PLAINTIFF'S EXHIBIT
WTF-1052

1956 Design Survey of Typical New ...m Central-Station Installations

Compiled by Althea Thornton, Assistant Editor

Company	Location	Plant name	Consulting engineers	Unit No., (in service)	Firm operation new units	Throttle pressure, psig	Steam temp., F: Throttle	Steam temp., F: Reheat	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Surface, 1000 sq ft: Boiler & WW	BOILERS: Surface, 1000 sq ft: Superheater	BOILERS: Surface, 1000 sq ft: Reheater	Furnace bottom	Economizer surface per boiler, 1000 sq ft	Air heater surface per boiler, 1000 sq ft	Air heater type	F.D. FANS: Drive	F.D. FANS: Air-flow control	I.D. FANS: Drive	I.D. FANS: Gas-flow control	Firing	FUELS: Type	FUELS: Heating value, 1000 Btu per lb	FUELS: Ash softening temperature, F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capability, each, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psia	TURBINES: No. bleed points	Full load generator pressure, psia	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	CONDENSERS: Total circ. capacity, (gpm), 1000 gpm	CONDENSERS: Total generator capability, (kw) kw units, 1000 kw
Dallas Power & Light Co	Dallas, Texas	Mt. Creek	Ebasco Services Inc	7	1-58	1450	1000	—	1	1050[10]	BW	117		N				Re	M	D																		
Florida Power & Light Co	Dania, Fla	Lauderdale	Bechtel Corp	4	6-57	1450	1000	1000	1	1100[10]	BW	100		—				Re	M	D																		
Indianapolis Power & Light Co	Indianapolis, Ind	Harding St	Gibbs & Hill, Inc	5	1958	1450	1000	1000	1	1100[10]	BW	100		—	DB	112	144	Re	M	D	M	D	G,O	G O	1006[24]		3M	R	1	125[10]	GE	1.75	4	Con	60	1 2-P	3800	400
Minnesota Power & Light Co	Cohasset, Minn.	Clay Boswell	Ebasco Services Inc	5	6-58	1450	1000	1000	1	750	CE	191	442	105	DB	112	144	Re	M	D	M	D	O	O	1800	1950	3M	R	1	165[10]	WE	1.25	6	Con	80	1 4-P		474
Northern States Power Co	St. Paul, Minn	High Bridge	Pioneer Service & Engrg Co.	5	9-56	1450	1000	1000	1	500[10]	RS	291	285	195	DB	181	127	Re	Mp	V	Mp	V	P	C	1100	1950	3M	R	1	104[10]	GE	0.75	5	83	50	1 4-P	2510	255
Pacific Power & Light Co	Glenrock, Wyo	Dave Johnston	Ebasco Services Inc	1	4-58	1450	1000	1000	1	500[10]	RS	291	285	195	DB	93	984	Re	Mp	D	Mp	D	P	C	1135	2100	2M	Hy	1	65[10]	GE	0.75	5		34	1 4-P	1720	165
Pennsylvania Power Co	W. Pittsburgh, Pa	New Castle	Commonwealth Assoc, Inc	1	10-58	1450	1000	1000	1	750[10]	BW	169	493	218	DB	105	143	Re	M	S Ma	M	S Ma	P,G	C G	1014	1950	3M	H	1	100[20]	AC	0.75	5	100	85	2 4-P		368
Southwestern Gas & Electric Co	Mooringsport, La	Lieberman	Sargent & Lundy	4	7-58	1450	1000	1000	1	690	BW	148	520	130	DB	188	153	Re	M	D V	M	D V	P O	C O	68	2325	2M	R	1	90[20]	GE	0.5	5	100	87.5	2 4-P	2160	213
Texas Electric Service Co	Monahans, Texas	Permian Basin	Ebasco Services Inc	3[24]	5-57	1450	1000	1000	1	735[10]	CE	230	379	120	DB	143	227	Tu	M	D Hy	M	D Hy	P	C	212	2100	2M	Hy	1	100[20]	WE	0.5	5	124.5	65	2 4-Ar	1750	1760
Wisconsin Power & Light Co	Cassville, Wis	Nelson Dewey	Sargent & Lundy	5	3-58	1450	1000	1000	1	825[10]	RS	286	338	230	DB	139	136	Re	M	V	M	V	G	G	1060[24]		2M	R	1	116[10]	WE	1.25	5	Con	86	2 4-Cu	1870	162
Wisconsin Public Service Corp	Green Bay, Wis	Pulliam	Pioneer Service & Engrg Co	1	11-59	1450	1000	1000	1	700	BW					199	137	Re	M	D			G,O	G O	1080[24]		2M	Hy	1	100	AC	1.5	5					101	121
Central Maine Power Co	Wiscasset, Maine	Mason	Jackson & Moreland	1	1958	1400	1000	1000	1	600	BW	93	330	156				Re	M	V			G,O	C	1012		2M	Hy	1	75	AC	0.75	5	32	40	1 4-P	2040	182
Montana Dakota Utilities Co	Sidney, Montana	Sidney	Ebasco Services Inc	1	11-57	1250	950		1	445	FW	118	220	N				Re	M	V	Mp	V	O,P	O C	184		2M	h	1	44[20]	GE	0.75	5	35	35	2 4-P	1440	127
				2	2-58	1250	950		1	445	FW	118	220	N				Re	M	V	Mp	V	O,P	O C	184		2M	h	1	44[20]	GE	0.75	5	59	35	2 4-Ni	1440	127
				5	10-55	850	910		1	445	FW	118	220	N				Re	M	V	M	V	O,P	O C	184		2M	h	1	33[20]	GE	0.75	4	75.4	25	2 4-Ni	1310	114
				1	8-58	950	950		1	425[10]	CE	61	112	N				Re	M	D V	M	D V	P,G	L G	60	2350	2M	h	1	44[20]	GE	0.75	5	104	50	2 4-Ni	1470	144
Puerto Rico Water Resources Authority	Guayanilla, P.R.	South Coast	Jackson & Moreland		57-59	1250	950		2	425[10]	GE	186	150	N																								
	San Juan, P.R.	San Juan	Jackson & Moreland																																			
Savannah Electric & Power Co	Savannah, Ga	Riverside	Jackson & Moreland	6	12-56	1250	950		1	425[10]	CE	186	150	N	DB	101	660	Re	M	V	M	V	O	O	183		2M	R	2	44[10]	GE	1.25	5	67.5	45	2 4-Ni	1320	121
Southern Nevada Power Co	Whitney, Nev	Clark	Stone & Webster Engrg Corp	6	7-57	1250	950		2	450	FW	160	115	N	DB	101	660	Re	M	V	M	V	O	O	183		2M	h	1	44[10]	WE	1.25	5	67.5	45	2 4-Ni	1320	121
				8	7-56	1250	950		1	360[10]	CE	81		N	DB	96	418	Re	M	V	Ma		O	O	187		2M	h	1	44[20]	WE	0.75	5	58	35	2 4-Ni	1320	121
				1	12-55	1250	950		1	425[10]	RS	69		N		84	478	Re	M	V			O,G	O G	187		2M	h	1	44[20]	GE	0.75	5	58	35	2 4-Ni	1320	121
Nova Scotia Light & Power Co Ltd	Halifax, N.S.	Water St														130	892	Re	M	V			G,O	O,O	1090[24]		2M	h	1	44[20]	GE	0.75	5	58	35	2 4-Ni	1320	121
El Paso Electric Co	Dona Ana County, N.M.	Rio Grande	Stone & Webster Engrg Corp	7	1959	900	900		1	450	BWG	158	188	N	ST[9]	73	124	Tu	M	V			Cy,O	C O	1215	1900	2M,1T	R	1	66[5]	EL	0.75	5	29[4]	33.0	2 Ni	1420	132
				6	1957	875	910		1	450[10]	BW			N				Re	M	V			G	G	1090[24]		2M	h	1	66[20]	WE			75	31.0	2 4-P	2100	210
Bangor Hydro Electric Co	Veazie, Maine	Edward M Graham	Chas T Main, Inc				850	900																														
Central Power & Light Co	Mission, Texas	West Valley	Sargent & Lundy				850	900	1	165	CE	186	65	N																								
	Victoria, Texas	Victoria	Sargent & Lundy	1	3-58	850	900		1	630[10]	BW	325	122	N	DB	14	204	Re	M	D	M	D	O	G	183		2M	R	1	64[20]	WE	0.75	4	84.2	60	2 4-Ni	1630	161
Missouri Public Service Co	Pleasant Hill, Mo.	Ralph Green	Burns & McDonnell	1	1955	850	900		1	630[10]	BW	325	122	N	"	N	155	Tu	M	V			C O	C O	1066[24]		2M	R	1	64[20]	WE	0.75	4	84.2	60	2 4-Ni	1630	161
Public Service Co of New Mexico	Albuquerque, N.M.	Person	Howard Person	2	3-58	850	900		1	200[10]	BW	162	84	N	DB		520	Tu	M	V	M	D	P	C,G	184	1950	2M	R	1	27[20]	GT	1.25	4	Con	25	2 4-Cu		48
				4	11-57	850	900		1	350[10]	BW	205		N			533	Tu	M	V			G,O	G O	1000[24]		2M	Hy	1	40[20]	WE	0.75	5	50	30	2 4-Ni	1320	110
Saskatchewan Power Corp	Saskatoon, Sask.	A.L. Cole	R.A. Hanright	5	11-56	850	900		1	330	CE	282		N	DB		759	Tu	M	V	M	S,D Hy	P,O G	C,O,G	84	2000	3M,1Hy	R	1	33[20]	GT	0.6	5	Con	28	2 4-Cu	1365	106
	Estevan, Sask.	Estevan	R.A. Hanright	4	11-56	400	750		1	200	FW	267	40	N																								
Western Light & Telephone Co Inc	Dodge City, Kans	Fort Dodge	Sargent & Lundy	5	11-56	400	750		1	200	FW	267	40	N		19	160	Tu	M	V	M	S,D Hy	SS(468)	L	65	2000	3M,1T[14]	P	1	30	MV	1.0	3	Con	26	1 4-Cu		30	22.7
Lake Superior District Power Co	Ashland, Wis	Bay Front	Sargent & Lundy	3	6-57	850	900		1	200	FW	267	40	N		19	160	Tu	M	V	M	S,D Hy	SS(468)	L	65	2000	3M,1T[14]	P	1	30	MV	1.0	3	Con	26	1 4-Cu		30	22.7
				6	2-57	625	900		N						DB	h	270	Re	M	V	M	D	G	G	1006[24]		2M	H	1	20	GT	1.25	4	69	18	2 4-Cu	1320	110
Central Kansas Power Co	Colby, Kans	Colby	Black & Veatch	2	9-55	400	750		1	75	BW	89		N																								
Empire District Electric Co	Riverton, Kans	Riverton	Black & Veatch	41	8-56	250	700		1	350	CE	201	38	N	DB		96	Tu	M	D	M	D	G,O	G O	956[24]		1M,1T	R	1	62	WE	0.75						
					1956	205	490		1	31	FW				6	N	386	Re	M	V			G,O	G O	1040[24]		2M	P											
																N	h			D			O	O				P											

MUNICIPAL, FEDERAL AND COOPERATIVE INSTALLATIONS

Company	Location	Plant name	Consulting engineers	Unit No., (in service)	Firm operation new units	Throttle pressure, psig	Steam temp., F: Throttle	Steam temp., F: Reheat	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Surface, 1000 sq ft: Boiler & WW	BOILERS: Surface, 1000 sq ft: Superheater	BOILERS: Surface, 1000 sq ft: Reheater	Furnace bottom	Economizer surface per boiler, 1000 sq ft	Air heater surface per boiler, 1000 sq ft	Air heater type	F.D. FANS: Drive	F.D. FANS: Air-flow control	I.D. FANS: Drive	I.D. FANS: Gas-flow control	Firing	FUELS: Type	FUELS: Heating value, 1000 Btu per lb	FUELS: Ash softening temperature, F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capability, each, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psia	TURBINES: No. bleed points	Full load generator pressure, psia	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	CONDENSERS: Total circ. capacity, (gpm), 1000 gpm	CONDENSERS: Total generator capability, (kw) kw units, 1000 kw
Memphis Light, Gas & Water Div	Memphis, Tenn		Burns & Roe, Inc	1	8-58	2400	1050	1050	1	2000	BW	394	149	102	ST[9]	290	370	Re	M	V			Cy,G	C,G	120	2400	3M	Hy	1	225[11]	WE	0.75	8	85	135	2 4-Ni		
				2	8-58	2400	1050	1050	1	2000	BW	394	149	102	ST[9]	290	370	Re	M	V			Cy,G	C,G	122	2400	3M	Hy	1	225[11]	WE	0.75	8	85	135	2 4-Ni	6260	562
				3	9-58	2400	1050	1050	1	2000	BW	394	149	102	ST[9]	290	370	Re	M	V			Cy,G	C,G	120	2400	3M	Hy	1	250[11]	WE	0.75	8	85	135	2 4-Ni		
Tennessee Valley Authority	Kingston, Tenn			7	8-58	2000	1050	1000	1	1100	FW	264	73.0	41.3	DB	57.3	288	Re	M	V	M	D	P	C	116	1950	2M	Hy	1	150	GE	1.0	7	124	65	1 4-Ni	8710	1040
	Rogersville, Tenn	John Sevier		8	8-58	2000	1050	1000	1	1100	FW	264	73.0	41.3	DB	57.3	288	Re	M	V	M	D	P	C	116	1950	2M	Hy	1	150	GE	1.0	7	124	65	1 4-Ni	8710	1040
				4	12-57	1800	1050	1050	1	1280	CE	706	125	253	DB	304	226	Re	M	V	M	D	P	C	115	2200[27]	3M	Hy	1	200	GE	1.0	8	180	79	1 4-Ni	5120	610
Can Neb Public Pw & Irrigation Dist	Bertrand, Neb	Canaday	Sargent & Lundy	1	4-58	1800	1000	1000	1	750	CE	206																										
Detroit Public Lighting Commission	Detroit, Mich	Mistersky	Burns & Roe	6[26]	10-57	1800	1050	1000	1	370	CE	95	35.0	4.8	DB	97	72.4	Tu	M	V	M	Hy	P	C	135	2700	2M	Hy	1	50[26]	WE	0.75	6	65	75	2 4-Ni	8710	1040
Hydro Electric Power Comm of Ontario	Toronto, Ontario	Richard L. Hearn	Stone & Webster Engrg Corp	5	1958	1800	1000	1000	1	1450	BWG	660	880		DB	213							P	C	135	2100	3M			200[27]	GE	0.75	6					8300	1100
Los Angeles Dept of Water & Power	Playa del Rey, Calif	Scattergood		1	10-58	1800	1000	1000	1	1200	CE	204	455	344	ST	450	252	Re	M	D Hy	M	D Hy	O G	O G	179		3M	Hy	1	156[10]	GE	0.75	6	62.2	96	1 4-Ni	2610	322
	Los Angeles, Calif	Valley		2	9-59	1800	1000	1000	1	1200	CE	204	455	344	ST	450	252	Re	M	D Hy	M	D Hy	O G	O G	179		3M	Hy	1	156[10]	GE	0.75	6	62.2	96	1 4-Ni	2610	322
				3[27]	6-55	1800	1000	1000	1	1200[10]	RS	212	90.6	181		450	274	Re	M	D Hy	M	D Hy	O G	O G	179		3M	Hy	1	156[10]	GE	1.0	6	51.9	96	2 4-Cu	4360	432
Imperial Irrigation District	El Centro, Calif	El Centro	Gibbs & Hill																																			
Lansing Board of Water & Elec Light Comm	Lansing, Mich	Moores Park	Boddy Benjamin, Woodhouse	3	6-57	1250	950		1	425[10]	CE	167	131	N																								
Wyandotte Dept of Municipal Service	Wyandotte, Mich		Emery, Marker & Campbell	2	6-58	1250	950		1	430	CE	64	155	N	DB	140	510	Re	M	V	M	D	O,G	O G	185		2M	R	1	44[20]	AC	0.75	5	63	32	2 4-Ni	1695	137
				5	3-58	875	900		1	210	BW	224	85	N	DB	174	665	Tu	M	V	M	Hy	P	C	123	2100	1M,1T	Hy	1	25[29]	CE	1.5	3	40		2 Ar	578	50
City of Austin	Austin, Texas	Municipal	Burns & McDonnell																																			
Lakeland Light & Water Dept	Lakeland, Fla	Lake Parker		9	6-58	850	900		1	425[10]								Re	M	V			G	G	1056[24]		2M	R	1	40[20]	WE	0.75		Con				147
Lubbock Municipal Power & Light Dept	Lubbock, Texas	Plant No. 2	Nelson Miner & Co	5	4-56	850	900		1	240	BW	206	220	N				Re	M	V			O	O	185		2M,1T	R	1	22[20]	GE	1.0	4	50		2 Ar	693	
				6	6-57	850	900		1	225[10]	BW	107	48	N	DB		231	Re	M	V			G O	G O	1026[24]		2M	R	1	22[20]	WE	1.0	4	Con	19.0	2 Ar	820	87
City of Tallahassee	St. Marks, Fla	St. Marks	Reynolds, Smith & Hills	7	1959	850	900		1	225[10]	BW	107	48	N	"		233	Re	M	V			G O	G O	1020[24]		2M	R	1	22[20]	WE	1.0	4	Con	19.0	2 Ar	820	87
				5	9-57	850	900		1	220[10]	CE	176	94	N	DB		182	Re	M	V	Mp	D	O	O	183		2M	R	1	22[20]	WE	0.75	4	75	35	2 4-Ni	580	57.0
Camp County Power Commission	Warwick, Ga		Patchen & Zimmerman	1	6-58	625	850		1	130	BW			N																								
				2																																		
City of St. Marys	St. Marys, Ohio	Municipal	Berwanger, Hoch & Associates	5	12-56	620	825		1	60	BW	87		N									P	C	130	2100	2M,1T	R	1	60	GE	1.0	3	25	22	2 Ar	1260	170
City of Ames	Ames, Iowa		Burns & McDonnell	6	5-58	600	825		1	125													P	D,V	Mp	D	TG(389)	C	130	2100	2M,1T	R	1	60	WD	1.0	3	25	22	2 Ar	1260	170
City of Jonesboro	Jonesboro, Ark		Burns & McDonnell	6	3-58	600	825		1	125[10]				N									P	D,Hy	M	D,Hy	SS	C	92	1950	2M	R	1	12.6		0.75	4	60	35	2 Ar	360	26.0
															DB								P	D,Hy	M	D,Hy	G	G	1002[24]		2M	R	1	12.6	GE	0.75	4	65	35	2 4-P	400	35.2
Atlantic Municipal Utilities	Atlantic, Iowa		Black & Veatch																																			
Borough of Chambersburg	Chambersburg, Pa		A.C. Woods Associates	4	12-56	435	760		1	70	CE	68	14	N	37.5	"		66	Tu	M	V			G O	G O	1000[24]		2M	R	1	5.0	GT	1.5	3		7	1		167	11.0
						425	720																															
Garland Electric Dept	Garland, Texas	East Side	Black & Veatch	1	1-57	400	750		1	125	CE	94	18	N	37.5	"		88	Tu	M	D			G	G	1002[24]		3M	R	1	5.0	GT	1.0	3	150	44	2 Ar	270	33.6
				2	1-57	400	750		1	125	CE	94	18	N	37.5	"		88	Tu	M	D			G	G	1002[24]		3M	R	1	9.5	EL	1.25	3	30	12	2 Ar	250	22.3
City of Iola	Iola, Kans		Burns & McDonnell	5[26]	1-58	400	750		1	65	BW	61	15	N	26.3		69	Tu	M	V	M	D	G O	G O	1004[24]		1M,1Dr	R	1	6.2	DL	1.0	3	60	7.2	2 Ar	166	15.0
Public Utilities Commission	New Ulm, Minn	Municipal	Pfeifer & Shultz	1	4-57	400	750																															
City of Wellington	Wellington, Kans	Municipal	A.C. Kirkwood & Associates	4	6-56	400	750																															
Board of Public Works	South Haven, Mich	South Haven	Hamilton, Weeber & Ward	4	2-57	275	750																															

AC – Allis Chalmers Mfg Co
Ad – Admiralty
AdA – Admiralty A
AdB – Admiralty B
AdI – Admiralty Inhibited
Al – Aluminum
AlB – Aluminum Bronze
AlBr – Aluminum Brass
AnAd – Antimonial Admiralty
AsAd – Arsenical Admiralty
AsAlBr – Arsenical Aluminum brass
AsCu – Arsenical copper
Bw – Babcock & Wilcox Co
BWG – Babcock Wilcox & Goldie McCulloch Ltd
C – Coal, bituminous
CE – Combustion Engineering Inc
CNi – Cupro nickel
Con – Condenser deaeration
CP – C.P. Parsons & Co, Ltd
Cu – Copper
Cy – Cyclone furnace
D – Deaerator
DB – Dry bottom
DL – DeLaval Steam Turbine Co
De – Deal turbine and motor drive
EE – English Electric Co Ltd
EL – Elliott Co
FB – Flooded bottom
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co
Hy – Hydraulic coupling
L – Lignite
M – Motor drive
Ma – Magnetic coupling
Mp – Two motors per fan
MV – Metropolitan-Vickers Electrical Co Ltd
N – None
O – Oil
P – Pulverized
PAd – Phosphorized Admiralty
Pl – Plate
R – Regulator

generative
ley Stoker Corp
ood control
ejector stoker
ng fan
stoker drive
peeling grate stoker
ebular
ane control

WE – Westinghouse Electric Corp
WO – Worthington Corp
Yo – Yarrow or metal
(468) – Stoker grate area, sq ft

1 – Once-through boiler
2 – Double reheat
3 – Two motor-driven constant speed in series with one turbine-driven variable speed. Two cycles in parallel
4 – Future gas
5 – Revised data, previously listed 9 54
6 – Oil
7 – Constant speed
8 – Pressurized furnace
9 – Ho 3600 rpm to 1800 rpm
10 – Outdoor installation
11 – Nameplate
12 – Four motor-driven pumps for three boilers
13 – Future coal
14 – High viscosity oil
15 – Delayed coke refinery gas
16 – For two boilers
17 – Topping unit
18 – Maximum
19 – Two automatic extraction points, 750 and 150 psig
20 – Preferred standard
21 – Revised data, previously listed 3 52
22 – Future gas and bituminous coal
23 – Revised data, previously listed 9 53
24 – Btu per lb E
25 – Future lignite
26 – Revised data, previously listed 9 55
27 – Fusion temperature
28 – Feed pump on main generator shaft
29 – Gas turbine
30 – Gas turbine exhaust supplies boiler air

