. S	H G Acres	1946	250	350		15	DBR		2.5		
Mars, Ltd	Halifax, N. S	Montreal Emer	1945	250	Sat	1	12	FW	0.4	1.2	0.46	35.5
Northern Lumber Co, Ltd	Montreal, Que		4-45	250	406	1	3.5	BWG		1.0	0.32	
Quebec Sugar Ref Co	St. Helene, Que	F Burnham		250	406	3	40	FW	0.9	6.4	2.5	
Eastern Ore Co, Ltd	Timon, N. S		12-41	234	600	1	65	CE	1.9	7.7	5.5	
Restone Tire & Rubber Co	Hamilton, Ont		3-43	225	Sat	2	30	BW		3.3	1.0	
Maple Leaf Milling Co	Port Colborne, Ont	MacDonald Engrg	9-45	210	Sat	2	15	BWG		2.5		

Typical Municipal Plants Installed on

UNITED STATES

City of Denham	Denham, Calif	Chas A Henzler	5-47	600	825	1	200	CE	2.33	12.43	7.33	34.4
City of Springfield	Springfield, Minn	Chas Foster	7-46	480	750	1	55	WB		4.79		25.2
City of Water & Light Dept	Springfield, Tenn			480	700	1	81	BW	9.38	1.87		
McPherson Water & Light Dept	McPherson, Kansas	Burnmore & Douglas	4-46	450	750	1	100	RS	1.63	5.15		25.0
Marathon Utilities	Marathon, Mo	Burnmore & Douglas	7-42	450	750	1	24	CE				
		Burnmore & Douglas	5-42	450	750	1	40	CE				
		Burnmore & Douglas	1-47	450	750	1	60	CE	1.34	6.40	3.62	29.9
		Burnmore & Douglas	4-42	450	750	1	70	CE	9.78	7.55	4.25	
City of Clinton	Clinton, Minn	R D Thomas	9-46	450	450	2	130	CE, BW				
City of Clinton	Clinton, Minn		11-46	450	750	1	45	BW	0.75	6.40	2.50	27.7
City of Clinton	Clinton, Minn		1-47	425	750	1	60	RS	9.94	7.74	3.90	24.5
City of Clinton	Clinton, Miss	Burn & McDonnell	2-46	410	750	1	80	BW	1.30	8.34	4.49	
City of Clinton	Clinton, Miss	Burn & McDonnell	7-42	400	725	1	110	BW	1.17	12.29		
City of Clinton	Clinton, Fla	Burn & McDonnell	4-47	400	750	1	70	BW		7.35		35.0
City of Clinton	Clinton, Fla	Burn & McDonnell	1-43	400	750	2	50	BW	1.11	6.43		
City of Clinton	Clinton, Fla	Burn & McDonnell	7-46	400	750	1	40	BW	0.41	4.78		
City of Clinton	Clinton, Fla	Burn & McDonnell	1-46	400	725	1	50	BW		6.44		27.0

CANADA

City of Denham	Denham, Calif		1942	450	825	1	180	FW	3.20	9.02	6.36	21.0
City of Denham	Denham, Calif		7-46	450	750	1	55	BWG	1.55	21.75	7.10	33.4
City of Denham	Denham, Calif		9-45	275	600	1	70	FW	1.52	7.34	5.35	31.2
City of Denham	Denham, Calif		1-42	150	940	1	20	BWG		6.24		