1956 Survey of Stationary Gas Turbines in Both Central Stations and Industry

Compiled by Althea Thornton, Assistant Editor

OWNER	LOCATION	Builder	No. of units	Total rated output, kw	Total max. output, kw	Total net output, kw	Net heat rate, Btu/kwh	Fuel	Cycle	Combustor	Compressor	Turbine	Cooling	Rotative speed, rpm	Pressure ratio	Turbine inlet temp., °F	Year installed	REMARKS
UNITED STATES																		
Stationary Generating Units																		
Orlando Utilities Commission	Orlando, Fla.																	
Corps of Engineers	U.S. Army																	
West Texas Utilities	Fort Stockton, Texas																	
	Quinlan, Texas																	
Bangor Hydro-Electric Co.	Bangor, Maine																	
Central Vermont Public Service Co.	Rutland, Vermont																	
Public Service Co. of Oklahoma	Elk City, Oklahoma																	
Connecticut Light & Power Co.	Thomaston & Devon, Conn.																	
Georgia Power Co.	Warwick, Georgia																	
Texas Power & Light Co.	Gainesville, Texas																	
Oklahoma Gas & Electric Co.	Oklahoma City, Oklahoma																	
Central Maine Power Co.	Augusta, Maine																	
Montana-Dakota Utilities Co.	Williston, North Dakota																	
Otter Tail Power	Fergus Falls, Minn.																	
Liberty Fuels Co.	Waukegan, Illinois																	
Pipe Line Units																		
Texas Eastern Transmission Corp.	Ames, Ohio																	
	Chambersville, Pennsylvania																	
	Clarington & Marquette, Ohio																	
	Kilgore, Texas																	
	Longview & Waskom, Texas																	
Transcontinental Gas Pipe Line Corp.	Kentucky																	
United Gas Corporation	Shreveport, Louisiana																	
Northern Natural Gas Co.	Fairmont & Minneapolis, Minn.																	
El Paso Natural Gas Co.	Texas, Ariz. & New Mexico																	
	Bloom & Kirtland, New Mexico																	
Algonquin Gas Transmission Co.	West Bridgewater, Mass.																	
Gateway Pipeline Co.	Portland, Ore.																	
Mississippi River Fuel Corp.	Cedar Point, Wyoming																	
Miscellaneous and Process Units																		
	Mexico																	
																		Railway propulsion emergency power plant
																		Railway propulsion emergency power plant
																		Railway propulsion emergency power plant
																		Mobile air compressor drive
																		Pipeline compressor drive
																		Exhaust gas used in evaporation process of waste heat boiler
																		Process compressor drive, uses exhaust gas cooler
																		Hot gas generator for petroleum plant
																		High pressure air for nitric acid plant
																		Hot gas generator for petroleum plant
	Mexico																	
	Mexico																	
																		Powers unit air supply, generate on product gases

BUILDER

COMBUSTOR TYPE
A – Annular
CA – Chemical reactors
I – Engine (2 combustors in parallel)
M – Multiple (usually 6 or more combustors in parallel)
S – Silo
TA – Tubo-annular
TC – Tubo-can
V – Simple

COMPRESSOR

COOLING TYPE
R – Radial
F – Flow
S – Stator casing

TURBINE
A – Axial
Ra – Radial

CYCLE TYPE
C – Closed cycle
EP – Equipressure cycle
FP – Free-piston cycle
O – Open cycle
S – Semiclosed cycle

FUEL TYPE
BG – Blast-furnace gas
BO – Bunker C or boiler oil
CT – Coal tar
CS – Coal slurry
DO – Distillate oil
FD – Domestic fuel oil
FL – Heavy oil, varied kinds
FL1 – Heavy oil 1
FL2 – Heavy oil 2
G – Natural gas
GO – Gas oil
K – Kerosene
LO – Light oil
O – Oil, unspecified
P – Peat
PC – Pulverized coal
PG – Producer gas
PR – Process reaction
RG – Refinery gas
RO – Residual oil
S – Solid fuels
SG – Sewage gas
Wh – Waste heat

1956 Survey of Stationary Gas Turbines

Compiled by Althea Thornton, Assistant Editor

OWNER	LOCATION	Builders	No. of units	Status or date of initial operation	GENERAL CHARACTERISTICS: Name plate or rated capacity	Expected or maximum capability	Turbine inlet temperature, F	Pressure ratio	Cycle	No. of shafts	Shaft speeds 1000 rpm	No. of turbine cylinders	No. of turbine wheels in series
Huettenwerk Rheinhausen A.G.	Rheinhausen, Germany	BB	1	1956	15,000 kw		1400	5	O	1	3.0	1	..
Huettenwerk Haspe	Hagen Haspe, Germany	BB	1	1957	14,000 kw		1400	5	O	1	3.06	1	..
Niederrheinische Huette Duisburg	Germany	BB	1	1956	5,820 kw		1400	5	O	1	4.75	1	..
Dortmund Hoerder Huettenunion AG	Dortmund, Germany	BB	1	1957	100 Mcfm		1400	5	O	1	3.06	1	..
	Hoerde, Germany	BB	1	1957	96 Mcfm		1400	5	O	1	3.0	1	..
Mannesmann Huettenwerke AG	Duisburg-Huckingen, Germany	BB	1	1957	80 Mcfm		1400	5	O	1	3.0	1	..
Niederoesterreichische Elektrizitaetswerke, AG	Vienna, Austria	BB	1	1958	13,900 kw		1200	4.6	O	1	3.0	1	.
Oesterreichische Alpine Montangesellschaft Werk	Donawitz, Austria	BB	1	1957	14,000 kw		1400	5	O	1	3.0	1	.
Manfacturas Metalicas Madrilenas	Villaverde, Spain	W	1	1956	5,000 kw	6,250 kw	1350	5.8	O	1	5.74	1	..
Altos Hornos de Viscaya	Baracaldo, Spain	BB	1		26.5 Mcfm				O	1		1	.
Societe Romana di Elettricita	Rome, Italy	BB	1	1956	25,000 kw		1200	16	O	2	4.75/3.0	2	.
Societe Set Valdarno	Livorno, Italy	BB	2	1956	22,000 kw		1200	16	O	2	4.75/3.0	2	.
Tifeo	Augusta, Italy	SM	2	1957	3,600 kw	4,000 kw	842	4	FP		3.0		
Azienda Generale Italiana Petroli	Cortemaggiore, Italy	RH	1	1955	900 kw	1,000 kw	1340	4	O	2	11.5/6.0	2	2
Societa Nationale Metanodotti	San Donato, Italy	RH	1	1955	900 kw	1,000 kw	1340	4	O	2	11.5/6.0	2	2
Raffineria de Napoli	Naples, Italy	BB	1	1937	10 Mcfm								
Societe Generala de Gas si de Electricitate	Bucharest, Romania	BB	1	1948	10,000 kw		1100	12.0	O	2	4.0/3.0	2	2
Russia	Russia	EW	1	1958	10,000 kw	12,000 kw	1250	4	C	1	6.6	1	
ASIA													
Palestine Electric Corp.	Haifa, Israel	BB	2	1957	10,000 kw		1200	4.6	O	1	3.0	1	
Electricity Board of Beirut	Beirut, Lebanon	W	1	1955	5,000 kw	6,250 kw	1350	5.8	O	1	5.74	1	.
Ciments Libanais	Chekka, Lebanon	SM	2	1957	1,500 kw	1,650 kw	842	4.0	FP	1	9.0[f]	1	
Anglo-Iranian Oil Co, Ltd	Agha-Jari, Iran	BB	2	1949		4,700 kw[d]	1100	4.6	O	1	3.8	1	
Basran Petroleum Co	Basran, Iraq	RH	3	1957	1,300 hp	1,430 hp	1340	4.0	O	2	11.5/6.0	2	2
Iraq Petroleum Co, Ltd	Dukhan, Bahrain	BB	1	1953	4,000 kw	4,700 kw	1200	4.6	O	1	3.8	1	
Government of Bahrain	Manamao "B" PP, Bahrain	BB	2	1958	6,100 kw		1200	4.6	O	1		1	
Bahrain Petroleum Co, Ltd	Banrain Island	GE	1	1956	7,000 hp	8,750 hp	1450	6.0	O	1	6.9	1	.
Saudi-Nation et National Co for El Pwr	Jeodah, Arabia	BB	2	1955	5,750 kw		1200	4.6	O	1	3.6	1	.
Arabian American Oil Co	Arabia	CB	5	1958	8,500 hp		1350	4.25	O	2	5.0/5.2	1	2
		CB	1	1958	6,200 kw		1350	4.25	O	2	5.0/3.6	1	2
		BB	4		5,000 kw		1200	4.6	O				
Ministry of Finance, Riyadh Pwr Plt	Saudi-Arabia	BB	4	1957	6,000 kw		1200	4.6	O	1	3.6	1	
Kuwait Oil Co, Ltd	Kuwait	RH	1	1953	820 hp	900 hp	1340	4.0	O	2	11.4/6.0[f]	2	2
Pakistan Industrial Development Corp.	Karachi Pakistan	RH	1	1955	900 kw	1,000 kw	1340	4.0	O	2	11.5/6.0	2	2
Singapore Paris Pantang Power Plant	Singapore	P	1	1-56	1,950 kw		1230	3.63	O	2	6.28/3.0	2	2
Asiatic Petroleum Co	Borneo	W	1	1957	5,000 kw	6,250 kw	1350	5.8	O	1	5.74	1	
Shell Petroleum Co, Ltd	Borneo	MV	1	C	4,500 kw	5,600 kw	1292	5.25	O	1	4.3	1	
Standard Vacuum Oil Co	Wakayama, Japan	W	2	1957	3,000 hp	3,750 hp	1350	4.8	O	1	8.5	1	
Hokkaido Denryoku KK	Hokkaido Tanko, Japan	EW[d]	1	C	2,000 ho		1220	3.2	C	1	13.0	1[5]	
Maruzen Oil Co, Ltd	Wakayama, Japan	TS	1	1956	2,000 kw		1250	4.5	O	2	5.5/4.5	2	2
Standard Vacuum Oil Co	Palembang, Sumatra	W	2	1957	3,000 hp	3,750 ho	1350	4.8	O	1	8.5	1	
Kwinana Construction Co	Australia	RH	2	1956	900 kw	1,000 kw	1340	4.0	O	2	11.5/6.0	2	2
UNELCO	Noumea, New Caledonia	SM	1	1956	1,500 kw	1,650 kw	842	4.0	FP	1	9.0[f]	1	
Le Nickel	Noumea, New Caledonia	SM	1	1956	1,500 kw	1,650 kw	842	4.0	FP	1	9.0[f]	1	
AFRICA													
Compagnie des Phosphates	Gafsa, Tunisia	SM	1	1952	600 kw		865	3.8	FP	1	11.7	1	
	Redeyef, Tunisia	SM	1	1956	1,400 kw	1,650 kw	842	4.0	FP	1	9.0[f]	1	
	Metlaoui, Tunisia	SM	1	1953	600 kw	660 kw	842	4.0	FP	1	11.5[f]	1	.
			1	1955									
Ciments Portland	Tourah, Egypt	SM	1	1957	3,750 kw	4,000 kw	842	4.0	FP	1	3.0	1	
Raymond Arcache & Co	Alexandria, Egypt	BB	1	1949	1,200 kw		1100	3.0	O	1	6.55[f]	1	
UNELCO	Lome French Togo	SM	1	1956	1,500 kw	1,650 kw	842	4.0	FP	1	9.0[f]	1	
Compagnie Electricitie et Gas d'Algerie	Bone Algeria	O	1	1952	730 kw		1110	3.45	O	1	5.25	1	
Williamson Diamond Mines	Shinyanga, Tanganyika	RH	1	1955	900 kw	1,000 kw	1340	4.0	O	2	11.5 6.0	2	2
East African Power & Lighting Co, Ltd	Nairobi Kenya	BT	2	9-54	2,500 kw		1200	4.6	O	1	3.5	1	
				1-56									

BUILDER

- AC – Allis-Chalmers Mfg Co, USA
- AI – W H Allen Sons & Co Ltd, England
- AR – AiResearch Mfg Co USA
- B – Boeing Airplane Co USA
- BB – Brown, Boveri & Co, Ltd, Switzerland
- BE – Brush Electrical Engrg Co, Ltd England
- BT – British Thomson-Houston Co, Ltd, England
- CA – Continental Aviation and Engineering Corp, USA
- CB – Clark Brothers USA
- DB – David Budworth Limited, England
- EE – English Electric Co, Ltd, England
- EI – Elsinore Shipbldg & Engrg Co, Ltd, Den
- EM – Cie Electro-Mecanique France
- EW – Escher Wyss Ltd, Switzerland
- FC – Societe des Forges et Ateliers du Creusot – Usines Schneider France
- G – Gasturbine Maatschappij, Holland
- GE – General Electric Co, USA
- HW – Harland & Wolff, Ltd, Ireland
- JB – John Brown & Co, Ltd, Scotland
- M – Ernest Mercier (design), France
- MN – Mitsubishi-Nippon Heavy Industries, Ltd, Japan
- MV – Metropolitan-Vickers Elec Co England
- O – Maschinenfabrik Oerlikon, Switzerland
- P – C A Parsons & Co, Ltd, England
- Pt – Pametrada (Parsons and Marine Engrg Turbine Research and Development Association), England
- R – Societe Rateau, France
- RG – Rover Gas Turbines Ltd, England
- RH – Ruston & Hornsby, Ltd, England
- S – Sulzer Brothers, Ltd, Switzerland
- SM – SEME (Societe d'Etudes Mecaniques et Energetiques), SIGMA (Societe Indust. Generale de Mecanique Appliquee), France
- ST – Swenska Turbinsfaorik Aktiebolaget Ljungstrom, Sweden
- So – Solar Aircraft Co, USA
- St – Stabilimento Ernesto Breda, Italy
- T – Societe Turbomeca France
- TS – Tokyo Shibaura Electric Co, Japan
- W – Westinghouse Electric Corp, USA

GENERAL FOOTNOTES

- a – Thermal effy based on higher heating value of fuel unless otherwise noted
- b – Turbines and compressors listed in order of descending pressure for each unit
- c – Power shaft geared to 3600 rpm
- d – With reduction in ambient temperature
- e – L-p and H-p turbines in one casing
- f – Double flow
- g – One Rutland unit has 85% effectiveness
- h – Water-cooled pads facing disks
- j – Based on lower heating value of fuel
- k – Starting combustor, catalyst case is the operating combustor
- m – Power shaft geared to 3000 rpm
- n – 120 lb per sec gas at 25 psia, 1050 F

in Both Central Stations and Industry

No. of compressor cylinders	No. of intercoolers	No. heating stages	Combustor type	Regenerator effectiveness, %	Type of fuel	PERFORMANCE: Thermal efficiency, %[o]	PERFORMANCE: Work ratio	TURBINES: Type[b]	TURBINES: No. of stages	TURBINES: Engine efficiency, %	TURBINES: Cooling	COMPRESSORS: Type[b]	COMPRESSORS: No. of stages	COMPRESSORS: Discharge pressure, psia	COMPRESSORS: Compression ratio	COMPRESSORS: Compression efficiency, %	REMARKS
1	0	1	S	75	BG	27		A			D,S	A			5		Blast furnace air and electric generation
1	0	1	S	75	BG	27		A			D,S	A			5		Blast furnace air and electric generation
1	0	1	S	75	BG	26.5		A			D,S	A			5		Blast furnace gas and electric generation
1	0	1	S	75	BG	27		A			D,S	A			5		Blast furnace gas and electric generation
1	0	1	S	75	BG	26.5		A			D,S	A			5		Blast furnace gas and electric generation
1	0	1	S	75	BG	26.5		A			D,S	A			5		Blast furnace gas and electric generation
1	0	1	S	None	G	19.5		A			D,S	A			4.6		Electric generation
1	0	1	S	75	BG	27		A			D,S	A			5		Blast furnace gas and electric generation
1	0	1	M	None	DO	35.0	0.33	A	5			A	16	86.0	6		Electric generation
1	0	1	S		BG			A			None	A					Air to Bessemer converter
2	1	2	S	None	BO	24		A			D,S	A			16		Electric generation
2	1	2	S	None	BO	24		A			D,S	A			16		Electric generation
					BO	34			8			FP					Auxiliary for steam power station, output turbine by Alsthom, 5 FP engines by SIGMA for each unit
1	0	1	S	None	G	15.9[f]	0.33	A	2,2	87[p]	D,S	A	13	61.8	4.2	83	Combined with exhaust heat boiler with optional after burning
1	0	1	S	None	G,LO	15.9[f]	0.33	A	2,2	87[p]	D,S	A	13	61.8	4.2	83	Combined with hotwater heater
																	Houdry unit
2		2	S	None	G	21.4		A			None	A					Refinery unit
1	1	1	Ex		PC	28.5		A				A		433			Precooler and intercooler arranged for water heating
1	0	1	S	None	BO	19.5		A			D,S	A			4.6		
1	0	1	M	None	DO	19.0	0.33	A	5			A	16	86.0	6		Electric generation
2	0	1	FP	None	BO	34		A	4			FP					Power source for cement mill
1	0	1	S	None	G	16.4		A			None	A	24		4.6		Fuel gas expanded through separate turbine
1	0	1	S	None	G	15.9[f]	0.33	A	2,2	87	D,S	A	13	61.6	4.2	83	Drives crude oil pumps
1	0	1	S	None	G	16.4		A			None	A	24		4.6		Fuel gas expanded through separate turbine
1	0	1	S	None	G	19.0		A			D,S	A			4.6		
1	0	1	M		RG	20.0[f]		A	2		D	A	15	85			Petroleum refinery
1	0	1	S	None	BO	19.0		A			D,S	A			4.6		
1	0	1	S	None	DO,G			A	2,1			A	13				Centrifugal compressor drives
1	0	1	S	None	DO,G			A	2,2			A	13				Electric generation
					G	17.0		A			None	A					For oil field operation
1	0	1	S	None	BO	19.0		A			D,S	A			4.6		
1	0	1	S	75	G			A	2,2			A	13				Crude oil pumping plant
1	0	1	S	None	C,LO	15.9[f]	0.33	A	2,2	87	D,S	A	13	61.8	4.2	83	
1	0	1		75	BO,LO	21		A	2,2	85	D	A	12	54.0	3.69	84	Derated standard 2500-kw unit, at 85 F
1	0	1	M	None	G	18.6	0.33	A	5			A	16	86.0	6.0		Electric generation
1	0	1	M		G	16.5	0.354	A	5	90		A	16	76.1	5.25	85.5	
1	0	1	M	None	RG	18.0	0.33	A	4			A	14	70.0	4.9		Air and gas compressor drive for refinery
1[5]	1	1	Ex		LO	26.0		A	5			C	5	400			
2	0	1	S	65	BO	20.0		A	3,3		None	A	10,9	66	4,5		Standby unit
1	0	1	M	None	RG	18.0	0.33	A	4			A	14	70	4.9		Air and gas compressor drive for refinery
1	0	1	S	None	LO	15.9[f]	0.33	A	2,2	87	D,S	A	13	61.8	4.5	83	Combined with exhaust-heat boiler
2		1	FP	None	GO	34.0		A	4			FP					
2		1	FP	None	GO	34.0		A	4			FP					
		1	FP		BG	35		A	4		None	FP					Output turbine built by Pennoel
		1	FP		FLI	34		A	4			FP					2 FP generators supplying 1 turbine
		1	FP		FLI	32		A	3			FP					Electric generation Pennoel turbine
		1	FP		FL	34		A	6			FP					5 FP generators supplying 1 turbine
1	0	1		80	BO	21.6		A			None	A	15		3.0		
		1	FP		CO	34		A	4			FP					2 FP generators supplying 1 turbine
1	0	1	S	None	BO	15.9		A	5		B,D	C	3		3.45		Waste heat recovery included
1	0	1	S	None	LO	15.9[f]	0.33	A	2,2	87	D,S	A	13	61.8	4.2	83	
1	0	1	R	65	BO	21.2		A	9			C	4	55.0	4.6		

o – Power shaft geared to 1800 rpm
p – Turbine efficiency
q – Turbine cooling efficiency
r – Power shaft geared to 1500 rpm
s – Velox boiler furnace acts as combustor
t – Model in quantity production
u – *Or 125 air hp*
w – Gas hp
x – 20 lb per sec air at 4 atmospheres
y – *Air hp*
z – 30 delivered, 70 on order
1 – 10 delivered, 90 on order
2 – Injection rotative
3 – Output speed 1100 rpm, 2-stage reducer
4 – Escher Wyss and Fuji Denki
5 – Turbine and compressor in common casing
6 – Two compressors in series and 3 turbines in series all in common shell
7 – Ambient temperature 41 F
8 – Double-flow low-pressure turbine and double-flow-low-pressure compressor
9 – Emergency operation with fuel oil
10 – *Output shaft geared to 6000 rpm*
11 – Lb per second
12 – Maximum

STATUS
C – Under construction
D – Under development
O – In operation
Or – Ordered
T – Under test

COMPRESSOR
A – Axial
AC – Combined axial and centrifugal
C – Centrifugal
FP – Free piston

COMBUSTOR TYPE
A – Annular
CP – Chemical process
D – Double (2 combustors in parallel)
M – Multiple (usually 6 or more combustors in parallel)
F – Furnace
Ex – External heating
R – Refractory lined
S – Single

COOLING TYPE
B – Blade
D – Disk
S – Stator casing

TURBINE
A – Axial
Ra – Radial

CYCLE TYPE
C – Closed cycle
EP – Equipressure cycle
FP – Free-piston cycle
O – Open cycle
S – Semiclosed cycle

FUEL TYPE
BG – Blast-furnace gas
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WH – Waste heat

in Both Central Stations and Industry

No. of cylinders	No. of intercoolers	No. heating stages	Combustor type	Regenerator effectiveness, %	Type of fuel	PERFORMANCE: Thermal efficiency, %[a]	PERFORMANCE: Work ratio	TURBINES: Type[b]	TURBINES: No. of stages	TURBINES: Engine efficiency, %	TURBINES: Cooling	COMPRESSORS: Type[b]	COMPRESSORS: No. of stages	COMPRESSORS: Discharge pressure, psia	COMPRESSORS: Compression ratio	COMPRESSORS: Compression efficiency, %	REMARKS
1	0	1		70	O	27		A	2,1		-	A	13		4.25	86	Development tests for British Navy
1	0	1	S	75	BO	22.5	0.33	A	2,2		D,S	A	13	61.8	4.2		
1	0	1	S	None	LO	15.9	0.33	A	2,2	87[e]	D,S	A	13	61.8	4.2	83	
1	0	0	S	None	CT	15.9	0.33	A	2,2	87[e]	D,S	A	13	61.8	4.2	83	Combined with exhaust heat boilers
1	0	0	S	None	CT	15.9	0.33	A	2,2	87[e]	D,S	A	13	61.8	4.2	83	Combined with exhaust heat boiler and spray heater
1	0	1	S	None	CT	16.0	0.33	A	2,2		D,S	A	13	61.8	4.2		Combined with waste heat boiler
1	0	1	S	75	LO	22.5	0.33	A	2,2		D,S	A	13	61.8	4.2	-	*Air transportable* power plants
1	0	1	S	75	CT	22.5	0.33	A	2,2		D,S	A	13	61.8	4.2		Combined with waste-heat boiler
2	1	1		86	WH	25.0		A	8		None	A: 10; C: 3					Input from heat exchange in waste flue of group of continuous vertical retorts in gas works
2	1	1		86	WH		0.27	A	8		None	A: 10; C: 3	161	4.4	-		Heat input from waste flue of gas works vertical retorts
1	0	1	S		SG,BO	20.6	0.33	A	2,2	87[e]	D,S	A	13	61.8	4.2	83	
1	0	1	S	75	BG	24	-	A			D,S	A			4.6		Blast furnace air and electric generation
2	1	2	S	78	SG	26	0.37	A	3,4		D	C	2,1	69	3.2,1.55		Unit used in large sewage disposal works. Final output 25,000 cfm, free air compressed to 7.5 psig
1		1		None	O	10.0		A	2			C	1		2.7	75	
1		1		None	O	10.0		Ra	1		-	C	1		2.5		
1	0	1	S		LO		-	A	6		None	A	14			-	Provides compressed air for test purposes
3	2	2	W			40		-			-	FP	3	56.0	4.0		
4	3	2	S	90	BO	32.0	0.43	A				A,C			-		*Last two compressor stages centrifugal* and in same casing
1	0	1	S	None		19	-	A		-	D,S	A	-		4.6		Electric generation
-					LO	35		A	9			FP					*Standby* and peak load, 8 FP *engines* built by SIGMA
1	0	1	W	None	LO	17		A	2,2	-	S	A	14			-	Standby unit, peak load
2	0	1	S[2]	None	FO	17	0.37	A	2,2		D	A,C	6,1		2.5,1.8		
-			S	- -	LO	30		A	6			FP					*Standby* and peak load, 6 FP *engines built by SIGMA, combustion chamber* between generators and turbine
1	0	1	S	60	BO	-		-		-	None	A		-	3.5		
-					FLI	34			4			FP			-		Electric generation; output turbine built by Alsthom. 2 FP engines built by SIGMA for each unit
-				-	FLI	34			4		-	FP					Starting synchronous compensator. Output turbine built by Alsthom, 2 FP engines built by SIGMA for this unit
-	-				BO	36	-	A	3		None	FP	-	-			Output turbine built by Alsthom
1	0	1	S	None	BO	19.5		A			D,S	A	-	-	4.6	-	Electric generation
1	0	1	S	75	BG	27		A	-	-	D,S	A			5.0	-	Blast furnace air and electric generation
1	-		S		BG	-		A			-	A	-	-	-		Electric generation and air supply
1	0	1	S	80	BG	28	-	A	8	-	None	A	20			-	Drives turbo-blower for blast furnace
1	-		S	- -	BG			A			- -	A	- -				Electric generation and air supply
1	0	1	S	75	BG	27		A			D,S	A	-	-	5	-	Blast furnace air and electric generation
1	0	1	S	80	BG	24.8	0.31	A	6	89		A	15		4.3	87	Drives alternator and blast furnace blower
1			S		BG			A	- -		-	A				- -	Electric generation and air supply
1	0	1	S	75	BG	26.5	-	A		-	D,S	A			5		Blast furnace air and electric generation
-	-				FG	32	-	-	3			FP		-	-		*Pumping unit, output turbine* built by Pennpet under Rateau license
-	-	-	-	-	-	-		-						-		-	Houdry unit
	1	1			BO	26.9	-	A		-		A					Electric generation
2	1	2	S	None	BO	24		A	-		D,S	A	-		16		Electric generation
6	0	1	W	-	BO	25		A	1,2,3	- -	None	A	10,10	154	10.5		Electric generation
4	2	2	S	80	BO	32.4		A	-	- -	None	A	-				Hydro standby, double flow H-P turbine, compressor
3	2	2	S	80	BO	25.7	-	A			None	A				-	Hydro standby
4	3	2	S	-	BO	32.0	-	A	-		None	A	-	-			Winter hydro backup
1	0	1	S	None	BO	16.5		A	-	88	None	A	23	61.9	4.4	84.6	Emergency standby
2	1	1	S	77	BG	22.7	0.26	A	6	86.5	-	A	21	- -	7.0	87.0	Drives alternator and blast furnace blower
2	1	1	S	-	BO[g]	22.7	0.28	A	6	86.5	-	A	21	- -	7.0	87.0	
1	0	1	S	80	BG	24.8	0.31	A	6	89	-	A	15		4.3	87	Drives alternator and blast-furnace blower
1	0	1	S	75	BG	26.5		A			D,S	A	-	-	5		Blast furnace air and electric generation
1	0	1		80	BG	21.5		A	-	-	None	A	19				

o – Power shaft geared to 1800 rpm
p – Turbine efficiency
q – Turbine coupling efficiency
r – Power shaft geared to 1500 rpm
s – Velox boiler furnace acts as combustor
t – Model in quantity production
u – Oil lift hp
w – Gas hp
x – 20 lb per sec air at 4 atmospheres
y – Air hp
z – 30 delivered, 70 on order
1 – 10 delivered, 90 on order
2 – Injection rotative
3 – Output speed 1100 rpm, 2-stage reducer
4 – Escher Wyss and Fuji Denki
5 – Turbine and compressor in common casing
6 – Two compressors in series and 3 turbines in series all in common shell
7 – Ambient temperature 41 F
8 – Double-flow low-pressure turbine and double-flow-low-pressure compressor
9 – Emergency operation with fuel oil
10 – Output shaft geared to 6000 rpm
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A – Axial
AC – Combined axial and centrifugal
C – Centrifugal
FP – Free piston

COMBUSTOR TYPE
A – Annular
CP – Chemical process
D – Double (2 combustors in parallel)
M – Multiple (usually 6 or more combustors in parallel)
F – *Furnace*
Ex – External heating
R – *Refractory lined*
S – Single

COOLING TYPE
B – Blade
D – Disk
S – Stator casing

TURBINE
A – Axial
Ra – Radial

CYCLE TYPE
C – Closed cycle
EP – Equipressure cycle
FP – Free-piston cycle
O – Open cycle
S – Semiclosed cycle

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BG – Blast-furnace gas
BO – Bunker C or boiler oil
CT – Coal tar
CS – Coal slurry
DC – Distillate oil
FO – Domestic fuel oil
FL – Heavy oil, varied kinds
FL1 – Heavy oil 1
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GO – Gas *oil*
K – Kerosene
LO – Light oil
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Compiled by Althea Thornton, Assistant Editor

OWNER	LOCATION	Builders	No. of units	Status or date of initial operation	GENERAL CHARACTERISTICS: Name plate or rated capacity	Expected or maximum capability	Turbine inlet temperature, F	Pressure ratio	Cycle	No. of shafts	Shaft speeds 1000 rpm	No. of turbine cylinders	No. of turbine wheels in unit
UNITED KINGDOM													
Admiralty	England	AI	1	1950	1,000 kw	1,250 kw	1200	.	O	2	3.0/8.0	2	...
	Pyestock, England	RH	1	1953	750 kw	.....	1340	4.0	O	2	11.4/6.0[d]	2	2
Ministry of Supply	England	RH	1	1956	900 kw	1,000 kw	1340	4.0	O	2	11.5/6.0	2	2
Hoffman Manufacturing Co.	Chelmsford, England	RH	2	1956	900 kw	1,000 kw	1340	4.0	O	2	11.5/6.0	2	2
Michael Nairn & Co Ltd	Kircaldy, Scotland	RH	1	1957	900 kw	1,000 kw	1340	4.0	O	2	11.5/6.0	2	2
Crittal Manufacturing Co	England	RH	1	...	830 kw	1,000 kw	1340	4.0	O	2	11.4/6.0[d]	2	2
Air Ministry	England	RH	3	52, 53	750 kw	1,000 kw	1340	4.0	O	2	11.4/6.0[d]	2	2
Bank of England	Debden, England	RH	1		725 kw	970 kw	1340	4.0	O	2	11.4/6.0[d]	2	2
West Midlands Gas Board	Coventry, England	JB	1	1952	700 kw	.....	1112	4.4	C	1	9.5[c]	1	...
		JB	1	1955	700 kw	.....	1112	4.0	C	1	9.5	1	...
London County Council	London, England	RH	8	1957	620 kw	750 kw	1200	4.0	O	2	11.5/6.0	2	2
Miscellaneous and Process Units													
Shelton Iron, Steel & Coal Co. Ltd.	Stoke-on-Trent, England	BB	1	1956	2,500 kw	.....	1200	4.6	O	1	5.35	1	—
Middlesex County Council	Isleworth, England	HW	1	T	930 hp	.....	1300	2.1	O	2	14.0/5.0	2	2
Alfred Holt & Co. Ltd	Shipboard	AI	5	1-56	350 kw	350 kw	1380	..	O	1	15.0	1	...
Anglo-Saxon Petroleum Co. Ltd	Shipboard	AI	1	..	125 kw	125 kw	1310	..	O	1	23.0	1	..
National Gas Turbine Establishment	*Pyestock, England*	*P*	1	....	20[a]	.....	1125	4	O	1	4.6	1	....
FRANCE													
Stationary Generating Units													
Electricite de France	Paris, France	M	1	1949	15,000 kw	.	1112	4.0	EP	.	.....	.	.
	St. Denis, France	EW	1	1949	12,500 kw	..	1250	11.6	C	2	8.0[m]/3.0	2	2
	St. Dizier, France	BB	1	1956	6,080 kw	...	1290	4.6	O	1	4.75	1	
	Cherbourg, France	EM	1	1955	6,000 kw	6,500 kw	825	4.30	FP	1	3.0	..	.
	Angers, France	R	1	1956	6,000 kw	.....	1210	4.0	O	2	4.8/3.0	1	2
	Garchizy, France	FC	1	C	6,000 kw	...	1292	4.5	O	2	5.2/3.0	2	2
	Tours, France	EM	1	1956	5,500 kw	5,800 kw	1200	4.3	FP	1	7.5[m]	.	.
	Paris, France	R	1		2,000 kw	2,500 kw	1300	3.5	O	1	3.0	1	
	Ajaccio, France	SM	2	1955, 1956	1,500 kw	1,650 kw	842	4.0	FP	.	9.0[f]	..	
	Reims, France	SM	1	1951	1,500 kw	1,700 kw	842	4.0	FP		9.0[m]		.
	Reims, France	SM	1	1950	1,250 kw	1,400 kw	865	3.9	FP	1	9.0	1	.
Electricite et Gaz d'Algerie	Santa Cruz, France	BB	2	1956	11,000 kw	12,000 kw	1200	4.6	O	1	3.0	1	
Miscellaneous and Process Units													
Societe Metallurgique de Knutange	Knutange, France	BB	1	1957	14,000 kw		1400	5.0	O	1	3.0	1	
		EM	1	C	14,000 kw	.	1360	5.5	O	1	3.0	1	
		R	1	1958	6,000[f] ahp	...	1380	4.0	O	1	3.5	1	.
USINOR	Denain, France	EM	1	C	14,000 kw	...	1360	5.5	O	1	3.0	1	
USINOR for Escaudin P.P.	France	BB	1	1957	12,000 kw	.	1400	5.0	O	1	3.0	1	
Societe des Fonderies de Pont-a-Mousson	Pont-a-Mousson, France	S	1	1958	7,500 kw		1256	4.0	O	1	3.85	1	.
Societe des Hauts-Fourneaux de la Chiers	Longwy, France	SM	1	C	7,400 kw		1360	5.5	O	1	4.23	1	
		BB	1	1957	7,300 kw		1400	5.0	O	1	5.4	1	.
Cie des Eaux de la Banlieue de Paris	Suresnes, France	SM	1	1955	900 ghp[e]	1,000 ghp	842	4.0	FP		11.5[3]		
Raffinerie de Berre	Berre, France	BB	1	1945	16 Mcfm	.	..				.		
EUROPE (Excluding France and Great Britain)													
Swedish Power Board	Vastervik, Sweden	ST	1	1959	40,000 kw[7]		.		O		.	.	
Gullspong Munkfors Kraft AB Oerebro — Otterbacken Power Plant	Sweden	BB	1	1957	25,000 kw	27,500 kw	1200	16	O	2	4.75/3.0	2	
Ytgereedstors Power Co	Varberg, Sweden	ST	1	T	10,000 kw[7]	.	1292	.	O	3	7.0/5.5/3.0	[b]	3
North East Power Co	Beznau, Switzerland	BB	1	1949	27,000 kw[7]		1112	8.0	O	2	3.0/3.0	3	. [g]
	Beznau, Switzerland	BB	1	1948	13,000 kw[7]	.....	1112	8.0	O	2	4.75[m]/3.0	2	2
	Wettelden, Switzerland	S	1	1950	20,000 kw	.	1200	20.0	S	3	5.0/3.0	3	3
Municipal Electric Supply	Neuchatel, Switzerland	BB	1	1939	4,000 kw		1020	4.0	O	1	3.0	1	
Societe Hainaut-Sambre SA	Courllet, Belgium	S	1	10-55	7,500 kw	.	1256	6.6	O	1	4.25	1	
		S	1	4-56	7,500 kw	.	1256	6.6	O	1	4.25	1	
Societe Anonyme Cockerill-Ougree	Seraing, Belgium	S	1	1957	7,500 kw	..	1256	4.0	O	1	3.85	1	
Miniere et Metallurgique de Rodange	Rodange, Luxemburg	BB	1	1957	7,300 kw		1400	5	O	1	5.4	1	
Arbed Steel Works	Dudelange, Luxemburg	BB	1		5,400 kw	..	1112	3.6	O	1	.....	1	

BUILDER

AC – Allis-Chalmers Mfg Co, USA
AI – W H Allen Sons & Co, Ltd, England
AR – AiResearch Mfg Co, USA
B – Boeing Airplane Co, USA
BB – Brown, Boveri & Co, Ltd, Switzerland
BE – Brush Electrical Engrg Co, Ltd, England
BT – British Thomson-Houston Co, Ltd, England
CA – Continental Aviation and Engineering Corp, USA
CB – Clark Brothers, USA
DB – David Budworth Limited, England
EE – English Electric Co, Ltd, England
EI – Elsinore Shipbldg & Engrg Co, Ltd, Den
EM – Cie Electro-Mecanique, France
EW – Escher Wyss Ltd, Switzerland
FC – Societe des Forges et Ateliers du Creusot – Usines Schneider, France
G – Gasturbine Maatschappij, Holland
GE – General Electric Co, USA
HW – Harland & Wolff, Ltd, Ireland
JB – John Brown & Co, Ltd, Scotland
M – Ernest Mercier (design), France
MN – Mitsubishi-Nippon Heavy Industries, Ltd, Japan
MV – Metropolitan-Vickers Elec Co, England
O – Maschinenfabrik Oerlikon, Switzerland
P – C A Parsons & Co, Ltd, England
Pt – Pametrada (Parsons and Marine Engrg Turbine Research and Development Association), England
R – Societe Rateau, France
RG – Rover Gas Turbines Ltd, England
RH – Ruston & Hornsby, Ltd, England
S – Sulzer Brothers, Ltd, Switzerland
SM – SEME (Societe d'Etudes Mecaniques et Energetiques), SIGMA (Societe Indust. Generale de Mecanique Appliquee), France
ST – Svenska Turbinfabrik Aktiebolaget Ljungstrom, Sweden
So – Solar Aircraft Co, USA
St – Stabilimento Ernesto Breda, Italy
T – Societe Turbomeca, France
TS – Tokyo Shibaura Electric Co, Japan
W – Westinghouse Electric Corp, USA

GENERAL FOOTNOTES

a – Thermal effy based on higher heating value of fuel unless otherwise noted
b – Turbines and compressors listed in order of descending pressure for each unit
c – Power shaft geared to 3600 rpm
d – With reduction in ambient temperature
e – L-p and h-p turbines in one casing
f – Double flow
g – One Rutland unit has 85% effectiveness
h – Water-cooled pads facing disks
j – Based on lower heating value of fuel
k – Starting combustor, catalyst case is the operating combustor
m – Power shaft geared to 3000 rpm
n – 120 lb per sec gas at 25 psia, 1050 F

In Both Central Stations and Industry

No. of compressor cylinders	No. of intercoolers	No. heating stages	Combustion type	Regenerator effectiveness, %	Type of fuel	PERFORMANCE: Thermal efficiency, %[a]	PERFORMANCE: Work ratio	TURBINES: Type[b]	TURBINES: No. of stages	TURBINES: Engine efficiency, %[c]	TURBINES: Cooling	COMPRESSORS: Type[b]	COMPRESSORS: No. of stages	COMPRESSORS: Discharge pressure, psia	COMPRESSORS: Compression ratio	COMPRESSORS: Compression efficiency, %	REMARKS
2	.	2	S	None	G	24		A			D,S	A			16		Electric generation
2	.	2	S	None	G	24		A			D,S	A			16		Electric generation
2	.	2	S	None	G	24		A			D,S	A			16		Electric generation
1	0	1	M	None	BO	21.1		A	2		D	A	15	85			Hydro backup and emergency standby
1	0	1	M	EC	BO	27.0		A	2		D	A	15	85			Hydro backup and emergency standby
.	0	1	S	None	G	19.0		A			D,S	A			4.6		Electric generation
.	0	1	S	None	G	19.0		A			D,S	A			4.6		Electric generation
.	0	1	S	None	G	16.6		A			None	A					
.	0	1	S	None	G	19		A			D,S	A			4.6		Electric generation
.	0	1	S	None	G	19.0		A			D,S	A			4.6		Electric generation
.	0	1	S	None	G	19		A			D,S	A			4.6		Electric generation
1	0	.	M	None	RG	18.0	0.33	A	4			A	14	70	4.9		Air-compressor drive for refinery
.	.	.	FP	None	FL	22.0			3								Penmot turbine, Rateau license, electric generation
1	0	1	M		G	20.6		A	2		D	A	15	85	6.16		Electric generation
1	0	1			G,DO	20.8[d]		A	5			A	16	85	6.0		Electric generation
1	0	1	M		G,DO	19.0		A	2		D	A	16	85			Electric generation
1	0	1	M	None	RG	15.6	0.33	A	8	.		A	23	68	4.7	.	Gas-compressor drive for refinery
1	0	1	M		RG,G	19.0		A	2		D	A	16	85	.		Electric generation
1	0	1	M		G	17.1		A	2		D	A	15	85		.	Electric generation
2	2	2	S	BC	BO	28.2		A			None	A			. .		Base load unit
1	0	.	S	None	O	16.3		A		88	None	A			4.6	89	Standby unit
1	0	1	S	None	G	15.9	0.33	A	2,2	87	D,S	A	13	61.8	4.2	83	Electric generation
1	0	1	M		G,DO	19.2		A	2		D	A	15	85			Electric generation
2	1	2	S	None	O	24		A		.	D,S	A		.	16		Electric generation at El Convento power plant
2	1	2	F		G,DO	20.2			7,6			A	12,15	206	3.6 4.4		Electric generation
2	1	2	S	None	G	24		A			D,S	A		..	16		Electric generation
1	0	1	S	75	G	24		A	..		D,S	A			4.0		Electric generation
1	0	1	S	None	G	16.4	.	A			None	A					
1	0	1	S	None	BO	20.7		A			None	A	16		.		
1	0	1	M		G	18.6	0.33	A	5	.		A	16	86.0	6.0		Electric generation
					G	...											Electric generation
1	0	1		None	G	17		A			.	A	.	81	5.5	..	
1	0	1	M	None	G	15.0	0.34	A	4	.		A	15	75.0	5.2		
.	0	1	M		G	15.2	0.263	A	5	89[e]		A	14	72	4.9	84.5	
1	0	1	S	None	G	15.9	0.33	A	2,2		D,S	A	13	61.8	4.2	83	
1	0	1	M	None	G	18.6	0.33	A	5			A	16	86	6.0	..	Gas compressor drive[f] pressure maintenance platform
1	0	1	M	None	G	15.5	0.33	A	1,1	.	D,S	A	14	78	5.5		Repressurizing drive, 2 single-stage turbines, variable inlet nozzles in 2nd stage
1	0	1	M		G,DO	20.6		A	2	.	D	A	15	85	.		Power generation, barge mounted
3	2	2		75	LO	27.9		A	7,5,5	..		A	13,10,8[b]	117.6	{2.0,2.03 / 2.07}		Two lp turbines in parallel, one driving lp compressor, other lp
2	1	2	S	73.6	DO	29.3	0.355	A	2,6			A	15,14	148	3.25,3.25	85.8	
4	3	2	S	88	BO	30.9	0.38	A		.		A					Built under Escher Wyss license
1	1	1	S	87	F		0.30	A	5	88	None	C	3	442	2.9	81	
2	1	1	M	75	LO	25.0[g]	.	A	8	.	None	A	24	.		.	Regenerator exhaust provides space heating
1	0	1	M	None	GC	16.5	0.35	A	2,2	..	D,S	A	14	60	4.15	.	For standby service
1	.	1	M	.	DO	17.7	0.342	A	5	85.5[e]		A	14	71	4.9	84.5	
1	0	1	S	None	O	16.0[d]	.	A	4		D,S	A,C	6.1	70.5	4.8	.	For standby service
1	1	1	S	87	CS	.	0.21	A	5	88	None	C	3	442	3.9	81	