8.5	Tu	T	S	Da	F	S	Da	P	C	13.8	2800	I	S	R				600	36
11.0	Tu	M	S	Da	M	S	Da	P	C	14.0	2630	I	S	R				450	13
17.0	Tu	M	S	Da	M	S	Da	P	C	14.4	2902	2M, 1T	S	R	0.2	1800	WE	4.0	1146
3.8	Tu	M	S	Da	M	S	Da	P	C	10.5	2100	T	S	R				100	30
11.0	Tu	M	S	Da	M	S	Da	P	C	12.3	2600	1M, 1T	S	R				360	100
7.3	Tu	M	S	Da	M	S	Da	P	C	18.5		T	S	R	1.0	3600	GI	2.0	150
4.7	Tu	M	S	Da	M	S	Da	P	C			T	S	R				200	4
3.1	Tu	M	S	Da	M	S	Da	P	C	12.2	2050	1M, 1T	S	R				145	0.5
10.0	Tu	M	S	Da	M	S	Da	P	C	12.6	2200	1M, 4T	S	R	2.25	3600	MS	20.0	170
10.0	Tu	M	S	Da	M	S	Da	P	C	14.5	2920	2M, 1T	S	R				150	2.5
10.0	Tu	M	S	Da	M	S	Da	P	C	13.0	2600	M	S	R				210	
10.0	Tu	M	S	Da	M	S	Da	P	C	11.5	2500	T	S	R				60	
10.0	Tu	M	S	Da	M	S	Da	P	C	11.3	2100	S	S	R	1	3600	MI	3.0	135
10.0	Tu	M	S	Da	M	S	Da	P	C	11.9		2Du	S	R					
10.0	Tu	M	S	Da	M	S	Da	P	C	13.5	2600	1M, 1T	S	R	2	3600	MS	1.0	75
10.0	Tu	M	S	Da	M	S	Da	P	C	12.7		2T	S	R	0.8		TL	15.0	180
10.0	Tu	M	S	Da	M	S	Da	P	C	14.6	2900	1M, 1T	S	R					188
10.0	Tu	M	S	Da	M	S	Da	P	C	11.5		2T	S	R					50
10.0	Tu	M	S	Da	M	S	Da	P	C	13.2		T	S	R					260
10.0	Tu	M	S	Da	M	S	Da	P	C	11.5		T	S	R					450
10.0	Tu	M	S	Da	M	S	Da	P	C	14.8	2400	Du	S	R					150
10.0	Tu	M	S	Da	M	S	Da	P	C	18.1		Du	S	R					130
10.0	Tu	M	S	Da	M	S	Da	P	C			Du	S	R					46
10.0	Tu	M	S	Da	M	S	Da	P	C	11.0		2Du	S	R					70
10.0	Tu	M	S	Da	M	S	Da	P	C	13.6		1M, 3T	S	R					180
10.0	Tu	M	S	Da	M	S	Da	P	C	14.3		T	S	R					150
10.0	Tu	M	S	Da	M	S	Da	P	C	11.5	2500	1M, 2T	S	R					170
10.0	Tu	M	S	Da	M	S	Da	P	C			2T	S	R					60
10.0	Tu	M	S	Da	M	S	Da	P	C	11.0		1M, 1T	S	R					28
10.0	Tu	M	S	Da	M	S	Da	P	C	14.2	2400	3T	S	R	12	MS	1.0		400
10.0	Tu	M	S	Da	M	S	Da	P	C	11.0		1M, 1T	S	R					260
10.0	Tu	M	S	Da	M	S	Da	P	C	14.4		Du	S	R					38
10.0	Tu	M	S	Da	M	S	Da	P	C	13.5	2600	2T	S	R					200
10.0	Tu	M	S	Da	M	S	Da	P	C	11.0		T	S	R					100
10.0	Tu	M	S	Da	M	S	Da	P	C	14.0	2400	T	S	R					750
10.0	Tu	M	S	Da	M	S	Da	P	C	13.0		T	S	R					135