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CANADA													
British Columbia Electric Company	Vancouver, Canada	BB	4	1958	23,000 kw	27,000 kw	1200	16	0	2	4.75/3.0	2	
City of Edmonton	Edmonton, Canada	BB	2	1957	20,000 kw	30,000 kw	1200	16	0	2	4.75/3.0	2	
Calgary Power	Canada	BB	1	1957	20,000 kw	30,000 kw	1200	16	0	2	4.75/3.0	2	
British Columbia Power Commission	Vancouver Island, Canada	GE	2	C	16,500 kw	20,650 kw	1450	6.0	0	1	3.6	1	
		GE	2	C	15,200 kw	20,650 kw	1450	6.0	0	1	3.6	1	
Canadian Utilities Limited	Sturgeon Lake, Canada	BB	1	1957	6,200 kw	9,000 kw	1200	4.6	0	1	3.6	1	
	Edmonton, Canada	BB	1	1958	6,000 kw	10,000 kw	1200	4.6	0	1	3.6	1	
	Vermilion Canada	BB	1	1954	5,900 kw	7,400 kw	1200	4.6	0	1	3.6	1	
Saskatchewan Power Corp	Regina Canada	BB	2	1958	6,200 kw	9,000 kw	1200	4.6	0	1	3.6	1	
City of Lethbridge	Lethbridge, Canada	BB	1	1958	6,200 kw	9,000 kw	1200	4.6	0	1	3.6	1	
Western Chemicals	Elk Point, Canada	BB	1	1957	6,200 kw	9,000 kw	1200	4.6	0	1	3.6	1	
LATIN AMERICA													
Stationary Generating Units													
Esso Standard Oil Company	Belot, Cuba	W	1	1957	3,000 hp	3,750 hp	1350	4.8	0	1	8.5	1	
Cervecería Modelo	Havana, Cuba	SM	1	1953	500 kw	560 kw	342	4.0	FP	1	11.5[b]	1	
Planta Electrica of Grupo Industrial	Monterrey, Mexico	GE	2	C	16,000 kw	20,650 kw[d]	1450	6.0	0	1	3.6	1	
Altos Hornos de Mexico	Coan, Mexico	W	1	Or	8,100 kw	....	..	..	0	1	5.74[c]	1	
		GE	2	C	7,500 kw	9,375 kw	..	6.0	0	1	4.63[c]	1	
Lago Oil & Transport Co	Aruba, B.W.I.	W	1	1957	1,800 hp	2,250 hp	1350	4.6	0	1	8.75	1	
Industria Colombiana de Fertilizantes	Bermeja, Colombia	GE	2	C	7,500 kw	9,375 kw	...	6.0	0	1	4.63[c]	1	
Empresa Colombiana de Petroleos	El Centro, Colombia	GE	2	1957	5,000 kw	6,250 kw	1450	6.0	0	1	6.9[c]	1	
Lima Light, Power & Tramway Co	Lima Peru	BB	1	1949	10,000 kw	.	1100	8.0	0	2	4.75[m]/3.0	2	2
Cerro Peruano del Santo	Chimbote, Peru	BB	1	1949	4,000 kw	4,225 kw	1100	4.6	0	1	3.6	1	
Anglo Ecuadorian Oilfields	Ancon, Ecuador	RH	1	1956	900 kw	1,000 kw	1340	4.0	0	2	11.5/6.0	2	2
Electricidad de Caracas	Caracas, Venezuela	GE	1	C	21,800 kw	.	1450	6.0	0	1	3.29[m]	1	
		SB	1	1957	20,000 kw	.. .	1200	16	0	2	4.75/3.0	2	
		BB	4	12-56	20,000 kw	. . . .	1200	.		2	4.75/3.0	2	1
Shell Caribbean Petroleum Co	Las Morochas, Venezuela	BB	1	1958	20,000 kw	. . . .	1200	16	0	2	4.75/3.0	2	
CA Venezolana de Cementos	Pertigalete, Venezuela	BB	2	1954	5,000 kw	. ..	1200	4.0	0	1	3.6	1	
		BB	1	1954	5,300 kw		1200	4.6	0	1	3.6	1	
		BB	2	1949	1,650 kw	. . .	1100	3.0	0	1	5.23[c]	1	
Mene Grande Oil Co	San Tome, Venezuela	W	1	1954	5,000 kw	6,250 kw	1350	5.8	0	1	5.74	1	
			2	1955									
			1	1957									
NV De Bataafsche Petroleum Maatschappij	Venezuela	G		Or	2,000 kw								
Shell Oil Co	Maracaibo Venezuela	G	1		2,000 kw	.	1112	5.5	0	1	5.0	1	
Shell Petroleum Co. Ltd	Maracaibo, Venezuela	MV	1	T	1,750 kw	2,000 kw	1185	5.2	0	1	7.0	1	
Shell Petroleum Co. Ltd	Venezuela	MV	1	1955	1,750 kw	1,750 kw	1182	4.9	0	1	7.0	1	
CA Cemento Carabobo	Valencia, Venezuela	RH	4	1956	900 kw	1,000 kw	1340	4.0	0	2	11.5/6.0	2	2
Miscellaneous and Process Units													
Creole Petroleum Corp	Lake Maracaibo, Venezuela	W	12	1956-1957	8,000 hp	8,750 hp	1350	5.8	0	1	6.0	1	
		GE	10	1953	5,300 hp	..	1450	5.5	0	2	6.3/5.0	1[e]	2
		GE	1	1957	16,500 kw	20,650 kw	1450	6.0	0	1	3.6	1	
GREAT BRITAIN													
Stationary Generating Units													
Central Electricity Authority	Dunston England	P	1	1955	15,000 kw		1208	8.0	0	3	3.0-2.9/2.9	3	2
Central Electricity Authority	Manchester England	MV	1	1952	15,000 kw	15,000 kw	1200	10.1	0	2	5.5/3.0	2	2
North of Scotland Hydro Electric Board	Dundee Scotland	JB	1	1953	12,500 kw	.	1250	10.0	C	2	8.5/3.0	2	2
	Altnabreac, Scotland	JB	1	1957	2,000 kw	.	1220	3.6	C	1	12.75	1	
National Gas Turbine Establishment	Pyestock England	P	1		10,000 kw		1200	5.5	0	2	2.8/3.0	2	
Metropolitan Water Board	Ashford England	BE	1	T	2,500 kw		1340	4.0	0	2	6.4/3.0	2	2
		MV	1	1955	2,500 kw	2,500 kw	1292	4.9	0	1	7.0	1	
		EE	1	T	1,875 kw	2,250 kw	1400	4.8	0	2	8.25/7.0[m]	1	2
National Coal Board	Rothes, Scotland	JB	1	1958	2,000 kw	.	1220	3.6	C	1	12.75	1	

BUILDER

AC – Allis-Chalmers Mfg Co, USA
AI – W.H. Allen Sons & Co. Ltd, England
AR – AiResearch Mfg Co, USA
B – Boeing Airplane Co, USA
BB – Brown Boveri & Co, Ltd, Switzerland
BE – Brush Electrical Engrg Co, Ltd, England
BT – British Thomson-Houston Co. Ltd, England
CA – Continental Aviation and Engineering Corp, USA
CB – Clark Brothers, USA
DB – David Brigworth Limited, England
EE – English Electric Co. Ltd, England
ES – Ets Escher Brosette & Engrg Co. Ltd, Den
EM – Ste Electro-Mecanique, France
EA – Ste Energie Atomique, France
FC – Societe des Forges et Ateliers du Creusot – Usines Schneider, France
G – Gasturbine Maatschappij, Holland
GE – General Electric Co, USA
HW – Harland & Wolff, Ltd, Ireland
JB – John Brown & Co, Ltd, Scotland
M – Ernest Mercier (design), France
MH – Mitsubishi-Nippon Heavy Industries, Ltd, Japan
MV – Metropolitan-Vickers Elec Co, England
O – Maschinenfabrik Oerlikon, Switzerland
P – C.A. Parsons & Co, Ltd, England
PA – Pametrada (Parsons and Marine Engrg Turbine Research and Development Association), England
R – Societe Rateau, France
RG – Rover Gas Turbines Ltd, England
RH – Ruston & Hornsby, Ltd, England
S – Sulzer Brothers, Ltd, Switzerland
SM – SEMT (Societe d'Etudes Mecaniques et Energetiques), SIGMA (Societe Indust. Generale de Mecanique Appliquee), France
ST – Svenska Turbinfabrik Aktiebolaget Ljungstrom, Sweden
So – Solar Aircraft Co, USA
St – Stabilimento Ernesto Breda, Italy
T – Societe Turbomeca, France
TS – Tokyo Shibaura Electric Co, Japan
W – Westinghouse Electric Corp, USA

GENERAL FOOTNOTES

a – Thermal effy based on higher heating value of fuel unless otherwise noted
b – Turbines and compressors listed in order of descending pressure for each unit
c – Power shaft geared to 3600 rpm
d – *With reduction in ambient temperature*
e – L-p and H-p turbines in one casing
f – Double flow
g – One Rutland unit has 85% effectiveness
h – Water-cooled pads facing disks
j – Based on lower heating value of fuel
k – Starting comoustor, catalyst case is the operating combustor
m – Power shaft geared to 3000 rpm
n – 120 lb per sec gas at 25 psia, 1060 F

1956 Survey of Stationary Gas Turbines

Compiled by Althea Thornton, Assistant Editor

OWNER	LOCATION	Builders	No. of units	Status or date of initial operation	GENERAL CHARACTERISTICS: Name plate or rated capacity	Expected or maximum capability	Turbine inlet temperature, °F	Pressure ratio	Cycle	No. of shafts	Shaft speeds 1000 rpm	No. of turbine cylinders	No. of turbine stages in series
EXPERIMENTAL AND SHOP TEST UNITS													
United States													
Westinghouse Electric Corp	Lester, Pennsylvania	W	1	1957	17,500 kw	22,000 kw	1350	7.5	0	2	3.6	2	2
Locomotive Development Committee, 3CR	Dunkirk, New York	AC	1	1949	3,750 hp	4,500 hp	1300	5.2	0	1	5.7	1	--
Clark Brothers	Olean, New York	RH	1	1956	1300 hp	1,430 hp	1340	4.0	0	2	11.5/6.0	2	2
Foreign													
National Gas Turbine Establishment	Pyestock, England	P	1	1956	10,000 kw		1200	5.5	0	2	3.0/2.8	2	2
			1	1955	25 lb/sec		1160	4.05	0	1	4.6	1	--
C.A. Parsons & Co. Ltd	Heaton, England	P	1	1954	2,500 kw		1292	3.8	0	2	6.5/3.0	2	2
			1	1945	500 hp		1200	4.0	0	1	6.0	1	--
English Electric Co. Ltd	Rugby, England	EE	1	4-53	2,750 hp	3,250 hp	1430	4.8	0	2	8.25/7.0	1	2
Metropolitan Vickers Electrical Co. Ltd	Trafford Park, England	MV	1	1949	2,000 kw	-	1240	3.2	0	2	7.3/5.0	2	2
Ministry of Fuel and Power	England	EE	2	1954, 1956	2,000 kw	2,000 kw	1430	4.8	0	2	8.25/7.0[4]	1[4]	2
		MV	1	T	2,000 kw	2,000 kw	1200	5.3	0	1	7.0	1	--
Brush Electrical Engineering Co. Ltd	Loughborough, England	BE	1		2,000 kw		1160	4.9	0	2	5.0/3.0	2	2
Pametrada	Wallsend-on-Tyne, England	Pt	1	1949	3,500 hp		1250	5.4	0	2	4.5/3.08	2	2
			1	1952	2,000 hp		1500			1		1	--
British Admiralty	Pyestock, England	AI	1	1951	1,000 kw		1200	4.25	0	2	8.0/6.75	2	2
Smith's Dock	Middlesbrough, England	SM	1	1955	1,250 hp[w]	1500 hp[w]	842	4.0	FP				
John Brown & Co. Ltd	Clydebank, Scotland	JB	1	1955	1,000 kw		1160	3.2	C	1	13.5	1	1
Ministry of Fuel & Power	Lincoln, England	RH	1	1952	750 kw		1340	4.0	0	2	11.4/6.0[4]	2	2
Ruston & Hornsby, Ltd	Lincoln, England	RH	1	1949	750 kw	900 kw	1340	4.0	0	2	11.4/6.0[4]	2	2
			1	1952	750 kw	1,000 kw	1340	4.0	0	2	11.4/6.0[4]	2	2
W.H. Allen, Sons & Co. Ltd	Bedford, England	AI	1	1952	200 hp		1436	2.5	0	1	23.0[m]	1	--
Brown Boveri & Co. Ltd	Baden, Switzerland	BB	1	1943	1,500 kw		900	4	0	1	6.0	1	--
Escher Wyss Engineering Works, Ltd	Zurich, Switzerland	EW	1	1939	2,000 kw		1270	3.8	C	2	8.0/3.0	2	2
Escher Wyss GmbH Ravensburg	Wurttemberg, Germany	EW	1	1955	2,000 kw	2,300 kw	1220	3.6	C	1	12.75	1[5]	
Maschinenfabrik Oerlikon	Zurich, Switzerland	O	1	1947	1,000 kw		1022	4.0	0	2	4.5/3.0	2	2
Marine Nationale Francaise	Venissieux, France	SM	1	1949	1,550 kw	1,700 kw	842	4.0	FP	1	9.0[f]	1	--
			1	1946	1,250 gnp[w]	1,500 gnp	842	4.0	FP				
Societe Gen de Const Elec et Mecan Alsthom	Belfort, France	A	1	1952	5,000 kw		1472	9	0	2		2	
Electricite de France	Vitry, France	M	1		1,000 hp				EP				
Societe Rateau	St. Denis, France	R	1		2,000 kw		1292	3.8	0	1	4.6[f]	1	
Laboratoires Turbines a Gas	St. Denis, France	T	1	1949	1,600 hp		1300		0	1			
Elsinore Shipbldg & Engrg Co. Ltd	Elsinore, Denmark	EJ	1	1953	3,000 hp		1200	5.0	0	2	6.3/5.4	2	
STAL	Finspong, Sweden	ST	1	1952	2,400 kw		1292	3.9	0	2	5.65/3.0	1	
Stabilimento Ernesto Breda	Milan, Italy	St	1		350 hp								
Tokyo Shibaura Electric Co.	Tokyo, Japan	TS	1		2,200 hp		1200		0	1	5.5	1	--
Mitsubishi-Nippon Heavy Industries, Ltd	Yokohama, Japan	MN	1	1954	2,500 hp	2,750 hp	1292	10	0	3	17.8/8.5/8.0	3	3
			1	C	200 hp	300 hp	1472	3.75	0	2	29.25/22	1	2
SMALL AUXILIARY AND EMERGENCY UNITS													
AiResearch Manufacturing Co.	Phoenix, Arizona	AR			122 hp		1400	3	0	1	6.0	1	--
		AR			100 hp		1550	3.3	0	1	6.0	1	--
		AR			150 anp[r]		1625	3.4	0	1	42.5	1	
		AR	D		180 anp[r]		1650	3.5	0	1	42.0	1	
		AR			168 anp[r]		1550	3.5	0	1	41.5	1	
		AR			120 hp[r]		1550	3.4	0	1	42.1[10]	1	
Boeing Airplane Company	Seattle, Washington	B	120	1953	240 hp	300 hp	1500	3.95	0	2	36.5/2.32	1	2
		B		1953	205 anp[r]	205 anp[r]	1500	3.95	0	2	36.5/29.0	1	2
		B	350	1947	175 hp	210 hp	1550	3.0	0	2	36.5/2.75	1	2
		B	200	1951	140 anp[r]	140 anp[r]	1550	3.0	0	2	36.5/29.0	1	2
David Brailworth Limited	Harwich, Essex, England	DB			50 hp		1480	2.7	0	1	45.0	1	
Continental Aviation and Engrg Corp.	Detroit, Mich.	CA		1-56	180 anp[r]	180 anp	1460	3.6	0	1	35.0	1	2
		CA			169 anp[r]	170 anp	1460	3.35	0	1	35.0	1	2
Rover Gas Turbines Limited	Solihull, Warwickshire, England	RG		1954	50 kva		1340	3.09	0	1	46.0	1	
United States Air Force	Bureau of Ships	So	400	1952	50 hp		1100	2.35	0	1	38.25	1	
		So	100[1]	1954	250 anp		1450	4.15	0	1	21.0	1	
United States Navy		So	100[x]	1951	50 hp			2.56	0	1	40.3	1	
		So	10	1952	320 hp		1460	4.6	0	1	20.0	1	
United States Army and Navy		So	2	1953	520 hp		1460	4.6	0	2	20.22	2	2
Societe Turbomeca	Bordes, France	T			320 hp	400 hp	1427		0	1	3.3[10]	1	
		T			500 hp	600 hp			0	1	[10]	1	
		T			2.4[11]	2.5[11]		3.5	0	1	34.0[12]	1	
		T			360 hp	400 hp			0	2	34.5.29	1	
		T			2.4[11]	2.5[11]			0	1	34.0[12]	1	
Cie Auxiliaire de Navigation	Tanker "Bethsabee"	SM	1	1952	500 kw	550 kw	842	4	FP	1	9.0[f]	1	

Small Auxiliary and Experimental Units

No. of cylinders	No. of intercoolers	No. heating stages	Combustor type	Regenerator effectiveness, %	Type of fuel	PERFORMANCE: Thermal efficiency, %[a]	PERFORMANCE: Work ratio	TURBINES: Type[b]	TURBINES: No. of stages	TURBINES: Engine efficiency, %	TURBINES: Cooling	COMPRESSORS: Type[b]	COMPRESSORS: No. of stages	COMPRESSORS: Discharge pressure, psia	COMPRESSORS: Compression ratio	COMPRESSORS: Compression efficiency, %	REMARKS
2	1	1	M	75	G,O	27.0	0.33	A	7			A	29	113.5	8.0		Electric generation
1	0	1	D	53	PC	19.5	0.30	A	6	87.5	D	A	20	75.1	5.2	84	For coal burning operation
1	0	1	S		DO	15.9[f]	0.33	A	2,2	67	D,S	A	13	61.8	4.2	83	Demonstration unit
2	1	1		75	LO	28		A	5,3			A	11,13	80.8	2.2*2.6		H-p turbine drives load and h-p compressor
1		1			LO			A	6	86	None	A	14	59.5	4.05	83	Supplies variable air conditions for experimental rigs
1	0	1		75	LO,BO	24.5		A	2,2	85.2	D	A	12	55.8	3.8	84.2	Prototype standard set
1	0	1		75	O,PC	15.6		A	8			A	25		4.0	81	Used for oil and pulverized coal tests
1	0	1	D	60	D,G	22.9[f]		A	4		D,S	A,C	6,1	70.5	4.8		Shop test engine
1	0	1	D	56	O	20.5	0.34	A	1,4	86	D,B	A	11	46.6	3.2	86	Shop power supply
1	0	1		60	PC			A	4		D,S	A,C	6,1	70.5	4.8		For coal and gas burning tests
1	0	1	S	None	PG			A	5	89		A	14	76.2	5.3	85	For coal burning tests
1	0	1		None	-	17.0	0.26	A	2	85	D,S	A	16	71.2	4.9	82	Stator cooling on both turbines
2	1	2	S D	80	LO,BO	29[g]	0.38	A' A'	13,8	86		A	17 11	76.7 29.9	2.63 2.05	87 84	Prototype marine propulsion unit under shop test Separate boost turbine drives blower for combustion tests
1	0	2	S	70	LO	19.8	..	A	2,1	85	D	A	13	60	4.25	86	Long-life generator set for British Navy
					DO	43											Efficiency based on gas hp output
1	1	1	S	90	S	-	0.285	A	5	88	None	C	3	230	3.5	81	Shop unit for testing solid fuels
1	0	1	S	75	P	22.0	0.33	A	2,2		D,S	A	13	61.8	4.2		Exhaust heat dries incoming wet peat
1	0	1	D	75	BO	23.4	0.33	A	2,2		D,S	A	13	61.8	4.2	..	Both generate part of factory power supply
1	0	1	S	75	O	22.5											
1	0	1	S	None	DO	8.75	..	Ra	1	.		C	1		2.4	.	Emergency generator set for British Navy
1	0		S[e]	None	BO			A	5			A	10	.	4	.	Shop test unit for Velox boiler
3	2	1	S	92	BO	31.5	0.39	A	6	90.3		A	13,9	.	1.6		
1	1	1	Ex		PC	26		A	5			C	3	400			*Precooler and intercooler used for water heating*
	2	1	S	78	BO	22.6	0.32	A	5,5	84	None	C	3	4.0	4.0	88	Shop test unit
		1	FP		FO	34	.	A	4					.	.	. .	Efficiency based on kwhr generator output
	.	1	FP		FL2	43	.		.	.				.	.	..	Efficiency based on gas output
2	1	1			BO	29		A			.	A	.				For plant power generation
.	.	.				.										.	Test unit in Vitry steam station
1	0	1	S		O	15.0		A	3		.	A	16			.	
.	.			.	K	.			2	86	None		.			.	Turbine only, supplied by compressed air
2	1	2	S	90	LO	31	0.37	A	8	86	None	A	24	71	5.0	83	Experimental marine unit
1	0	1	M	50	LO	21	..	A	5		..	A	14	..	3.9	90	Shop test unit
..	.	.	.	.	.	.				.			.	.		..	Experimental unit
	0	1	.	None	BO	13		A				A	20		.		For Railway Technical Research Institute
2	1	2	S	75	BO	31	0.325	A	4	88	D	A,AC	11,5,1	142	3.3.3.1	92,88	Experimental unit
1	0	1	S	.	K	13	0.31	A	1,1	87	D	C	1	54.1	3.75	80	Expected to be completed summer 1956
.	0	1	S	.	DO			Ra	1			None	.	.	.		Airborne unit depends on pressurized hot air source
.	0	1	S		DO			Ra	1	.	.	C	2				Airborne auxiliary power unit
.	0	1	S		DO	9.8		Ra	1			C	2	.	3.4	.	Airborne auxiliary and ground support source of bleed-air power
.	0	1	S		DO	9.9	.	Ra	1	.		C	2		3.5	..	Airborne and ground support unit to provide bleed-air power
.	0	1	S	..	DO	9.7		Ra	1			C	2		3.5	.	Air transportable source of bleed air for ground support
..	0	1	S	..	DO	7.9		Ra	1		.	C	2		3.4	.	Airborne auxiliary power unit, shaft hp or bleed air
1	0	1	D	..	LO	14	0.345	A	1,1	82.5		C	1	60.0	4.1	75	Shaft power, supersedes 175 hp unit
1	0	1	D	..	LO	14	0.345	A	1,1	82.5	.	C	1	62.0	4.1	75	Output turbine drives 1-stage compressor supersedes 140 hp unit
1	0	1	D		LO	11	0.345	A	1,1	80.5	.	C	1	45.5	3.1	73	Out of production-superseded by 240 hp unit
1	0	1	D	.	LO	11	0.349	A	1,1	80.5		C	1	45.5	3.1	73	Out of Production-superseded by 205 hp unit
1	0	1	A	.	DO	9.5		Ra	1	..	.	C	1		.	.	Portable pumping, generating, process heat applications
.	.	.	A	..	DO	.		A	2	.		C	1		3.85		Portable air compressor drive for aircraft ground support
.		1	A		DO	.		A	2			C	1		..		Portable air compressor drive for aircraft ground support
1	0	1	S	None	DO,G	10.4	0.35	A	1	83.7	D,S	C	1	44.8	3.09	77.4	Drives water pumps, electric generators
1	0	1	S	.	DO	7	.	Ra	1			C	1	34.6	2.35	.	Electric generation
1	0	1	S	.	DO	35		A	3			A	10	61	4.15		Compressed air and shaft power
1	0	1	S		DO,K	7		Ra	1		.	C	1	37.6	2.56		Pumping or air bleed
1	0	1	S	..	DO,K	15		A	3		.	A	10	67.6	4.6	.	Shipboard generator set
1	0	1	S	.	DO,K	15		A	2,1			A	10	67.6	4.6	.	Boat propulsion unit suited for stationary applications
1	0	1	A	None	LO		.	A	2			C	1				Helicopter ground auxiliary drive
1	0	1	A	None	LO			A	3	.		C	1		.	.	Helicopter ground auxiliary drive
1	0	1		None	LO	.		A	2		.	C	1		.	.	Helicopter compressed air supply
1	0	1		None	LO	..	..	A	1,1			C	1	.		.	For starting equipment
1	0	1		.	K	.	.	A	2			C	1	.		.	Air conditioning aircraft cabins on ground, warming up engines
1	0	1	FP	.	FL2	32	.	A	3			FP	1	.		..	