	Pl	T	2Mp	V	2M	S	Da	P	C			T	R	7.5	3600	WE	15.0	2						
21.5	Pl	T	2Mp	V	M	F	S	P	C			T	R											
4.8	Pl	M		Da	M		Hy	P	C	10.6-14.0	1950	M												140
7.0	Pl	M		V	M		S	P	C	13.0	1900	T												
3.0	Pl	M		V	M		Hy	P	C	10.5	1900	M, T		3.5	3600	WB	165							190
5.0	Pl	M		V	M		S	P	C	13.0	2300	T		4.0	3600	WB	0.5	2	A	2.23	2	Ad	7.0	
12.5	Pl	M		V	T		S	P	C	11.5	2550	M	R	16	3600	CP	1.0	0	A	15	2	Ad	555	
6.1	Tu	T		S, V	T		S, Da	TG	C	13.0	2300	T	S, R											180
4.4	Tu	T		S, Da	T		S, V	P, G	C	13.4	2200	M, Da	S, R											110
3.1	Tu	M		Da	M		Da	O, G	C	18.6		Du	S, R											200
								O, G	C	18.5		T												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	2	Mu	1540	
														4	3600	WE	55.0	1	A				24	
								OG	C															
								UF	C	15.5	2500	2M	Du											60
6.5	Pl	M		S, Da	M		Da	UF	C	14.3	2650	2Du	S, R											51
7.4	Pl	M		V	M		S	P, L	C	7.4		T	P, R	10	1800	AC	0.5	1	A		2	Ad	200	
	Pl	M		V	M		S	P	C	13.3		T												
								SS	C															
								UF	C	15.2	1990													
								G	C															
								SS	C	14.5		1M, 2T	S											80
5.0	Pl	M	T	Da, V	M		Da	SS	C	13.1		M	R	5	3600	GE	0.5	1	A	6.6	2	Br	120	
								P	C	13.5	2520	1M, 1T	S, Hy										157	
								FG, SS	C	13.5	2400	1M, 1T	S, Hy	0.04	2000	WE	5.0						60	
								UF	C	13.5													30	

Under Construction Since September, 1941

19.0	Re	D	S	Da	M	S	Da	P	C	13.0	2100	1M	S	R	2	3600	GE	1.0	4	H	16.0
2.95	Tu	D	S	Da	M	S	Da	P	C	12.2	2000	1T	S	R	2	3500	MS	0.75	1	A	3.6
0		2M								12.5	2300									Ad	70
10.0	Tu	D	S	Da	M	S	Da	P	C	10.3		2M, 1T	S	R	5.0	3600	EL	1.0	5	A	7.5
0		M	S	Da	M	S	Da	P	C	10.5	2950	1D, 1T	S	R	2.5	3600	EL	1.0	2	A	4.75
0		M	S	Da	M	S	Da	P	C	10.5	2350	1M	S	R	4.0	3600	EL	1.0	3	A	7.0
5.5	Tu	M	S	Da	M	S	Da	P	C	10.5	2050	1M, 1T, 1D	S	R	4.0	3600	EL	1.0	3	A	7.0
7.0	2M									10.0		2M, 1D	S	R	10.0	3600	AC	1.0	5	A	7.5
0		M	S	Da	M	S	Da	P	C	10.25		2M	S	R	5.0	3600	GE	0.75	5	A	6.0
0		M	S	Da	M	S	Da	P	C	10.0		2M, 1T	S	R	5.0	3600	WE	0.75	5	A	7.5
0.20	Tu	M	S	Da	M	S	Da	P	C	10.1	2000	1M, 1T	S	R	5.0	3600	EL	1.0	3	A	7.0
0		2M								10.1		1M, 1T	S	R	5.0	3600	EL	1.0	3	A	7.0
97	Tu	M	S	Da	M	S	Da	P	C	10.5		1M, 1T	S	R	5.0	3600	WE	1.2	5	A	8.0
0		M	S	Da	M	S	Da	P	C	10.5	2100	2T	S	R	5.0	3600	AC	1.0	0	A	4.2
0		M	S	Da	M	S	Da	P	C	11.0	2100									Ad	120
0	Tu	D	S	Da	M	S	Da	P	C	13.0	2400	1M, 1T	S	R	5.0	3600	WE		3	A	5.5
16.03	Tu	D	S	Da	M	S	Da	P	C	12.2	2100									Ad	425
16.06	Tu	D	S	Da	M	S	Da	P	C	8.0	2120	1M, 1T	S	R	15.0	3600	GE	0.6	2	A	16.0
0		M	S	Da	M	S	Da	P	C	9.98		1M	S	R	3.0	1900	CP	0.75	0	A	9.0
0		M	S	Da	M	S	Da	P	C	11.38	1900	2T	2D	R	2.5		AC	0.50		A	6.25