Plants in the United States and Canada

Date of initial operation	Initial capacity, hp	Added capacity, no. of units	Date of added capacity	Ultimate capacity, hp	No. of units installed	Waterwheel capacity, hp	Waterwheel type	Speed, rpm	Static head, ft	Design head, ft	[4]Waterwheel manufacturer	[4]Governor manufacturer	Scroll case, concrete or steel	Penstock valve, type	Generator capacity, kva	Synchronizing, manual or automatic	[5]Thrust-bearing location	Design power factor	Kilovolts	[4]Generator manufacturer
1956	6,000			6,000	2	3,000	Propeller	120	20	20	JL	W	Concrete	Head gate	2,500	Automatic	BG	0.80	2.4	WE
1956	4,500			4,500	3	1,500	Francis	257	40	40	MS	L	Plate steel	Head gate	1,000	Manua.	HS	0.80	0.48	WE
1956	7,575	1	1956	10,100	4	2,525	Propeller	120	20-8	20	MS	L	Concrete	Heac gate	2,000	Semi-auto	AG	0.80	4 15	GE
1956	780			780	1	780	Impulse	831	822	822	MS		Cast steel							
1956	220,000			220,000	4	55,000	Francis	128.6	158-119	150	MS	W	Plate steel	Head gate	39,000	Manual	BG	0.90	13.8	WE
1956	2,400			2,400	1	2,400	Francis	400	55-52	57	JL	W	Concrete	Head gate	2,000	Manual	AG	0.80	4.16	GE
1956	200			200	1	200	Francis	360	30	30	MS									
1956	600			600	1	600	Francis	200	28	28	JL		Concrete	Heac gate	500	Manual	AG	0.80	0.6	WE
1956	370			370	1	370	Francis	180	18	18	JL		Concrete	Heac gate	312	Manual	AG	0.80	0.6	EM
1955	57,000			57,000	1	57,000	Kaplan	138.5	99-72	96	AC	W	Plate steel	Head gate	43,750	Auto or man.	BG	0.80	11.5	AC
1958	1,200,000			1,200,000	6	75,000	Propeller	94.73	86-79	81	AC	AC	Concrete	Head gate	60,000	Auto. or man	BG	0.90	13.8	GE
					8	75,000	Propeller	94.73	86-79	81	BL	AC	Concrete	Heac gate	60,000	Auto or man.	BG	0.90	13.8	GE
1955	30,600			30,600	1	30,600	Francis	120	104	101	MS	W	Plate steel	Head gate	25,000	Automatic	BG	0.90	11.5	GE
1955	30,600			30,600	1	30,600	Francis	120	102	101	MS	W	Plate steel	Heac gate	25 000	Automatic	BG	0 90	11.5	GE
1956	18 650			18,650	1	18,650	Francis	112.5	69	67	MS	W	Plate steel	Heac gate	16,000	Automatic	BG	0.90	6.9	AC
1957	32 000			32,000	1	32,000	Francis	120	105	104	MS	W	Plate steel	Heac gate	25 000	Automatic	BG	0.90	11.5	GE
1957	686			686	1	686	Francis	900	115	115	JL	W	Bronze	Butterfly	690	Automatic	HS	0 90	0 44	EC
1956	8,200	1	1956	20,800	1	8,200	Francis	514	268-258	230	JL	W	Welded pl st	Gate valve	6,759	Semi-auto.	AG	0.80	6.9	EC
1955	1,067			1,067	2	511	Francis	181	25	25	JL		Concrete	Heac gate	Drives mill machinery					
						556	Francis	130	20	20	JL		Concrete	Heac gate	Drives mill machinery					
1956	440			440	1	440	Impulse	600	435	435	MS		Cast steel							EC
1956	7,500			3,750	2	3,750	Kaplan	180	30	30	MS		Concrete	Head gate	3 000	Manual	AG	0.80	4.16	EM
1955	11,690	1	1955	11,690	1	2,800	Francis	240	63	63	MS		Concrete	Head gate	Connects to existing GE generator					
1955	650			650	1	650		225							500	Manual	HS	0.80	0.48	WE
1955	143			143	1	143	Francis	82	8	8	JL		Open flume	Heac gate	Drives mill machinery					
1956	254			254	1	254	Francis	218	22	22	JL		Concrete	Heac gate	Drives mill machinery					
1955	264,000	1	1956	440,000	3	88,000	Francis	90	187-100	150	BL	W	Plate steel	Head gate	84,210	Manual	BG	0.95	13.8	GE
1961	170,000			425,000	2	85,000	Francis	94.7	210-136	170			Plate steel	Heac gate	65,000	Manual	BG	0.95	13 8	
1954	460,000	3	1955	460,000	8	57,500	Francis	85.7	145-75	112	AC	W	Plate steel	Heac gate	42,105	Manual	BG	0.95	13.8	WE
1956	162,000	2	1957	162,000	3	54,000	Kaplan	75	66-40	48	BL	W	Concrete	Head gate	35,100	Manual	BG	0.95	13.8	GE
1955	340			340	1	340	Francis	300	26	26	JL		Concrete	Heac gate	Connects to existing Westinghouse generator					
1955	400			400	1	400	Propeller	277	20	20	JL		Concrete	Head gate	375	Manual	AG	0.80	0.48	GE
1955	140,000			140,000	4	35,000	Kaplan	128.6	82-36	74.5	NN	W	Concrete	Head gate	27,800	Automatic	BG	0.90	14.4	GE
1955	12,570			12,570	1	12,570	Francis	600	520-458	502	MS	W	Plate steel	Butterfly	12,000	Auto or man.	AG	0.90	4.16	GE
1957	70,000			70,000	3	23,333	Kaplan	128.6	64-50	56.5	NN	W	Concrete	Head gate	19,610	Auto. or man.	BG	0.85	6.9	WE
1955	650			650	1	650	Francis	164	15	15	JL		Concrete	Heac gate	Connects to existing Electric Machinery generator					
1956	118,400			118,400	2	55,000	Francis	100	170-104	136	NN	PB	Plate steel	Head gate	44,444	Manual	BG	0.90	13.8	WE
					1	8,500	Francis	277	170-104	136	JL	PB	Plate	Heac gate	6,667	Manual	AG	0.90	13.8	WE
		2	1930		2	3,600	1 tra, 1 pro	100	33-10	30	NN	W	Concrete	Head gate	2,750	Manual	AG	0.80	2.3	GE
1956	7,200	1	1942	18,200	1	6,000	Propeller	128.5	33-10	30	NN	W	Concrete	Heac gate	5,000	Manual	AG	0.80	2.3	GE
		1	1955		1	5,000	Kaplan	128.5	33-10	30	NN	W	Concrete	Heac gate	4,500	Manual	AG	0.80	2.3	GE
1955	25,600	2	1955	39,600	2	7,000	Francis	200	65-59	60	JL	W	Plate steel	Head gate	6,250	Manual	HS	0.80	4.16	AC
1955	42,000			42,000	3	14,000	Terry	75	32-14	26	NN	W	Concrete	Head gate	11,111	Manual	BG	0.90	13.8	WE
1955	21,000			21,000	1	21,000	Francis	180	166-76	124	JL	W	Plate steel	Head gate	16,667	Automatic	BG	0.90	13.8	WE
1940	80,000	1	1955	160,000	1	80,000	Francis	120	195	190	NN	W	Plate steel	Head gate	64,000	Manual	BG	0.90	13.8	WE
as a 102,000-hp, 2,900-cfs, 205-ft head pump →					1	80,000	Francis	105.9	195	190	AC	AC	Plate steel	Head gate	70,000	Manual	BG	0.90	13.8	AC
1956	180,000			180,000	4	45,000	Kaplan	75	60-25	45	BL	W	Concrete	Head gate	51,250	Manual	BG	0 80	13.8	GE
1958	60,000			60,000	3	20,000	Kaplan	60	32	32	NN	W	Concrete	Head gate	15,333	Manual	BG	0.90	13.8	WE
1958	138,000			272,000	2	68,000	Francis	128.6	228-134	190	EE		Plate steel	Head gate	52,623	Manual	BG	0.95	13.8	WE
					2	1,000	Francis	600	226-134	190	JL		Plate steel	Head gate	875	Manual	AG	0.80	0 48	WE
1959	550 000			550,000	4	137,500	Francis	100	154-162	152	AC	AC	Plate steel	Heac gate	101,660	Manual	BG	0 95	14.4	GE
1955	53 000			53 000	2	26,500	Francis	163.6	165-143	155	NN	W	Plate steel	Butterfly	18,950	Manual	AG	0.95	6.9	EC
1961	33,500			33,500	2	16,750	Francis	18	133-67	107	MS		Plate steel	Butterfly	15,333	Manual	AG	0 90	6.9	AE
1957	158 000			158,000	4	39,500	Francis	163.6	245-114	190	MS	W	Welded pl st	Butterfly	30.000	Manual	AG	0.95	11.5	PO
1955	58 800			58,800	3	19,600	Kaplan	54.5	33-8	22	BL	W	Concrete	Heac gate	15,778	Manual	BG	0.90	13.8	GE
1956	780			780	1	780	Francis	150	22	22	JL		Concrete	Head gate	Connects to existing GE generator					
1955	477			477	1	477	Francis	720	81.5	81.5	MS		Plate steel	Heac gate	500	Manual	HS	0.80	2.4	WE
1955	565			565	1	565	Impulse	600	748	732	PB	W	Cast steel		625	Manual	HS	0.80	2.4	WE
1957	7 900			7,000	2	3,500	Francis	360	140-78	120	JL	W	Steel	Head gate	2,750	Manual	AG	0.90	2.4	EC
1956	4 260			4,260	3	1,420	Impulse	1,200		1,525			Cast steel	Heac gate	1,110	Manual	HS	0.90	2.4	
1955	1,200			1,200	2	600	Propeller	300	28	26	PB	PB	Concrete	Head gate	500	Manual	AG	0.80	2.4	GE
1955	1,607,000	4	1955	2,707,000	10	100,000	Francis	100	175-148	165	NN	AC	Plate steel	Head gate	67,386	Manual	BG	0 95	13.8	WE
		4	1956		6	100 000	Francis	100	175-148	165	MS	W	Plate steel	Heac gate	67,386	Manual	BG	0.95	13.8	WE
		4	1956		2	3,500	Francis	514	175-148	165	PB	PB	Plate steel	Head gate	3 000	Manual	AG	0.80	4 16	EC
1953	1,565,200	10	53-55	2,235,000	14	111,300	Kaplan	85.7	92-62	80	MS	AC	Concrete	Head gate	73,684	Manual	BG	0 95	12 GE, 2 EE	
		4	1956		2	3,500	Francis	277	92-62	80	PB	W	Concrete	Heac gate	3,750	Manual	AG	0.80	4.16	EM
1955	98 000			122,500	4	24,500	Kaplan	106	46-20	41	AC	W	Concrete	Heac gate	16,667	Manual	BG	0.90	13.8	EC
1957	560 000	1	1956	560,000	4	140 000	Francis	150		385	3 BL, 1 NN	W	Welded pl st	Butterfly	100,000	Auto or man.	AG	0.80	13.8	WE
1960	912 000			1 824,000	6	114,000	Kaplan	85.7	84-49	76			Concrete	Heac gate	83,000			0 95	13.8	
1962	864 000			1,728,000	6	108,000	Kaplan	85.7	80-52	75			Concrete	Heac gate	75,000			0.95	13.8	
1960	220 000			220,000	4	55,000	Francis	138.5	165-135	132	MS	PB	Plate steel	Head gate	45,000	Manual	BG		13 6	
1955	54,000	1	1959	131 000	1	77,000	Francis	163.6	233-200	227	MS	W	Plate steel	Butterfly	61,000	Manual	BG	0.90	13.8	GE
1956	120,000			120 000	2	60 000	Francis	200	268-248	275	BL	PB	Plate steel	Heac gate	47 200	Automatic	BG	0.90	13.8	GE
1957	10,000	1	1957	35,000	1	28,000	Francis	300	280	272	MS	W	Plate steel	Head gate	22,500	Automatic	AG	0.90	6.9	GE
1955	17 000			17,000	2	8 500	Francis	240	125-107	118	JL	PB	Plate steel	Head gate	6,215	Manua:	AG	0.55	4.16	EM
1956	5,200			5,200	2	2 600	Francis	240	125-107	118	JL		Plate steel	Head gate	Drives Worthington pumps					
1955	18 000			18,000	1	18,000	Francis	225	182-140	156	PB		Plate steel	Heac gate	11,842	Manual	AG	0.95	6.6	
1956	1,400			1 400	2	700	Francis	600	63	63	JL		Concrete	Heac gate	Drives pumps					

EE – English Electric Co Ltd
EECo – English Electric Co of Canada Ltd
EM – Electric Machinery Mfg Co
GE – General Electric Co
G&G – Gilkes & Gordon Ltd
JL – James Leffel & Co
KMW – KMW of Sweden
L – Lombard Governor Co
MS – S Morgan Smith Co
MSC – S Morgan Smith, Canada Ltd
MVE – Metropolitan Vickers Electrical Co Ltd
NBP – (Neyrpic) Neyret-Beylier & Piccard Pictet
NN – Newport News Shipbuilding & Dry Dock Co
PO – Pacific Gerlinon Co
PE – Pelton Div, Baldwin-Lima-Hamilton Corp
SEC – Swedish Electric Co
SGE – Swedish General Electric Co
VIW – Vancouver Iron Works Ltd
W – Woodward Governor Co
WE – Westinghouse Electric Corp
WEI – Westinghouse Electric International Co

[5]AG, indicates thrust bearing is above generator rotor; BG, thrust bearing is below generator rotor, HS, horizontal-shaft machine.

[6]Vertical-shaft, 4-nozzle type.

Compiled by F A Annett
Contributing Editor

Company or government agency	Design or consulting engineers	Project name	[1]New or redeveloped	River	State	Project started, date	[2]Dam type	Crest length, ft	Max height, ft	[3]Type of installation
NEW ENGLAND STATES										
Central Maine Power Co	Central Maine Power Co	Bar Mills	Red.	Saco	Me.	1955				I
St Croix Paper Co	*Chas T Main, Inc*	Woodland	Red.	St Croix	Me.	1954				I
Bangor Hydro-Electric Co	Bangor Hydro-Electric Co	Milford No. 3A	Red.	Penobscot	Me.	1955	CG	960	30	I
Northern Chemical Industries			New		Me.	1955				I
Connecticut River Power Co	Chas T Main, Inc; N. E. Power Service Co	Littleton	New	Connecticut	N.H. & Vt.	1952	C&E	3,148	180	I
Citizens Utilities Co	*Stone & Webster; Citizens Utilities*	Newport No. 11	Red.	Clyde	Vt.	1956	CG	90	19	I
Southworth Co		West Springfield	New		Mass.	1955				I
American Writing Paper Corp		Holyoke	Red.		Mass.	1955				I
Parsons Paper Co		Holyoke	Red.		Mass.	1955				I
Electric Power, Inc	Chas T Main, Inc	*Shepaug*	New	Housatonic	Conn.	1953	CG	1,412	139	I
MIDDLE ATLANTIC STATES										
Power Authority of the State of N.Y.	Sanderson & Porter, Uhl, Hall & Rich	Barnhart Island	New	St Lawrence	N.Y.	1954	CG CG	3,200 3,100	172 126	S
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Five Falls	New	Raquette	N.Y.	1953	C&E	500	50	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Rainbow Falls	New	Raquette	N.Y.	1954	C&E	600	78	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	Blake Falls	New	Raquette	N.Y.	1954	C&E	600	50	I
Niagara Mohawk Power Corp	Niagara Mohawk Power Corp	*Stark*	New	Raquette	N.Y.	1955	C&E	235	40	I
Eastman Kodak Co	Company engineering staff	Waste treatment	New	Genesee	N.Y.	1955		10	115	I
New York State Electric & Gas Corp	Company engineering dept	High Falls	New	Saranac	N.Y.	1955	CG	274	58	I
Brownville Board Co		Brownville	Red.		N.Y.	1954				I
Amoridge Water Authority		Amoridge	New		Pa.	1955				
EAST NORTH CENTRAL STATES										
Northern States Power Co		Menomonie	New	Menomonie	Wis.	1955				I
Kimberly-Clark Corp	Company engineering staff	Quinnesec	Red.	Menomonie	Wis.	1954	CG	200	22	I
Kansas City Star		Park Falls	New		Wis.	1954				I
Whiting Plover Paper Co		Stevens Point	Red.		Wis.	1954				I
Clark Bros Milling Co		Augusta	Red.		Wis.	1955				I
WEST NORTH CENTRAL STATES										
U. S. Corps of Engineers	U. S. Corps of Engr; Chas T Main, Inc	Garrison	New	Missouri	N.D.	1945	EF	12,000	210	I
U. S. Corps of Engineers	U. S. Corps of Engr; Chas T Main, Inc	Oahe	New	Missouri	S.D.	1948	EF	9,300	242	I
U. S. Corps of Engineers	U. S. Corps of Engr; Erik Floor & Assoc	Fort Randall	New	Missouri	S.D.	1946	EF	10,500	160	I
U. S. Corps of Engineers	U. S. Corps of Engr; Harza Engrg Co	Gavins Point	New	Missouri	S.D. & Neb.	1948	EF	8,700	74	I
Lanesboro Public Utilities		Lanesboro	Red.		Minn.	1954				I
Amana Woolen Mills		Amana	New		Iowa	1954				I
SOUTH ATLANTIC STATES										
Virginia Electric & Power Co	Stone & Webster Engrg; Chas T Main, Inc	Roanoke Rapids	New	Roanoke	N.C.	1953	CG	3,060	72	S
Nantahala Power & Light Co	Aluminum Company of America	Tennessee Creek	New	E. Fork Tuckasegee	N.C.	1952	EF,RF	810 385	185 135	I
Tapoco, Inc	Aluminum Company of America	Chilhowee	New	Little Tennessee	Tenn.	1955	EF,RF	1,410	82	I
Martel Mills		Cherokee Falls	Red.		S.C.	1954				I
U. S. Corps of Engineers	U. S. Corps of Engineers Erik Floor & Associates	Buford	New	Chattahoochee	Ga.	1950	Earth	1,530	192	I
Crisp County Power Comm	*J E Sirrine & Emmet S Killebrew*	Flint River	New	Flint	Ga.	1928	CG	450	30	I
Georgia Power Co	Georgia Power Co	Goat Rock	New	Chattahoochee	Ga.	1954	CG	1,548	67	I
U. S. Corps of Engineers	U. S. Corps of Engineers	Jim Woodruff	New	Apalachicola	Fla.	1947	CG	6,134	106	I
EAST SOUTH CENTRAL STATES										
Tennessee Valley Authority	Tennessee Valley Authority	Nottely	New	Nottely	Ga.	1941	E&RF	2,300	184	I
Tennessee Valley Authority	Tennessee Valley Authority	Hiwassee	New	Hiwassee	N.C.	1937	CG	1,255	308	S This unit also operates in reverse
U. S. Corps of Engineers	U. S. Corps of Engr; Ambursen Engr Corp	Old Hickory	New	Cumberland	Tenn.	1951	CG&EF	3,750	38	I
U. S. Corps of Engineers	U. S. Corps of Engineers	Cheatham	New	Cumberland	Tenn.	1950	CG	495	75	I
WEST SOUTH CENTRAL STATES										
U. S. Corps of Engineers	U. S. Corps of Engineers	Table Rock	New	White	Ark.	1952	CG&EF	6,388	250	I
MOUNTAIN STATES										
Washington Water Power Co	Ebasco Services Inc	Noxon	New	Clark Fork	Mont.	1955	CG&EF	4,700	190	O
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Alcova	New	North Platte	Wyo.	1951	EF	763	265	I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Glendo	New	North Platte	Wyo.	1954	EF	4,640	207	I
U. S. Bureau of Reclamation	*U. S. Bureau of Reclamation*	*Palisades*	New	Snake	Idaho	1952	EF	2,200	206	I
U. S. Corps of Engineers	Sverdrup & Parcel, Inc	Albeni Falls	New	Pend Oreille	Idaho	1951	CG	755	83	I
Idaho Falls Electric Light Dept			Red.		Idaho	1955				I
City of Soda Springs		Soda Creek No. 4	New	Soda Creek	Idaho	1954				I
Parowan City Corp		*Red Creek*	New	Red Creek	Utah	1954				I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Provo River	New	Provo	Utah	1955	EF	1,300	235	I
Garkane Power Association, Inc	Harza Engineering Co	Boulder	New	Boulder Creek	Utah	1956	EF	450	30	I
Truckee-Carson Irrigation Dist		Drop No. 5	New		Nev.	1954				I
PACIFIC COAST										
U. S. Corps of Engineers	U. S. Corps of Engineers	Chief Joseph	New	Columbia	Wash.	1949	CG	2,315	235	I
U. S. Corps of Engineers	U. S. Corps of Engineers	McNary	New	Columbia	Wash. & Ore.	1947	CG&EF	8,000	157	I
PUD No 1 Pend Oreille County	Harza Engineering Co	Box Canyon	New	Pend Oreille	Wash.	1952	SG	200	105	I
City of Seattle	Dr J L Savage	Ross	New	Skagit	Wash.	1937	CA	1,300	540	I
Public Utility Dist of Grant County	Harza Engineering Co	Priest Rapids	New	Columbia	Wash.	1955	CG&EF	8,600	100	I
Public Utility Dist of Grant County	Harza Engineering Co	Wanapum	New	Columbia	Wash	1955	CG&EF	9,400	128	I
City of Tacoma, Dept of Public Util	Harza Engineering Co	Mayfield	New	Cowlitz	Wash.	1955	A&G	875	245	I
Puget Sound Power & Light Co	Stone & Webster Engineering Corp	Lower Baker No 3	New	Baker	Wash.	1957				I
Puget Sound Power & Light Co	Stone & Webster Engineering Corp	Upper Baker	New	Baker	Wash	1956	CG	1,200	300	I
Puget Sound Power & Light Co	Stone & Webster Engineering Corp	Snoqualmie Falls No. 2	New	Snoqualmie	Wash.	1956				I
U. S. Bureau of Reclamation	*U. S. Bureau of Reclamation*	Chandler	New	Yakima	Wash.	1963	CG	768	8	I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Roza	New	Yakima	Wash	1956				I
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Kennewick	New	Yakima	Wash	1963	CG	768	8	I

[1]The term "New" applies to a project on a site not developed before. "Redeveloped" indicates a project on a site that has been developed before and now has new turbines, settings, generators or a new plant.

[2]CA, concrete arch; C&E, concrete and earth; CG, concrete gravity; CG&EF, concrete gravity and earth fill; CG, S&B, concrete gravity, slab & buttress; CS&B, concrete slab and buttress; EF, earth fill; EF&RF, earth-faced rock fill; E&RF, earth and rock fill; EFCW, earth fill with concrete core wall; HF, hydraulic fill; RF, rock fill; RFCF, rock fill, concrete face; REF, rolled earth fill; SG sector gates; S&R, stucoways and rock fill; TC timber crib

[3]I, indoor; S, semi-outdoor; O, outdoor; U, underground.

[4]AC – Allis-Chalmers Mfg Co
AE – American Elin Corp
BL – Baldwin-Lima-Hamilton Corp
CAC – Canadian Allis-Chalmers Ltd
CBS – Charles Barber & Sons
CGE – Canadian General Electric Co Ltd
CVL – Canadian Vickers Ltd
CWC – Canadian Westinghouse Co Ltd
DEC – Dominion Engineering Co Ltd
EC – Elliott Co

1956 Design Survey: Typical Hydroelectric

Compiled by F A Annett
Contributing Editor

Company or government agency	Design or consulting engineers	Project name	[1]New or redeveloped	River	State	Project started, date	[2]Dam type	Crest length, ft	Max height, ft	[3]Type of installation
PACIFIC COAST STATES, cont.										
U. S. Corps of Engineers	U. S. Corps of Engineers	The Dalles	New	Columbia	Wash. & Ore.	1951				
U. S. Corps of Engineers	U. S. Corps of Engineers	The Dalles Fishway	New	Columbia	Wash. & Ore.	1951	CG			I
U. S. Corps of Engineers	U. S. Corps of Engr; Sverdrup & Parcel	Ice Harbor	New	Snake	Wash.	1956	CG	2,790	100	I
Portland General Electric Co.	Ebasco Services Inc	Pelton	New	Deschutes	Ore.	1956	CA	750	200	O
California Oregon Power Co	Pioneer Service & Engrg Co	Lemolo No. 1	New	North Umpqua	Ore.	1953	RFCF	885	120	O
California Oregon Power Co	Pioneer Service & Engrg Co	Lemolo No. 2	New	North Umpqua	Ore.	1953	CG&B	195	35	O
U. S. Corps of Engineers	U. S. Corps of Engr; Stevens & Thomson Engrs	Lookout Point	New	Middle Fork Willamette	Ore.	1949	CG&EF	4,740	253	I
U. S. Corps of Engineers	U. S. Corps of Engineers	Dexter	New	Middle Fork Willamette	Ore.	1953	EF	2,335	80	I
Idaho Power Co	International Engr Co; J P Growdon, H C Steele; & Harold Stearns	Brownlee	New	Snake	Ore. & Idaho	1955	E&R	1,320	395	O
Idaho Power Co		Oxbow	New	Snake	Ore. & Idaho	1955	E&R	1,100	200	O
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Pit No. 4	New	Pit	Calif.	1953	CG,S&B	415	74	
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Poe	New	Feather	Calif.	1954	CG	430	60	S
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Butt Valley	New	Butt Creek	Calif.	1956	HF	1,250	130	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Caribou No. 2	New	Feather	Calif.	1956	Earth	1,370	80	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Belden	New	Feather	Calif.	1957	CG	505	150	I
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Kings River	New	Kings	Calif.	1959	Arch	190	183	O
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Balch	Red.	Kings	Calif.	1956	Arch	388	148	O
Pacific Gas & Electric Co	Pacific Gas & Electric Co	Haas	New	Kings	Calif.	1955	RF	950 3,350	360 270	U
Los Angeles Dept of Water & Power	Prof F J Converse, Ralph R Proctor, Chas T Leeds & Chester Marshave	Pleasant Valley	New	Owen	Calif.	1954	EF	530	116	O
Southern California Edison Co	S C Edison & Bechtel Corp	Portal	New		Calif.	1955	EF	838	55	O
Oakdale & S San Joaquin Irr Dist	Tudor-Woodenough Engineers; International Engrg Co & Geo E Goodall Co	Tri-Dam Tulloch	New	Stanislaus	Calif.	1955	CG	1,500	200	I
Oakdale & S San Joaquin Irr Dist		Tri-Dam Donnells	New	Stanislaus	Calif.	1955	CA	800	477	I
Oakdale & S San Joaquin Irr Dist		Tri-Dam Beardsley	New	Stanislaus	Calif.	1955	EF	1,000	320	I
Imperial Irrigation District	Stobs & Hill Inc	Pilot Knob	New	All-American Canal	Calif.	1954				I
U. S. Corps of Engineers, U. S. Bureau of Reclamation	U. S. Corps of Engineers, U. S. Bureau of Reclamation	Folsom	New	American	Calif.	1947	CG&EF	10,230	340	S
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Nimbus	New	American	Calif.	1952	CG	813	50	S
U. S. POSSESSIONS										
Petersburg Light & Power Co			New		Alaska	1954				I
N. Y. Alaska Gold Dredging Corp	Company engineers	Nyac	New	Tuluksak	Alaska	1954				S
U. S. Bureau of Reclamation	U. S. Bureau of Reclamation	Eklutna	New	Lake Eklutna	Alaska	1951	EF			I
Metlakatla Indian Community	Hudpeth & Waller Engrg Corp	Purple Lake	New		Alaska	1954				I
Puerto Rico Water Resources Authority	Jackson & Moreland	Yauco No. 1	New	Guayo	P.R.	1953	CG	585	190	I
Panama Canal Co		Gatun Hydro	Red.	Chagres	Canal Zone	1954				I
CANADA					Province					
Union Electric Light & Power Co Ltd		Trinity	New	Trinity	N.F.	1954				I
United Towns Electric Co Ltd	Power Corp of Canada Ltd	New Chelsea	New	Chelsea	N.F.	1955	EF			I
Nova Scotia Power Commission	N. S. Power Comm & K E Whitman	Ridge	New	Bear	N.S.	1956	EF, CW	2,966	42	I
New Brunswick Electric Power Comm	Shawinigan Engineering Co	Beechwood	New	St John	N.B.	1955	CG	650	100	I
Quebec Hydro-Electric Comm	H G Acres & Co; Frazer Brace Engrg	Rapids No. 2	New	Ottawa	Que.	1951	CG	1,026	110	I
Quebec Hydro-Electric Comm	H G Acres & Co	Bersimis	New	Bersimis	Que.	1953	RF	2,215 1,042	200 230	U
Manicouagan Power Co	H G Acres & Co	McCormick Dam	New	Manicouagan	Que.	1951	CG	4,575	95	I
Eastern Smelting & Refining Corp	Montreal Engineering Co	Smelter Power	New	Chicoutimi	Que.	1955	CG	460	50	I
Price Brothers & Co	Montreal Engineering Co	Chute Wilson	New	Shipshaw	Que.	1956				I
Shawinigan Water & Power Co	Shawinigan Engineering Co	Trenche	New	St.Maurice	Que.	1946	CG			I
Shawinigan Water & Power Co	Shawinigan Engineering Co	Rapide Blanc	New	St.Maurice	Que.	1930	CG			I
Shawinigan Water & Power Co	Shawinigan Engineering Co	La Tuque	New	St.Maurice	Que.	1938	CG	1,325	131	I
Gatineau Power Co		Paugan	New	Gatineau	Que	1926	CG			I
Northern Quebec Power Co	Power Corporation of Canada Ltd	Quinze	New	Ottawa	Que.	1921	S&R	2,500	60	I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Sir Adam Beck-Niagara No. 2	New	Niagara	Ont.					I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Sir Adam Beck-Niagara No. 2	New	Niagara	Ont.	1952	RF	24,967	68	O
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Robert H Saunders	New	St. Lawrence	Ont.	1954	CC CG	3,290 3,100	172 126	S
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Manitou Falls	New	English	Ont.	1953	CG	1,069	40	I
Hydro-Electric Power Comm of Ontario	Hydro-Electric Power Comm of Ontario	Whitedog Falls	New	Winnepeg	Ont.	1955	CG	1,130	80	I
Great Lakes Power Co	Harza Engineering Co	Centre Falls	New	Montreal	Ont.	1956	CG	1,100	130	I
Great Lakes Power Co	Harza Engineering Co	Upper Falls	New	Montreal	Ont.	1955	CG	1,300	90	I
Bracebridge Pwr, Lt & Water Comm	H C Acres & Co	Bracebridge Falls	Red.	North Muskoka	Ont.	1956				I
Gananoque Electric Light & Water Co	H C Acres & Co	Jones Falls	New	Rideau Canal	Ont	1946				I
Ontario Minnesota Pulp & Paper Co	Company engineers	Fort Francis	Red.	Rainy	Ont.	1954	CG	700	50	I
Miller Bros Ltd		Trenton	New		Ont.	1955				I
Manitoba Hydro-Electric Board	H G Acres & Co	McArthur Falls	New	Winnipeg	Man.	1952	CG&EF	31,000	30	I
Calgary Power Co	Montreal Engineering Co	Interlakes	New	Kananaskis	Alta.	1954	EF	420	70	I
Calgary Power Co	Montreal Engineering Co	Pocaterra	New	Kananaskis	Alta.	1954	REF	2,000	90	I
Calgary Power Co	Montreal Engineering Co	Cascade Extension	New	Cascade	Alta.	1956				I
Aluminum Company of Canada	B. C. International Engrg Co	Kemano	New	Nechako	B.C.	1951	RF	1,550	319	U
British Columbia Electric Co	B. C. International Engrg Co	Seton	New	Seton & Cayoosh Creek	B.C.	1954	TC CG	800 450	20 25	I
British Columbia Electric Co	B. C. Engineering Co, Dr Terzaghi & Dr V Dolmage	Cheakamus	New	Cheakamus	B.C.	1954	EF	2,000	90	I
British Columbia Power Comm	B. C. Power Comm & H G Acres & Co	Puntledge	Red.	Puntledge	B.C.	1953	CG	200	15	I
British Columbia Power Comm	H G Acres & Co	Ladore	New	Campbell	B.C.	1955	CG			S
British Columbia Power Comm	B. C. Power Comm, H G Acres & Co	Whatshan	New	Whatshan	B.C.	1948				I
British Columbia Power Comm	H G Acres & Co	Upper Campbell Lake	New	Campbell	B.C.	1955	EF	1,700	170	S
Northern British Columbia Power Co	Power Corp of Canada Ltd	Shawatlans	Red.		B.C.	1954				I
Yukon Hydro Co Ltd	Phelps & Scott Engineers	Porter Creek	New	Porter Creek	Yukon	1955	EF	230	25	I

[1]The term "New" applies to a project on a site not developed before. "Redeveloped" indicates a project on a site that has been developed before and now has new turbines, settings, generators or a new plant.

[2]CA, concrete arch; C&E, concrete and earth; CG, concrete gravity; CG&EF, concrete gravity and earth fill; CG, S&B, concrete gravity, slab & buttress, CS&B, concrete slab and buttress; EF, earth fill; EF&RF, earth-faced rock fill; E&RF, earth and rock fill; EFCW, earth fill with concrete core wall; HF, hydraulic fill; RF, rock fill; RFCF, rock fill, concrete face, REF, rolled earth fill, SG sector gates; S&R, sluiceways and rock fill; TC timber crib.

[3]I, indoor; S, semi-outdoor; O, outdoor; U, unverground.

[4]AC – Allis-Chalmers Mfg Co
AE – American Elm Corp
BL – Baldwin-Lima-Hamilton Corp
CAC – Canadian Allis-Chalmers Ltd
CBS – Charles Barber & Sons
CGE – Canadian General Electric Co Ltd
CVL – Canadian Vickers Ltd
CWC – Canadian Westinghouse Co Ltd
DEC – Dominion Engineering Co Ltd
EC – Elliott Co

Plants in the United States and Canada

Year of initial operation	Initial capacity, hp	Added capacity, no. of units	Date of added capacity	Ultimate capacity, hp	No. of units installed	Waterwheel capacity, hp	Waterwheel type	Speed, rpm	Static head, ft	Design head, ft	[4]Waterwheel manufacturer	[4]Governor manufacturer	Scroll case, concrete or steel	Penstock valve, type	Generator capacity, kva	Synchronizing, manual or automatic	[5]Thrust-bearing location	Design power factor	Kilovolts	[4]Generator manufacturer
1957	1,779,800			2,779,200	14	123,000	Kaplan	85.7	91-60	81	BL	PB	Concrete	Head gate	92,105	Manual	BG	0.95	13.8	BGE
					2	18,600	Kaplan	200	91-60	74	AC	PB	Concrete	Head gate	14,200	Manual	AG	0.95	13.8	WE
					2	4,500	Francis	277	91-60	81	PB	W	Service units		3,500	Manual	BG	0.80	4.16	EM
1961	475,000			858,000	3	143,000	Kaplan	90	105-78	96	MS		Concrete	Head gate	94,737	Auto. or man.	BG	0.95	13.8	
1957	165,000			165,000	3	55,000	Francis	138.5	156-150	150	MS	W	Plate steel	Head gate	36,000	Manual	BG	0.90	13.8	GE
1955	40,000			40,000	1	40,000	Francis	400	756-745	710	AC	W	Welded pl st	Butterfly	30,527	Automatic	AG	0.95	11.5	WE
1956	46,000			46,000	1	46,000	Francis	400	727-704	705	AC	W	Welded pl st	Butterfly	34,737	Automatic	AG	0.95	11.5	WE
1955	157,500	.		157,500	3	52,500	Francis	126.6	233-126	185	PB	W	Plate steel	Head gate	42,222	Manual	BG	0.90	13.8	GE
1955	20,700			20,700	1	20,700	Kaplan	128.6	58-51	55	NN	W	Concrete	Head gate	15,000	Automatic	BG	1.00	13.8	GE
1958	556,000			834,000	4	139,000	Francis	128.6	277-176	274	MS	W	Plate steel	Head gate	100-100	Manual	BG	0.90	13.8	WE
	232,000			348,000	4	58,000	Francis	100	117-111	115		W	Plate steel	Head gate	42,000	Manual	BG	0.90	13.8	WE
1955	126,400			126,400	2	64,200	Francis	225	382-367	340	NN	W	Welded pl st	Butterfly	50,000	Manual	AG	0.90	13.8	GE
1958	152,000			152,000	2	76,000	Francis	225	492-467	421	PB	PB	Cast & pl st	Butterfly	59,000	Automatic	AG	0.90	13.8	GE
1958	50,000			50,000	1	50,000	Francis	200	360-295	313	.	.	Cast & pl st	Butterfly	40,000	Automatic	AG	0.90	13.8	GE
1958	152,000			152,000	2	76,000	Impulse	257	1,152-1,130				.	Butterfly	61,000	Automatic	AG	0.90	13.8	GE
1961	156,000			156,000	2	78,000	Francis	300	770	685			Cast & pl st	Butterfly	65,000	Automatic	AG	0.90	13.8	
1961	60,000			60,000	1	60,000	Francis		793-709	739			Cast & pl st	Butterfly	49,000	Automatic	AG	0.90	13.8	
1956	46,000	2	1958	180,000	2	67,000	Impulse	400	2,389-2,350	2293			Cast steel	Spherical	54,000	Automatic	AG	0.90	13.8	AC
1960	184,000			184,000	2	92,000	Impulse	400	2,444-2,224	2324			Cast steel	Spherical	75,000	Automatic	AG	0.90	13.8	WE
1958	4,200			4,200	1	4,200	Francis	550	76-52	68	JL	W	Plate steel	Butterfly	4,000	Manual	HS	0.80	4.16	EC
1956	14,000			14,000	1	14,000	Francis	300	230	210	MS	W	Welded pl st	Butterfly	10,000	Auto. or man.	AG	1.00	4.8	GE
1958	24,000			24,000	2	12,000	Francis	240	157-74	153	MS	W	Plate steel	Head gate	9,500	Manual	AG	0.90	6.9	EC
1957	74,500	. .		74,500	1	74,500	Impulse[6]	240	1,461-1,286	1151	AC	AC	Cast steel	Butterfly	67,500	Auto. or man.	AG	0.80	13.6	AC
1957	14,000			14,000	1	14,000	Francis	300	264-128	258	AC	AC	Riveted pl st	Butterfly	11,000	Manual	AG	0.90	6.9	AC
1956	52,600			52,600	2	26,300	Kaplan	128.6	48	48	BL	W	Concrete	Head gate	20,000	Manual	HS	0.80	4.16	EC
1955	222,000	1	1955	222,000	3	74,000	Francis	163.6	340-145	300	NN	W	Plate steel	Head gate	60,000	Manual	AG	0.90	13.8	WE
1955	18,800	.		18,800	2	9,400	Kaplan	150	51-20	42	MS	PB	Concrete	Head gate	7,500	Manual	AG	0.90	4.16	EC
1956	3,100	.		3,100	1	3,100	Impulse	600		1000	AC	W	. . .		2,500	Manual	HS	0.80	4.1	AC
1955	500			1,230	1	500	Francis	600	71	71	MS	L	Plate steel	Head gate	350	Manual	HS	0.80	4.1	AC
					1	730	Francis	514	71	71	JL	W	Plate steel	Head gate	625	Manual	HS	0.80	4.1	WE
1955	50,000			50,000	2	25,000	Francis	600	870-780	800	NN	W	Cast steel	Butterfly	16,667	Manual	AG	0.90	6.9	PO
1956	5,530			5,295	2	1,765	Francis	900	321-287	300	JL	W	Cast steel	Butterfly	1,250	Manual	HS	0.80	2.4	EC
1955	34,000			34,000	1	34,000	Impulse	257	878-793	740	PB	W	Cast steel	Spherical	25,000	Auto. or man.	AG	0.80	13.8	WEI
1956	13,320			20,070	3	4,440	Francis	257	.	75	PB	PB	Concrete	Head gate	3,750	Auto. or man.	AG	0.80	6.9	GE
					1	6,750	Francis	189.5	.	75	PB	PB	Concrete	Head gate	5,625	Auto. or man.	AG	0.80	6.9	GE
1955	2,000	1	1956	4,000	2	2,000	Francis	720	.	260			. . .		1,800	Manual	HS	0.80	6.9	CGE
1956	5,600			5,600	1	5,600	Francis	514		275	DEC	W	Plate steel	Butterfly	5,000	Auto. or man.	AG	0.80	6.9	CWC
1957	5,300			5,300	1	5,300	Francis	360	145-147	140	MSC	W	Plate steel	Butterfly	5,000	Automatic	AG	0.80	6.6	CGE
1958	90,000			135,000	2	45,000	Kaplan	109.1	61-20	57	DEC	SGE	Concrete	Head gate	40,000	Manual	BG	0.80	13.8	CGE
1954	46,000	1	1955	64,000	3	16,000	Francis	120	69-66	68	DEC	W	Concrete	Head gate	15,000	Manual	BG	0.85	1CGE, 2CWC	
1956	600,000			1,200,000	4	150,000	Francis	277	880-850	785	EEC	W	Plate steel	Spherical	120,000	Automatic	AG	0.95	13.8	MVE
					4	150,000	Francis	277	880-850	785	NBP	NBP	Plate steel	Spherical	120,000	Automatic	AG	0.95	13.8	CGE
1952	112,400	3	1957-58	337,200	2	56,200	Francis	112.5	126-116	124	MSC	W	Welded pl st	Head gate	37,500	Automatic	AG	0.95	13.8	CGE
					3	65,000	Francis	112.5	126-116	124	CAC	CAC	Welded pl st	Head gate	50,000	Automatic	AG	0.80	13.8	CGE
1957	42,000			42,000	1	42,000	Francis	257	285-277	268	MSC	W	Welded pl st	Head gate	40,000	Automatic	AG	0.80	13.8	CGE
1957	80,000			80,000	1	80,000	Francis		275-270	259	KMW	W	Plate steel	Butterfly	70,000	Automatic	BG	0.90	13.8	CWC
1950	325,000	1	1955	390,000	5	65,000	Francis	128.6	160	160	DEC	W	Plate steel	Head gate	52,000	Automatic	AG	0.90	13.8	CGE
1932	200,000	1	1955	244,500	5	40,000	Francis	109.1	117-93	108	DEC	DEC	Plate steel	Head gate	36,000	Manual	BG	0.85	11.0	CWC
					1	44,500	Francis	109.1	117-93	108	DEC	W	Plate steel	Head gate	36,000	Manual	BG	0.85	11.0	SGE
1940	178,000	1	1955	271,500	5	44,500	Francis	109.1	114-104	114	DEC	DEC	Plate steel	Head gate	40,000	Manual	AG	0.90	11.0	CGE
					1	49,000	Francis	109.1	114-104	114	DEC	W	Plate steel	Head gate	40,000	Manual	AG	0.90	11.0	CGE
1928	204,000	1	1956	285,000	7	34,000	Francis	128	136	133	DEC	W	Plate steel	Head gate	28,500	Manual	AG	0.80	6.6	CWC
					1	42,000	Francis	128.5	136	133	DEC	W	Plate steel	Head gate	36,000	Manual	AG	0.90	6.6	CGE
1922	50,000	4	1923-28	119,000	4	12,500	Francis		70-90	90	DEC		Plate steel	Head gate	10,000	Manual	AG	0.80	11.0	SEC
		1	1956		1	34,500	Francis	107	70-90	90	CAC	W	Welded pl st	Head gate	32,500	Manual	AG	0.80	11.0	CGE
		1	1955		1	34,500	Francis	107	70-90	90	CAC	W	Welded pl st	Head gate	32,500	Manual	AG	0.80	11.0	CGE
1954	1,260,000	12	1954-55	1,680,000	16	105,000	Francis	150	305-294	292	DEC	W	Plate steel	Head gate	80,000	Automatic	AG	0.95	13.8	CGE
															80,000	Automatic	BG	0.95	13.8	CWC
1957	270,000			270,000	6	45,000	Kaplan	92.3	87-40	83	EEC	W	Plate steel	Head gate	31,000	Manual	BG	0.95	13.8	CWC
					These units operate in reverse as 55,000-hp 4,600-cfs 75-ft head pumps. Head range 59 to 80 ft.															
1958	1,200,000			1,200,000	8	75,000	Propeller	94.7		81	EEC		Concrete	Head gate	60,000	Automatic	BG	0.95	13.8	CWC
					8	75,000	Propeller	94.7		81	EEC		Concrete	Head gate	60,000	Automatic	BG	0.95	13.8	CGE
1956	74,000			92,500	4	18,500	Propeller	150	59-44	54	DEC	W	Concrete	Head gate	16,000	Automatic	AG	0.90	13.8	CGE
1957	81,000	..	—	81,000	3	27,000	Propeller	105.9	54-40	50	DEC	W	Concrete	Head gate	24,000	Automatic	BG	0.90	11.5	CWC
1956	30,300			30,300	1	30,300	Kaplan	240	128-100	112			Plate steel	Head gate	22,222	Manual	BG	0.90	11.5	
1956	25,800	.	1956	58,300	1	31,500	Francis	240	247-190	225	MSC	W	Plate steel	Head gate	25,000	Manual	BG	0.90	13.8	CWC
1956	1,000	.	1956	1,130	1	560	Francis	400	36	34	CBS		Steel	Head gate	300	Manual	HS	0.80	4.16	CGE
1956	2,810	1	1956	3,810	1	1,500	Francis	400	62-56	56	CBS	W	Plate steel	Head gate	1,000	Manual	HS	0.80	2.3	CGE
1955	16,000	.	.	16,000	8	2,000	Propeller	200	29	29	CVL	W	Concrete	Head gate	2,000	Manual	AG	0.80	6.9	CGE
1956	290			290	1	290	Francis	180	14	14	JL	.	Concrete	Head gate	. . .	. . .	.	.	.	CWC
1954	80,600	4	1955	80,000	8	10,000	Propeller	85.7	23.5	23.5	DEC	W	Concrete	Head gate	8,500	Automatic	BG	0.90	6.9	CGE
1955	6,900	.		6,900	1	6,900	Francis	257	114-74	98	CAC	W	Plate steel	Butterfly	5,500	Automatic	AG	0.90	4.16	CWC
1955	18,400			18,400	1	18,400	Francis	240	210-165	186	CAC	W	Welded pl st	Butterfly	15,000	Automatic	BG	0.90	13.8	CWC
1957	23,000	1	1957	46,000	2	23,000	Francis	300	340-329	320	DEC	SGE	Plate steel	Pivot	20,000	Automatic	AG	0.85	13.8	CWC
					2	150,000	Impulse[6]	327	2,579	2,500	DEC	W	Cast steel	Spherical	114,000	Manual	AG	0.80	13.8	CGE
					2	150,000	Impulse[6]	327	2,579	2,500	DEC	W	Cast steel	Spherical	114,000	Manual	AG	0.80	13.8	EEC
1954	450,000	1	1955	2,400,000	1	150,000	Impulse[6]	327	2,579	2,500	CAC	W	Cast steel	Spherical	114,000	Manual	AG	0.80	13.8	CGE
		1	1957		2	150,000	Impulse[6]	327	2,579	2,500	PB&VIW	PB	Cast steel	Spherical	114,000	Manual	AG	0.80	13.8	CWC
					1	150,000	Impulse[6]	327	2,579	2,500	PB&VIW	PB	Cast steel	Spherical	114,000	Manual	AG	0.80	13.8	EEC
1956	58,500			58,500	1	58,500	Francis	120	167-129	147	CAC	W	Plate steel	Head gate	40,000	Automatic	BG	1.00	13.8	CWC
1957	190,000	.	.	190,000	2	95,000	Impulse	400	1125-1065	1070	PB&VIW	PB	Cast steel	Butterfly	80,000	Automatic	AG	0.90	13.8	CWC
1955	35,000		.	35,000	1	35,000	Francis	277	360-355	340	CAC	W	Plate steel	Pivot	30,000	Automatic	AG	0.90	13.8	CWC
1956	70,000	..	.	105,000	2	35,000	Francis	138.5	126-75	122	DEC	W	Plate steel	Butterfly	30,000	Automatic	BG	0.90	13.8	CGE
1950	33,000	1	1956	66,000	3	11,500	Francis	600	715-667	690	CAC	W	Welded pl st	Butterfly	12,500	Manual	AG	0.90	6.9	CGE
1957	42,000		.	126,000	3	42,000	Francis	138.5	153-85	140	CAC	W	Plate steel	Butterfly	37,500	Automatic	BG	0.90	13.8	CWC
1955	2,140	..		2,140	1	2,140	Francis	600	257	210	EEC	W	Welded pl st	Head gate	1,550	Manual	HS	0.80	4.16	EEC
1955	850	.	.	850	1	850	Francis	1200	211	212	G&G	G&G	Plate steel	Head gate	750	Auto. or man.	AG	0.80	2.30	CWC