Compiled by J. C. McCabe
Assistant Editor

Company

Location

Consulting Engineers

First Operation,
New Units

Nominal Pressure, psi

Nominal Steam
Temperature,
°F

Number

Capacity, each
ton in per hr

Manufacturer

Waterwall surface,
sq ft

Heating surface,
sq ft

Furnace Volume, cu
ft

Air-Heater Surface,
sq ft

700 PSI AND ABOVE

Utah Copper Co.	Magna, Utah	E J Franklin	7-43	950	800	2	350	BW	5.5	12.7	16.4	9	49.3
Wyandotte Chemical Corp.	Wyandotte, Mich.	Burns & Roe	12-44	925	570	1	125	BW	1.6	12.4	5.55	24.3	12.2
Firestone Tire & Rubber Co.	Memphis, Tenn.			900	725	1		BW				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	12.1
Socoy-Vacuum Oil Co.	Paulsboro, N. J.		4-44	850	750	4	125	CE	2.27	10.5	6.9	24.5	17.3
Veirton Steel Co.	Weirton, W. Va.		1-47	850	800	1	325	BW		20.5	16.8		34.1
Cities Service Refining Corp.	Lake Charles, La.	Gibbs & Hill	3-44	825	825	2	325	BW		21.3	14.0	32.6	36.7
Sinclair Rubber, Inc.	Houston, Texas		10-43	750	750	6	300	CE	3.2	17.7	11.1	39.0	33.4
Dairystand Power Co-op.	Genoa, Wis.			700	850	2	50	RS	2.0	4.5	2.75	23.4	23.4
Military Chemical Wks Inc.	Pittsburgh, Kan.	Chem Constr. Co.	1-43	700	700	5	200	RS	3.9	13.1	10.0	21.0	12.1
Monsanto Chemical Co.	Springfield, Mass.	C T Main	4-42	700	750	1	80	FW		7.0			

500 TO 699 PSI

Standard Oil Co of N. J.	Linden, N. J.		4-46	685	740	1	300	RS	8.9	21.0	21.3	20.8	50.1
Hammermill Paper Co.	Eno, Pa.	C T Main	10-46	675	750	2	150	CE	2.9	12.9	3.9	23.0	29.1
R J Reynolds Tobacco Co.	Winston-Salem, N. C.	J E Sirmine & 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					12.1
Fort Paper Co.	Cincinnati, Ohio	W I Barrows	8-43	650	650	1	65	BW		6.7		24.2	10.0
Industrial Hygon Corp.	Painesville, Ohio		8-44	650	750	1	90	CE	2.6	9.2			13.1
Shell Oil Co.	Deer Park, Texas		9-42	650	750	1	125	RS	9.1	3.5	8.1	23.3	17.1
C. S. Sugar Corp.	Clewiston, Fla.	Rust Engng.	1943	650	750	2	175	FW	3.2	18.5	12.6	20.0	15.1
			1945	650	750	1	175	BW	12.5	15.3	17.5	25.0	
			1946	650	750	3	250	BW	3.5	17.9	12.2	23.0	
			12-45	650	665	1	100	BW	4.0	5.9	6.4		
General Aniline & Film Corp.	Binghamton, N. Y.	Jaker & Spencer	3-46	625	755	3	40	CE		5.5	2.6	24.0	1.8
Utah Oil Refining Co.	Salt Lake City, Utah	Sargent & Lundy	2-44	625	750	4	70	BW	1.3				
Humble Oil & Refining Co.	Baytown, Texas		1943	620	745	2	275	CE	1.6	19.3	12.0	35.0	
			1946	620	745	1	275	CE	1.6	19.3	12.0	35.0	
St. Joe Paper Co.	Port St. Joe, Fla.	G F Hardy		615	715	1	100	CE					
Southland Paper Mills, Inc.	Lurkin, Texas	G F Hardy	7-47	610	750	2	175	CE	2.5	14.3		29.9	2.1
Bryant Paper Co.	Kalamazoo, Mich.		1-47	600	750	2	80	RS	3.9	7.3	4.6	21.5	11.1
Carbide & Carbon Chem Corp.	Texas City, Texas	Ford, Bacon & Davis	3-43	600	700	1	134	BW		12.0	5.3		
			5-42	600	300	1	150	RS	4.0	10.6	4.8	22.7	17.1
Celanese Corp of Am.	Narrows, Va.		11-46	600	800	1	200	RS	7.2	14.7	13.0	20.6	2.2
De Laval Steam Turbine Co.	Trenton, N. J.			600	550	1	75	CE	2.5	2.5	3.8	23.4	0.75
Detroit Sulphite Pulp & Paper	Detroit, Mich.	Gibbs & Hill	1943	600	740	2	90	BW	9.00	10.2	4.8		
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	12.5	11.4	32.0	3.1
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		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	7.4
Gulf Oil Corp.	Port Arthur, Texas		1-43	550	630	1	250	BW	2.8	16.7	11.5	28.4	11.1
			6-44	550	630	1	250	BW	2.8	16.7	11.5	28.4	11.1