EE – English Electric Co Ltd
EEC – English Electric Co of Canada Ltd
EM – Electric Machinery Mfg Co
GE – General Electric Co
G&G – Gilkes & Gordon Ltd
JL – James Leffel & Co
KMW – KMW of Sweden
L – Lombard Governor Co
MS – S Morgan Smith Co
MSC – S Morgan Smith, Canada Ltd
MVE – Metropolitan Vickers Electrical Co Ltd
NBP – (Neyrpic) Neyret-Beylier & Piccard Pictet
NN – Newport News Shipbuilding & Dry Dock Co
PO – Pacific Oerlikon Co
PB – Pelton Div, Baldwin-Lima-Hamilton Corp
SEC – Swedish Electric Co
SGE – Swedish General Electric Co
VIW – Vancouver Iron Works Ltd
W – Woodward Governor Co
WE – Westinghouse Electric Corp
WEI – Westinghouse Electrical International Co

[5]AG, indicates thrust bearing is above generator rotor, BG, thrust bearing is below generator rotor, HS, horizontal-shaft machine.

[6]Vertical-shaft, 4-nozzle type.

U. S. Government Hydro Power Plants

Government agency	Project	State or Possession	River	Ultimate capacity, hp	Initial capacity, hp	Installed capacity, hp	On order or being installed, hp
	Eklutna	Alaska	Lake Eklutna	50,000	50,000	50,000	
U. S. Bureau of Reclamation	Grand Coulee	Wash.	Columbia	3,102,000	538,000	3,102,000	
	Hungry Horse	Mont.	S. Fork Flathead	420,000	420,000	420,000	
	Bonneville	Ore. & Wash.	Columbia	729,000	137,000	729,000	
	Big Cliff	Ore.	North Santiam	26,500	26,500	26,500	
	Lookout Point	Ore.	N Fork Willamette	157,500	157,500	157,500	
	Detroit	Ore.	North Santiam	140,000	140,000	140,000	
U. S. Corps of Engineers	Dexter	Ore.	N Fork Willamette	20,700	20,700	20,700	
	Chief Joseph	Wash.	Columbia	2,707,000	1,607,000	207,000	1,400,000
	Dalles	Ore. & Wash.	Columbia	2,770,200	1,779,800		1,779,800
	McNary Dam	Ore. & Wash.	Columbia	2,226,000	1,565,200	1,120,000	445,200
	Ice Harbor	Wash.	Snake	858,000	429,000		429,000
	Albeni Falls	Idaho	Pend Oreille	58,800	58,800	58,800	
	Chandler	Wash.	Yakima	17,000	17,000		17,000
	Roza	Wash.	Yakima	18,000	18,000		18,000
	Anderson Ranch	Idaho	Boise	55,500	37,000	37,000	
	Minidoka	Idaho	Snake	26,500	9,000	19,500	
U. S. Bureau of Reclamation	Palisades	Idaho	Snake	158,000	158,000		158,000
	Shasta	Calif.	Sacramento	522,000	419,000	522,000	
	Nimbus	Calif.	American	18,800	18,800	18,800	
	Keswick	Calif.	Sacramento	102,000	102,000	102,000	
	Folsom	Calif.	American	225,000	225,000	225,000	
	Drop No. 2	Calif.	All American Canal	15,000	15,000	15,000	
	Drop No. 3	Calif.	All American Canal	15,000	7,500	7,500	
Imperial Irrigation District	Drop No. 4	Calif.	All American Canal	28,300	13,300	28,300	
	Pilot Knob	Calif.	All American Canal	52,600	52,600		52,600
	Parker Dam	Ariz. & Calif.	Colorado	160,000	120,000	160,000	
	Davis Dam	Ariz. & Calif.	Colorado	311,000	311,000	311,000	
	Hoover Dam	Ariz. & Nev.	Colorado	1,857,000	522,000	1,742,000	
	Elephant Butte	N. M.	Rio Grande	34,500	34,500	34,500	
	Green Mountain	Colo.	Blue	30,000	30,000	30,000	
	Estes Park	Colo.	Colo. Big Thompson	63,000	63,000	63,000	
	Mary's Lake	Colo.	Colo. Big Thompson	11,300	11,300	11,300	
	Pole Hill	Colo.	Colo. Big Thompson	47,500	47,500	47,500	
	Flatiron	Colo.	Colo. Big Thompson	108,000	108,000	108,000	
U. S. Bureau of Reclamation	Kortes	Wyo.	North Platte	55,500	55,000	55,000	
	Shoshone	Wyo.	Shoshone	20,000	20,000	20,000	
	Heart Mountain	Wyo.	Shoshone	8,300	8,300	8,300	
	Boysen	Wyo.	Big Horn	21,000	21,000	21,000	
	Alcova	Wyo.	North Platte	53,000	53,000	53,000	
	Glendo	Wyo.	North Platte	33,500	33,500		33,500
	Seminoe	Wyo.	North Platte	45,000	45,000	45,000	
	Provo	Utah	Provo	7,000	7,000		7,000
	Canyon Ferry	Mont.	Missouri	70,500	70,500	70,500	
	Angostura	S. D.	Cheyenne	1,675	1,675	1,675	
	Fort Peck	Mont.	Missouri	150,000	70,000	120,000	
	Fort Randall	S. D.	Missouri	460,000	460,000	460,000	
	Oahe	S. D.	Missouri	485,000	194,000		
	Garrison	N. D.	Missouri	440,000	264,000	176,000	88,000
	Gavins Point	S. D. & Neb.	Missouri	162,000	162,000		
U. S. Corps of Engineers	St. Mary's Falls	Mich.	St. Mary's	72,750	23,925	23,925	
	Norfolk	Ark.	North Fork	168,000	42,540	84,540	
	Blakely Mountain	Ark.	Ouachita	104,000	104,000	104,000	
	Bull Shoals	Ark.	White	419,000	211,000	211,000	
	Table Rock	Ark.	White	272,000	272,000		136,000
	Narrows	Ark.	Little Missouri	36,000	24,000	24,000	
	Fort Gibson	Okla.	Grand	96,000	64,000	64,000	
U. S. Corps of Engineers	Tenkiller Ferry	Okla.	Illinois	47,000	47,000	47,000	
	Denison Dam	Okla. & Texas	Red	282,080	56,080	114,080	
International Boundary & Water Comm.	Falcon Dam	Texas & Mex.	Rio Grande	88,500	88,500	88,500	
	Whitney Dam	Texas	Brazos	41,400	41,400	41,400	
U. S. Corps of Engineers	Wolf Creek	Ky.	Cumberland	377,000	377,000	377,000	
	Kentucky	Ky	Tennessee	220,000	176,000	220,000	
	Pickwick	Tenn.	Tennessee	302,000	96,000	302,000	
	Wilson	Ala.	Tennessee	610,000	206,000	610,000	
	Wheeler	Ala.	Tennessee	360,000	90,000	360,000	
	Guntersville	Ala.	Tennessee	141,000	120,000	141,000	
	Hales Bar	Tenn.	Tennessee	140,000	72,000	140,000	
	Chickamauga	Tenn.	Tennessee	144,000	108,000	144,000	
	Watts Bar	Tenn.	Tennessee	210,000	120,000	210,000	
	Norris	Tenn.	Clinch	132,000	132,000	132,000	
	Fort Loudoun	Tenn.	Tennessee	176,000	88,000	176,000	
	Cherokee	Tenn.	Holston	166,000	83,000	166,000	
Tennessee Valley Authority	Douglas	Tenn.	French Broad	154,000	83,000	154,000	
	South Holston	Tenn.	South Holston	49,500	49,500	49,500	
	Ft. Patrick Henry	Tenn.	S Fork Holston	50,000	50,000	50,000	
	Boone	Tenn.	S Fork Holston	103,500	103,500	103,500	
	Watauga	Tenn.	Watauga	69,000	69,000	69,000	
	Fontana	N.C.	Little Tennessee	274,000	183,000	274,000	
	Apalachia	Tenn.	Hiwassee	106,000	106,000	106,000	
	Hiwassee	N. C.	Hiwassee	160,000	80,000	160,000	
	Chatuge	N. C.	Hiwassee	13,800	13,800	13,800	
	Nottely	Ga.	Nottely	21,000	21,000	21,000	
	Ocoee No. 3	Tenn.	Ocoee	33,500	33,500	33,500	
	Ocoee No. 2	Tenn	Ocoee	25,000	20,000	25,000	
	Wilbur Dam	Tenn.	Watauga	9,700	9,700	9,700	
	John H Kerr	Va. & N C.	Roanoke	290,000	290,000	290,000	
	Philpott	Va	Smith	19,640	19,640	19,640	
	Central Hill	Tenn	Carney Fork	188,750	188,750	188,750	
	Dale Hollow	Tenn.	Obey	75,000	50,000	75,000	
	Old Hickory	Tenn	Cumberland	180,300	180,000		180,000
U. S. Corps of Engineers	Cheatham	Tenn.	Cumberland	60,000	60,000		60,000
	Alfatoona	Ga.	Etowah	152,900	102,900	102,900	
	Buford	Ga	Chattahoochee	118,400	118,400		118,400
	Jim Woodruff	Fla	Chattahoochee	42,000	42,000	42,000	
	Clark Hill	Ga. & S. C.	Savannah	388,600	388,600	388,600	
Total Capacity				26,820,310	19,804,130	16,380,442	4,922,500