100 TO 499 PSI

Atmos. Carbide Co.	Chicago, Ill.		11-44	475	740	1	100	RS	6.05	9.6	9.0	15.8	17.1
Gulf States Paper Corp.	Tuscaloosa, Ala.		4-46	475	650	1	100	BW					
Lee Rubber & Tire Corp.	Conshohocken, Pa.		10-45	475	700	2	40	RS	1.6	5.7	2.8	24.5	1.5
Federal Paper Board Co.	Bogota, N. J.	K A Leiten	1946	465	700	1	70	BW	0.2	7.7	2.8	34.0	1.1
Bert-Foster-Divide	Pittsburgh, N. Y.	H F Hallock	3-40	460	640	1	30	BW	0.1	4.4			
General Aniline & Film Corp.	Grasselli, N. J.		3-44	460	700	1	40	BW	1.5	7.2	4.5	22.0	
Banette Corp.	Bound Brook, N. J.	Francison, Jacobus	11-46	450		1	125	BW	0.7	15.9	5.3	29.3	1.6
Canton Industries, Inc.	Clinton, Iowa	Sargent & Lundy	4-46	450	550	2	100	BW	1.1	10.8	4.2	32.0	
Conqueam Narm Corp.	Marcus Hook, Pa.		12-46	450	485	2	75	BW		5.5	2.9	26.2	
Hercules Powder Co.	Bedford, Va.	N G Haug	3-43	450	750	1	175	CE	2.9	14.1		26.5	6.1
Eaststone Steel & Wire Co.	Bartonville, 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	5.3	4.5		
Publicker Industries	Philadelphia, Pa.	United Engngs.	1945	450	750	6	100	RS	2.6	9.4	6.4	18.5	2.1
Capoline Rubber Co.	Cincinnati, Ohio	R R Jones	1943	450	600	1	65	BW		7.2			
Wauvorth Co, Inc.	Keyser, Md.		5-45	450		1	60	EM	1.1	6.3	3.4	28.0	
Hamlin Paper Co.	Grand Rapids, Minn.	Hennick, Edesky & Lutz	2-42	425	650	1	100	BW		11.0	5.6	24.1	
Calvert Distilling Co.	Bellevue, Md.	Smith, Hutchinson & Grylls	9-46	425	600	1	75	BW	1.9	10.2		17.5	
Magnolia Petroleum Co.	Chrusoma, Texas		2-43	425	675	2	175	CE	2.4	12.7		55.0	
Amenda Ltd.	Sherrill, N. Y.		3-46	425		1	70	BW		7.0	1.7	45.9	
Pittsburgh Steel Co.	Monessen, Pa.	Froyn Engng		425	700	2	175	CL	4.2	19.3		20.5	
Joseph E. Seagram & Sons	Luxemburg, Ind.	Smith, Hutchinson & Grylls	3-46	425	500	1	125	CL	3.7	11.6	9.1	18.0	
Socoy-Vacuum Oil Co.	Int'l Falls, Minn.		1943	425		2	80	VO					
Para Fine Co, Inc.	Elizaville, Calif.	L S Roemer	1-47	420	550	1	100	BW					
Union Bag & Paper Corp.	Savannah, Ga.	Rust Engng	9-45	420	700	1	200	BW		17.2	9.9	27.5	
American Viscose Corp.	Fort Royal, Va.	I Mayne	1945	415	700	1	225	CL	3.6	11.2			
Holly Sugar Corp.	Colorado Springs, Colo.		1947	410	575	1	180	RS	2.6	16.7	7.8	26.5	7.5
Naval Department	Bremerton, Wash.		4-45	405	705	1	75	EM	1.4	9.0	3.5	25.6	
U. S. Naval Gun Factory	Washington, D. C.	H A Kulhan	1-42	405	700	1	120	EM	2.0	10.0	4.1	40.0	7.5
Ammonium Ore Co.	Tosco, Ill.	W S Skeels	1-43	405	700	1	120	EM	2.0	10.0	4.1	40.0	
Harpoon Int'l Co.	Lawrence, Mass.	C T Main	12-42	400	750	1	40	BW		5.1	1.6	52.3	
			1-47	400	500	1	70	RS	2.6	6.7	3.7	24.5	
Franklin Board & Paper Co.	Franklin, Ohio		1-46	400	600	1	55	BW	0.5	7.4	1.9	35.0	1.1
Kaiser Co, Inc.	Fontana, Calif.			400	700	1	105	BW		7.3	3.1	31.4	
National Steel Co.	Sayreville, N. J.	J G Ware	7-46	400	557	1	250	RS	6.4	16.1	13.5	25.7	
Donohoe Chem Fibre Corp.	Great Works, Me.	H S Ferguson	1-46	400	750	1	200	RS	3.3	12.5	10.5		
Rocky Mountain Arsenal	Ladora, Colo.	A. J. W. Smith	7-43	400	700	2	115	BW	1.4	10.9	5.5		
Long Paper Co.	Madison, Conn.	J E Sirmine	1-46	400	700	1	120	BW					

BW - Babcock & Wilcox
 CE - Combustion Engineering
 EM - Erie City Iron Works
 FW - Foster Wheeler
 RS - Rust Engng
 CL - Columbia
 VO - Vacuum Oil Co.
 L - Lignite
 Hy - Hydraulic coupling
 Du - Duplex
 Hy - Hard-drawn brass
 Hy - Hydraulic coupling
 L - Lignite

Open Steam Turbine Driv	53	Riley Stoker Corp	U	Tubular	150	Stoker grate area, sq ft
Two motors per fan	54	Speed control	U	Underfeed stoker		Includes water wall area
One motor, one turbine per fan	55	Spreader	U	Union Iron Works		Continuous ash discharge
Units metal	56	Spreader stoker	V	Vane control		Both fans on one shaft
Oil	57	Slag tap	V K	Vickers Keeler Boiler Co		Subbituminous
Divergent fuel firing	7	Turbine drive	Vo	Henry Vogt Machine Co		1000 Btu per 1000 cu ft
Grate	7E	Terry Steam Turbine Co	WE	Westinghouse Electric Corp		High-pressure boilers for testing
Regulator	7G	Traveling-grate stoker	W	Wickes Boiler Co		purpose

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	RS	P	C	4.5	1800	GE				80
Exchange Orange Prod Co.	Ontario, Calif.	200	388	1	33	BW	O	O							33
Fleming & Sons, Co.	Dallas, Tex.	9-46	200	427	1	50	Vo	O	1.75	8600	WE	A	I		231
General Electric Co.	Tiffin, Ohio.	6-46	200	Sat	2	20	BW	SS (63)							40
Hinde & Dauch Co.	Cleveland, Ohio.	7-46	200	...	1	18	BW	O							18
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.	Statens 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 Ass'n.	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

[illegible]

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										
Citrus Concentrates, Inc.	Dunedin, Fla.	1-43	180	Sat	8	23	BW	O		1.25	3600	WE	5		1		159	
E. I. du Pont de Nemours	Arlington, N. J.		150	368	1	50	BW	P										
Lutsworth Soap & Creamery	Elkhart, Wis.	3-45	150		1	25	RS	UF (75)										
General Foods Corp.	Milwaukee, Wis.	5-46	150	368	1	15	RS	O									41	
General Motors Corp.	Wilmington, Del.	7-46	150	368	3	60	BW	O									180	
G. M. C-Frigidaire	Moraine City, Ohio	10-40	150	Sat	1	00	BW	P									428	
Hooker Electrochemical Co.	Niagara Falls, N. Y.	1-44	150	368	1	50	EC	P									200	
Knowlton Bros.	Watertown, N. Y.	1-46	150	368	1	25	BW	UF (82)										
Miami Valley Coated Paper	Franklin, Ohio	2-46	150		1	16.4	BW	TG										
Naval Torpedo Station	Keyport, Wash.		150	Sat	2	12	LI	O		0.5	3600	WE	1.0		0		49	
Plywood Plastics Corp.	Hampden, S. C.		130	Sat	1	25	BW	O										
R. J. Reynolds Tobacco Co.	Danville, Va.	1-46	150	Sat	1	18		O, W									90	
Rubensam & Hornmann Brewing	Staten Island, N. Y.	1-43	150	Sat	1	26.5	CE	SS (73)									26	
Tantulum Defense Corp.	North Chicago, Ill.	6-42	150	366	3	20	EC	P									49	
University of Missouri	Rolla, Mo.	1946	150	366	2	18	BW	SS (155)									120	
University of Akron	Akron, Ohio	9-46	150	366	2	18	BW	CG (75)									36	
Upjohn Co.	Kalamazoo, Mich.	1-45	150		1	45	BW	UF (54)									30	
Canado Mission	Ganado, Ariz.	12-42	140	Sat	1	7	LI	SS (40)										
Alphawick Carpet Mills	Amsterdam, N. Y.	3-46	140	Sat	1	15	BW	SS (54)									22	
Naval Air Station	Lakehurst, N. J.		140	360	2	60	CE	P									120	
Alden Mills	New Orleans, La.	10-45	130	358	1	7	BW	G									120	
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									43	
Page Picher Coal Co.	Maple, Mo.	1-43	125	462	1	23	RS	O									10	
Excelsior Mill	Union, S. C.		125	353	1	32.5	BW	SS (90)									48	
H. J. Heinz Co.	Medina, N. Y.	9-45	125		1	60	BW	P										
Lloyd Mfg Co.	Tracy, Calif.	6-46	125		3	50	BW	O, G									150	
A Manning Paper Co.	Menominee, Mich.	11-46	125	338	2	30	CE	SS (125)									60	
Naval Air Station	Troy, N. Y.	9-46	125	Sat	2	12	RS	UF (50)									40	
Page Milk Co.	Jacksonville, Fla.	12-42	125	344	3	13.5	BW	O										
Physical Culture Hotel	Merrill, Wis.	1944	125		1	25	UI	P										
Washington Gas Light Co.	Dansville, N. Y.		125		1	10	BI										20	
Western Condensing Co.	Washington, D. C.	2-43	125	444														

R C A C
U. S. Ar
Warum
Westing
Winthrop

Canadian
Canadian
Consumer
Kroeber
Rolland

British-A
Canadian
Dominio
Toronto
Truro El
Brompto
Building
Canada
E B Edu
Shawinig
J R Boo
Booth L
Eldorado
Canadian
Dominio
Hamilton
Victoria

Alberta
Alberta
J A Y B
Canada
Canada
Donnac
Internat
J Lewis
Nationa
N M C
Nova Sc
Proctor
Swift Ca
Canada
Gypsum
Nationa
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Canada
Consum
Sunny
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Federation
Fry-Ca
Lauren

AC —
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BL —
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