1956 Design Survey of Typical Ne

Steam Central-Station Installations

Compiled by Althea Thornton, Assistant Editor

Company	Location	Plant name	Consulting engineers	Unit No., nos. units	First operation new units	Throttle pressure, psig	Steam temp., °F: Throttle	Steam temp., °F: Reheat	BOILERS: Number	BOILERS: Capacity, each, 1,000 lb per hr	BOILERS: Manufacturer	BOILERS: Boiler & unit designation	F.D. FANS: Drive	F.D. FANS: Air flow control	I.D. FANS: Drive	I.D. FANS: Gas flow control	Firing	FUELS: Type	FUELS: Heating value, 1000 Btu per lb	FUELS: Ash softening temperature, °F	FEED PUMPS: Drive	FEED PUMPS: Flow control	TURBINES: Number	TURBINES: Capacity, each, 1000 kw	TURBINES: Manufacturer	TURBINES: Backpressure, psig	TURBINES: No. bleed points	Full load generator pressure, psig	CONDENSERS: Surface, 1000 sq ft	CONDENSERS: No. water passes	CONDENSERS: Tube material	Total boiler capacity incl new units, 1000 lb per hr	Total generator capability incl new units, 1000 kw
Philadelphia Electric Co	Eddystone, Pa	Eddystone		1	1949	4300	1100	1100	2	1300	CE	2 DB					Pr	C	13.7	2400	4W 2T	3	1	358[8]	WE	0.5	8	55.0	150	1	AdA	7000	358
	Eddystone, Pa	Eddystone		2	1950	5000	1150	1150	2	1300	CE	2 DB					Pr	C					1	325	GE								
	Philadelphia, Pa	Schuylkill		1	1957	7400	1050	1050	2	1800	CE	2 DB					Pr	C					1	375	GE	0.5	6	Con	93.5	2	AdA	2560	375
Ohio Power Co	Philo, Ohio	Philo	American Gas & Electric Svc Corp	5	1957	4630	1150	1150	1	1400	CE	1 DB					Tu	Cy	10.5	7000	2M	Hy	1	125[4]	GE	0.75	5	210	55	1	Cnl		500
	Reiser, Ohio	Muskingum River	American Gas & Electric Svc Corp	6	1957	4630	1150	1150	1	1400	CE	1 DB					Tu	Cy	10.5	7000	3T	S	1	225[4]	GE	0.75	4	50	100	1	Ad		900
				7	1957	7415	1050	1050	2	1800	CE	2 DB					Pr	Cy	10.5	7000	3T	S	1	275[4]	GE	0.75	4	50	100	1	Ad		
American Gas & Electric System																		Cy					2	450[9]	GE								
Cleveland Electric Illuminating Co	Avon Lake, Ohio	Avon			1950	1625[1]	1050		3	1000	CE	3 DB					Pr	C															
Cincinnati Gas & Electric Co	Near New Richmond, Ohio	Walter C Beckjord	Sargent & Lundy	6	1958	2500	1000	1000	2	1250	CE	2 DB					Pr	C	12.4	2170	1M 2T	Hy S	1	250	WE	0.5	8	118	113	1	Ad	5815	670
Dayton Power & Light Co	Dayton, Ohio	Frank M Tait	Gilbert Associates Inc	4	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.5	2350	3M	Hy	1	156.2	WE	0.75	7	160	80	2	AsCu	3400	510
Duke Power Co				4	1957	2415	1050	1050	2	1000	CE	2 DB					Pr	C	12.0	2300	2M	R	1	130[11]	GE	0.75		140		2	Ac	3380	460
Metropolitan Edison Co	Peters, S C	Lee	Gilbert Associates Inc	5	1958	2400	1050	1050	2	1000	CE	2 DB					D	P	12.0	2300	2M	R	1	130[11]	GE	0.75		140		2	Ac		
	Portland, Pa	Portland		1	1958	4300	1150	1150	1	1400	CE	1 DB					P,G	C,G	13.4	2250	2M	Hy	1	175	GE	0.75	6	Con	105	1	Ad	2680	385
South Carolina Electric & Gas Co	Irmo, S C	Silas C McMeekin	Gilbert Associates Inc	1	1958	4300	1150	1150	1	1400	CE	1 DB					P	C	13.2	2000	2M	F Hy	1	165[9]	GE	0.5	7	175	80	1	Ad	1150	165
Ohio Edison Co	[illegible]	[illegible]	[illegible]	1	1948	1450	1000		2	450	B&W	2 VU					Pr	C	13.0	2000	3M	Ma	1	137.5[9]	GF	0.5	7	119	70	2	Ac	1870	275
			Commonwealth Associates Inc	2	1952	1450	1000	1000	2	450	B&W	2 VU					Pr	C	13.0	2000	3M	Ma	1	137.5[9]	GF	0.5	7	119	70	2	Ad		
				3	1956	1450	1000	1000	2	450	B&W	2 VU					Pr	C	11.0	2100	3M		1	170	GE	0.75	8	Con	90	2	Ad	2400	340
Public Service Electric & Gas Co	Linden, N J	Linden		1	1957	2415	1050	1050	2	1000	CE	2 DB					Pr	C	11.0	2100	3M		1	170	GE	0.75	8	Con	90	2	Ad		
Virginia Electric & Power Co	Bremo Bluff, Va	Bremo	Stone & Webster Engrg Corp	1	1931	1250	900	900	1	225	B&W	1 VU					Pr	C	11.0	2100	3M		1	170	GE	0.75	8	Con	90	2	Ad		
	Portsmouth, Va	Portsmouth	Stone & Webster Engrg Corp	1	1948	1450	1000	1000	1	450	B&W	1 VU					Pr	C	11.0	2100	3M		1	170	GE	0.75	8	Con	90	2	Ad		
	Yorktown, Va	Yorktown	Stone & Webster Engrg Corp	1	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.0	2100	3M		1	170	GE	0.75	8	Con	90	2	Ad		
Appalachian Electric Power Co	Clinch River, Va	Kanawha	American Gas & Electric Svc Corp	1	1954	2415	1050	1050	2	1000	CE	2 DB					Pr	Cy	10.5	7000	3T	S	1	225[4]	GE	0.75		50	100	1	Ad	3046	450
	Glen Lyn, Va	Glen Lyn	American Gas & Electric Svc Corp	6	1944	1450	1000	1000	2	450	B&W	2 VU					Pr	C	10.5	2000	3T	S	1	225[4]	GE	0.75		50	100	1	Ac		
	Queens, New York, N Y	Astoria		5	1950	1450	1000	1000	2	450	B&W	2 VU					Pr	C	10.5	2000	3T	S	1	225[4]	GE	0.75		50	100	1	Ac		655
	Staten Island, N Y	Arthur Kill		2	1959	1450	1000	1000	2	450	B&W	2 VU					Pr	C	10.5	2000	3T	S	1	225[4]	GE	0.75		50	100	1	Ac		655
[illegible]	[illegible]	[illegible]	[illegible]	1	1955	1800	1000	1000	1	1400	FW	1 VU					P	C	14.1	2100	1T[29] 2M	Hy	1	335[4]	GE	1.0	7	160	167	1	Ac	5040	680[11]
				2	1955	1800	1000	1000	1	1400	FW	1 VU					P	C	14.1	2100	1T[29] 2M	Hy	1	335[4]	GE	1.0	7	160	167	1	Ac	2640	360[11]
Consumers Power Co	Essexville, Mich	John C Weadock	Commonwealth Associates Inc	1	1958	2400	1050	1050	2	1000	CE	2 DB					P	C	13.3	2056	3M	R	1	200	WE	0.75	7	159	154	1	Ac		250
Jersey Central Power & Light Co	Sayreville, N J	Sayreville	Burns & Roe Inc	2	1958	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.0	2100	3M	R	1	156	GE	1.25	7	Con	70	1	Ac	5200	642
Narragansett Electric Co	Providence, R I	South St	United Engineers & Constructors	5	1956	2400	1050	1050	2	1000	CE	2 DB					Pr	Cy,G	13.0	2300	3M	S Hy	1	125	WE	0.5[18]	7	90	80	1	Cnl		336
Union Electric Co	St Louis County, Mo	[illegible]	[illegible]	2	1957	2400	1050	1050	2	1000	CE	2 DB					D	P,G	12.0	2350	3M[6]	Hy	1	79	WE	0.5	7	79					270
Wisconsin Electric Power Co	Milwaukee County, Wis	[illegible]	[illegible]	1	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	12.7	2290	3M	R	1	250[9]	GE	0.75	6	105	130	1	A	2480	360
	Oak Creek			3	1958	2400	1050	1050	2	1000	CE	2 DB					P	C	12.5	2130	2M		1	340[9]	AC	0.25	6	Con	100	1	Ac	3400	500
California Electric Power Co	San Bernardino County, Calif	San Bernardino	Fluor Corp														O,G	O,G	16.3		2M	R	1		GE	1.0	5		42.5	2	AsCu	475	
New England Power Co	Salem, Mass	Salem Harbor	Stone & Webster Engrg Corp	1	1951	1450	1000	1000	1	450	B&W	1 VU					O	P,C[6]	14.0	2375	3M	R	1	140	GE	0.5	6	91.9	60	1	Ac	2070	320
Baltimore Gas & Electric Co	Anne Arundel County, Md	Herbert A Wagner	Stone & Webster Engrg Corp	2	1949	1450	1000	1000	1	450	B&W	1 VU					Hy	P	12.8	1900	2M	Hy	1	125	GE	0.75	5	64	95	2	AsAlBr	1900	250
Carolina Power & Light Co	Moncure, N C	Cape Fear	Ebasco Services Inc	1	1956	2400	1050	1050	2	1000	CE	2 DB					D	P	13.8	2100	3M	R	1	156[20]	WE	0.75	6	Con	100	2	Ac	2200	435
	Wilmington, N C	Lovis V Sutton	Ebasco Services Inc	2	1954	2400	1050	1050	2	1000	CE	2 DB					D	P	13.8	2100	3M	R	1	113[20]	GE	0.75	5	Con	70	2	Ac	1894	225
Connecticut Light & Power Co	Devon, Conn	Devon	United Engineers & Constructors	9	1954	2400	1050	1050	2	1000	CE	2 DB					P	C	14.2		3M	R	1	100	WE	1.5	6	Con		2	Ac		385
Florida Power Corp	St Petersburg, Fla	Paul L Bartow	Black & Veatch	3	1954	2400	1050	1050	2	1000	CE	2 DB					D	O[22]	18.2		3M	Hy	1	121	GE	1.0	7	77	80	1	Cnl	960	120
Alabama Power Co	Gorgas, Ala	Gorgas No 3	Southern Services Inc	5	1954	2400	1050	1050	2	1000	CE	2 DB					Hy	P	11.7	2250	3M	Hy	1	165	GE	1.25	6	32[9]	120	2	Ac	2352	315
Georgia Power Co	Newman, Ga	Yates	Southern Services Inc	6	1950	1450	1000	1000	1	450	B&W	1 VU					Hy	P	12.0	2500	3M	Hy	1	125	GE	1.25	5	24.7	90	2	Ac,Ac	1890	250
				7	1957	2400	1050	1050	2	1000	CE	2 DB					Hy	P	12.0	2500	3M	Hy	1	125	GE	1.25	5	24.7	90	2	Ac,Ac	1890	250
Mississippi Power Co	Gulfport, Miss	Gulf Coast	Southern Services Inc	1	1953	2400	1050	1050	2	1000	CE	2 DB					FR	P	12.6	2500	3M	Hy	1	125	GE	1.25	5	24.7	90	2	Ac,Ac	1890	250
				2	1954	2400	1050	1050	2	1000	CE	2 DB					Hy	P	12.7	2090	2M	Hy	1	75	GE	1.75	5	7	65	1	Ac	58	75
Hartford Electric Light Co	Middletown, Conn	Middletown	Stone & Webster Engrg Corp	4	1958	1450	1000	1000	2	450	B&W	2 VU					Pr	C	13.6	7050	3M	Hy	1	315[10]	GE	0.5	6	90	70	2	AsAc	1375	334
Houston Lighting & Power Co	Strang, Texas	San Bernice	Ebasco Services Inc	1	1948	1450	1000	1000	1	450	B&W	1 VU					D	G,O	13.6	2050[24]	3M	R	1	156[10]	GE	1.75	6	150	85	1	Ac	2410	320
	Smithers Lake, Texas	Smithers Lake	Ebasco Services Inc	1	1954	2400	1050	1050	2	1000	CE	2 DB					D	G,O	13.6	2050[24]	3M	R	1	156[10]	GE	1.75	6	150	85	1	Ac	2410	320
				2	1956	2400	1050	1050	2	1000	CE	2 DB					D	G,O	13.6	2050[24]	3M	R	1	156[10]	GE	1.75	6	150	85	1	Ac	2410	320
				3	1958	2400	1050	1050	2	1000	CE	2 DB					D	G,O	13.6	2050[24]	3M	R	1	156[10]	GE	1.75	6	150	85	1	Ac	2410	320
Kansas City Power & Light Co	La Cygne, Kans	Montrose	Ebasco Services Inc	1	1958	2400	1050	1050	2	1000	CE	2 DB					D	P	10.0	1950	3M	R	1	156[10]	GE	0.75	7	132	70	2	[illegible]	2522	350
Kansas Power & Light Co	Tecumseh, Kans	Tecumseh	Black & Veatch	1	1957	2400	1050	1050	2	1000	CE	2 DB					D	P	10.0	1950	3M	R	1	156[10]	GE	0.75	7	132	70	2	[illegible]	2522	350
Long Island Lighting Co	Port Jefferson, N Y	Port Jefferson	Ebasco Services Inc	2	1958	2400	1050	1050	2	1000	CE	2 DB					Hy	P	11.5		2M	R	1	95[10]	WE	0.75	5	Con	60	1	Ad	1960	222
Louisiana Power & Light Co	Sterlington, La	Sterlington	Ebasco Services Inc	3	1953	2400	1050	1050	2	1000	CE	2 DB					D	P,O,G	C,O,G	11.5	2M	R	1	156[11]	GE	0.75	6	Con	71	1	Ac	2160	270
Montana Electric Co	Somerset, Mass	Somerset	Stone & Webster Engrg Corp	1	1949	1450	1000	1000	1	450	B&W	1 VU					D	P	12.9	2000	3M	R	1	156[11]	GE	0.75	6	Con	71	1	Ac	2160	270
				4	1958	2400	1050	1050	2	1000	CE	2 DB					D	G	13.5	345	3M	Hy	1	21	GE	0.75	6	Con	12.5	2	Ad		357
																		P,O	C,O				1	110	GE	0.75	6			2	Cnl		375
New York State Electric & Gas Corp	Lattimville, N Y	Milliken	Gibbs Associates, Inc	1	1951	1450	1000	1000	1	450	B&W	1 VU					Pr	C	13.3	2150	3M	Hy	1	157	WE	0.5	7	100	70	1	AsAc	2000	304
Northern Indiana Public Service Co	Gary, Indiana	[illegible]	[illegible]	2	1954	2400	1050	1050	2	1000	CE	2 DB					Pr	C	13.3	2156	2M	Hy	1	157[20]	GE	0.5	6	100	70	1	Ac	2508	390
Oklahoma Gas & Electric Co	Horace Villa	Dean H Mitchell	Sargent & Lundy	3	1958	2400	1050	1050	2	1000	CE	2 DB					Pr	C	10.0	1950	3M	Hy	1	137[20]	GE	1.5	6	100	70	1	Ac		
		Horseshoe Lake	Sargent & Lundy	4	1958	2400	1050	1050	2	1000	CE	2 DB					Pr	C	10.6	1950	3M	Hy	1	137[20]	GE	1.5	6	100	70	1	Ac		
Pacific Gas & Electric Co	San Francisco, Calif	Hunters Point		3	1956	2400	1050	1050	2	1000	CE	2 DB					Pr	G	10.6	1100[24]	3M	Hy	1	177	GE	1.0	6	123	70	1	Pac	2424	247
	Eagle, Calif	Humboldt Bay	Bechtel Corp	4	1958	2400	1050	1050	2	1000	CE	2 DB					Pr	C	12.4	2170	1M 2T	Hy S	1	250	WE	0.5	8	118	113	1	Ad	5815	670
Pacific Electric Power Co	Alamitos, Calif	Potomac River	Stone & Webster Engrg Corp	5	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.5	2350	3M	Hy	1	156.2	WE	0.75	7	160	80	2	AsCu	3400	510
Southern California Edison Co	Redondo Beach, Calif	Redondo	Bechtel Corp	6	1958	2400	1050	1050	2	1000	CE	2 DB					D	P	12.0	2300	2M	R	1	130[11]	GE	0.75		140		2	Ac	3380	460
Southern Nevada Power Co	Whitney, Nevada	Clark	Stearns-Roger Mfg Co	7	1959	2400	1050	1050	2	1000	CE	2 DB					D	P	12.0	2300	2M	R	1	130[11]	GE	0.75		140		2	Ac		
Texas Power & Light Co	Cooper, Texas	Stryker Creek	Ebasco Services Inc	1	1958	2400	1050	1050	2	1000	CE	2 DB					P,G	C,G	13.4	2250	2M	Hy	1	175	GE	0.75	6	Con	105	1	Ad	2680	385
West Penn Power Co	Greenville, Pa	Armstrong	Stone & Webster Engrg Corp	1	1958	2400	1050	1050	2	1000	CE	2 DB					D	P	12.0	2000	2M	F Hy	1	165[9]	GE	0.5	7	175	80	1	Ad	1150	165
Gulf States Utilities Co	Beaumont, Texas	Nelches	Stone & Webster Engrg Corp	1	1948	1450	1000	1000	1	450	B&W	1 VU					Pr	C	13.0	2000	3M	Ma	1	137.5[9]	GF	0.5	7	119	70	2	Ac	1870	275
	Lake Charles, La	Roy S Nelson	Stone & Webster Engrg Corp	1	1950	1450	1000	1000	1	450	B&W	1 VU					Pr	C	13.0	2000	3M	Ma	1	137.5[9]	GF	0.5	7	119	70	2	Ad		
				2	1958	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.0	2100	3M		1	170	GE	1.75	8	Con	90	2	Ac	2400	340
[illegible]	[illegible]	[illegible]	[illegible]	1	1950	1450	1000	1000	2	450	B&W	2 VU					Pr	C	11.0	2100	3M		1	170	GE	1.75	8	Con	90	2	Ad	2400	340
Central Illinois Light Co	Peoria, Ill	R S Wallace	Commonwealth Assoc	1	1953	1450	1000	1000	2	450	B&W	2 VU					Pr	C	9.8	1900	2M	Hy	1	100[20]	WE	1.25	5		50	2	AsAc	3130	315
Central Louisiana Electric Co	St Landry, La	Coughlin	Sargent & Lundy	1	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	10.6[6]	2M	R	1	61[10]	GE	0.75	5	70	35	2	AsAc	1135	
Columbus & Southern Ohio Electric Co	Conesville, Ohio	Conesville	Ebasco Services Inc	5	1957	2400	1050	1050	2	1000	CE	2 DB					Pr	C	11.3	2200	3M	R	1	125[10]	GE	1.25	6	110	75	2	AsAc	1000	125
Consolidated Water Power & Paper Co	Biron, Wis	Biron	Pitometer Service & Engrg	1	1954	1450	1000	1000	2	450	B&W	2 VU					Tu	Cy			1M	Hy	1	15.6	GE	50		50	N			460	25

- Regenerative
- Riley Stoker Corp
- Speer control
- Spreader stoker
- Stag cap
- Turbine drive
- Traveling grate stoker
- Yellow
- Vane control

WE – Westinghouse Electric Corp
WO – Worthington Corp
Yo – Yarnall-Waring Co
(468) – Stoker grate area, sq ft

1 – Future gas
4 – Revised data, previously listed 9-54
7 – Constant speed
9 – Pressurized furnace
10 – Hp 3600 rpm, lp 1800 rpm
11 – Outdoor installation
12 – Four motor-driven pumps for three boilers

13 – Future coal
14 – High viscosity oil
15 – Delayed coke refinery gas
16 – For two boilers
17 – Topping unit
18 – Maximum
19 – Two automatic extraction points, 750 and 150 psig
20 – Preferred standard
21 – Revised data, previously listed 3-57

22 – Future gas and bituminous coal
24 – Revised data, previously listed 9-53
25 – Btu per cu ft
26 – Future limited
28 – Revised data, previously listed 9-55
29 – Fusion temperature
29 – Feed pump on main generator shaft
29 – Gas turbine
30 – Gas turbine exhaust supplies boiler air

AC – Allis-Chalmers Mfg Co
Ad – Adamsity
AdA – Adamsity A
AdB – Adamsity B
Adi – Adamsity, Inhibited
Al – Aluminum
AlB – Aluminum Bronze
AlBr – Aluminum Brass
An Ad – Antimonial Admiralty

AsAd – Arsenical Admiralty
AsAlBr – Arsenical Aluminum brass
AsCu – Arsenical copper
B&W – Babcock & Wilcox Co
B&WG – Babcock Wilcox & Goldie-McCulloch Ltd
C – Coal, bituminous
CE – Combustion Engineering Inc
CNi – Cupro nickel

Con – Condenser deaeration
CP – C A Parsons & Co Ltd
Cu – Copper
Cy – Cyclone furnace
D – Damper
DB – Dry bottom
DL – DeLaval Steam Turbine Co
Du – Dual turbine and motor drive
EE – English Electric Co Ltd

EL – Elliott Co
FB – Flooded bottom
FW – Foster Wheeler Corp
G – Natural gas
GE – General Electric Co
Hy – Hydrogen cooling
L – L Cyclo
M – Motor drive
Ma – Mechanical compounding

Mp – Two motors per pump
WV – Westinghouse-Vickers Co Ltd
N – None
O – Oil
P – Pulverized
Ph – Phosphorized Admiralty
Pl – Plate
R – Regulator

1956 Design Survey: Typical Industrial Institutional Plants, Below 250 psi

Compiled by R C Bellas, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	Ash handling	TURBINES: Type	TURBINES: Manufacturer	ELECTRICAL POWER: Source	ELECTRICAL POWER: Plant distribution voltage, kv	ELECTRICAL POWER: Transformer type	ELECTRICAL POWER: Switchgear relay protection	ELECTRICAL POWER: Neutral grounding	Total boiler capacity including new units, 1000 lb per hr	Total generator capacity including new units, 1000 kw
200 TO 249 PSIG																		
Case Institute of Technology, Cleveland, Ohio	McGeorge & Hargett	1956	225	Sat	1	24	BW	G	–	–	–	–	–	–	–	–	67	–
Overbrook Hospital, Cedar Grove, N J	Gilbert Assoc, Inc	6-56	270	460	3	50	UI	P O	–	–	–	–	–	–	–	–	150	–
Dominion Tar & Chemical Co, Ltd, Montreal, Quebec		3-56	210	Sat	1	15	CV	O	–	–	–	PP	0.55	O	Ov Gr	N	33	–
General Electric Co, Louisville, Ky	Fairbrother-Wehrly	1963	200	430	4	150	RS,Vo	SS	Pn	–	–	PP	13.8	O,Or,As	All[1]	Pr Se	600	–
General Motors, Columbus, Ohio		10-56	200	390	2	70	BW	SS	Pn	–	–	PP	4.8	O,Or	All[1]	Pr Se	280	–
Boston State Hospital, Dorchester, Mass	Utilities Engineers Inc	7-56	200	390	1	40	EC	O	–	–	–	PP,GP	2.3	O	–	N	120	0.8
Interlake Tissue Mills Co, Ltd, Merritton, Ont		11 55	200	380	1	27 5	FWL	SS	Pn	–	–	–	–	–	–	–	–	–
Interl Creosoting & Constr Co, Texarkana, Texas		–	200	–	1	24	BW	G	–	–	–	PP	–	–	–	–	–	–
Canadian Kimberly Boxes, Ltd, Whitby, Ont.		3 56	200	–	1	18	CV	O	–	–	–	PP	0.55	O	–	–	18	–
150 TO 199 PSIG																		
British American Oil Co, Montreal, Quebec		3 57	190	475	1	150	BWG	O G	–	–	–	–	–	–	–	–	400	–
Altoona School District, Altoona, Pa	Peter F Loftus Corp	1956	190	384	1	30	CE	TG	Mc	–	–	–	–	–	–	–	–	–
Anglo Canadian Pulp & Paper Co, Ltd, Quebec, Que		7 56	180	550	2	50	CE	O B	–	–	–	–	–	–	–	–	700	–
Allied Mills, Inc, Everson, Pa		3-56	180	366	1	11	BW	UF	Mc	–	–	–	–	–	–	–	–	–
Bethlehem) Boiler Plant, Pittsburgh, Pa	Peter F Loftus Corp	8-57	175	377	1	100	BW	TG	Pn	–	–	–	–	–	–	–	–	–
Cosden Petroleum Corp, Big Spring, Texas		55 56	175	550	1	90	CE	O G	–	–	–	–	–	–	–	–	365	–
Midland Cooperatives, Inc, Cushing, Okla		7 56	175	400	1	37	EC	G	–	–	–	–	–	–	–	–	–	–
American Synthetic Rubber Corp, Louisville, Ky		1 57	175	Sat	2	26	EC	O G	–	–	–	–	–	–	–	–	130	–
Line Material Co (McGraw Electric), Baton Rou		9-56	175	365	1	16	CB	O	–	–	–	PP	0.44	O	–	–	–	–
E B Eddy Co, Hull, Quebec		2-56	165[2]	490[2]	1	100	FWL	P	Pn	–	–	–	–	–	–	–	240	–
Libby Owens Ford Glass Co, Toledo, Ohio	Emery Marker & Campbell	2 56	160	Sat	1	135	BW	O	Hy	–	–	PP	7.2	O	All[1]	N	470	–
American Oil Co, Yorktown, Va		1 57	160	470	2	100	BW	O G	–	–	–	PP	13.8	O	All[1]	Se	200	–
Kropp Forge Co, Cicero, Ill	Ragnar Benson Inc	8 55	160	–	1	100	BW	O G	–	Co	T	PP,GP	–	O	–	–	375	–
Westinghouse Electric Corp, Sharon, Pa	Peter F Loftus Corp	7 56	160	–	2	57	CE	SS	Pn	–	–	–	–	–	–	–	–	–
		11-53	160	370	1	30	FW	O	–	–	–	–	–	–	–	–	–	–
Foot Machinery & Chemical Corp, Baltimore, Md		11 55	160	–	2	30	BW	O	–	–	–	PP	6.6	O	Ov	Pr Se	100	–
Price Brothers & Co, Ltd, Kenogami, Que		12 57	150	365	1	150	RHM	P B	Hy	–	–	–	–	–	–	–	410	–
Lowe Dejonge Coated Papers, Fitchburg, Mass		11 55	160	360	2	15	BW	O	–	–	–	PP	0.55	Pr Or	Ov	–	30	–
Hooker Chemicals Ltd, North Vancouver, B C	Hooker Electrochemical Inc	6-57	150	Sat	2	100	FWL	G	–	–	–	PP	12.0	O	All[1]	Se	200	–
Carlisle Finishing Co, Carlisle, S C	J E Sirrine Co	9 56	150	366	3	75	BW	SS	Hy	–	–	PP	0.6	O	Ov	N	225	–
Dofasco, Hamilton, Ont		–	150	–	1	60	FW	SS	Pn	–	–	PP	13.8	As	Ov Gr	N	–	–
Atlantic & Thomas Inc, Dover, Ohio		7 55	150	365	1	60	UI	SS TG	–	–	–	PP	0.22	O	Ov	Se	100	–
Rushton Carpet Co, Saxonville, Mass.		8-56	150	366	1	50	FC	O	–	–	–	PP	0.44	O	Ov	Se	85	–
Maitland Medical Center, Newark, N J	Vogelbach & Bryman	10-55	150	366	3	48	BW	–	–	–	–	–	–	–	–	–	–	–
		11 55	150	366	2	45	FW	O	–	–	–	–	–	–	–	–	2	–
		10-56																
American Gilsonite Co, Gilsonite, Colorado	Kaiser Engineers	4 57	150	Sat	2	43	BW	O G W	–	–	–	PP	4.16	O	Ov Gr	Se	100	–
Medical Center, Cleveland, Ohio	Rost Engineering	10 55	150	370	1	40	RS	SS TG	Me	–	–	–	–	–	–	–	180	–
					1	40	EC											
The Kirk Corp, Milwaukee, Wis		4 56	150	466	1	40	Wi	O G	–	–	–	–	–	–	–	–	–	–
International Business Machines Corp, Kingston, N Y	Rocetti Giffels, Vallett	–	150	366	3	40	Wi	O	–	Co	El	PP	–	Or As	Ov Gr	Se	120	–
Edwards de la Nerniere & Co, Utica, N Y		7 53	150	366	1	35	CF	SS	–	–	–	–	–	–	–	–	–	–
Ball State Teachers College, Muncie, Ind		55	150	366	1	37 5	Va	TG	Pn	–	–	PP	4.16	O	Ov	Pr,Se	113	–
Polysius Ltd, Saskatoon, Sask		1 56	150	366	1	35	FWL	O	–	–	–	–	–	–	–	–	85	–
Delaware and Hudson RR Corp, Watervliet, N Y		10 56	150		2	33	Ke	O	–	–	–	PP	0.24	O	Ov	N	90 2	–
					1	24 2												
Flint Pipe & Seal Co, Bloomington, Ill		10-55	150	Sat	1	26	BW	TG	Pn	–	–	PP	0.44	O	Ov	–	78	–
Anniston Ordnance Depot, Anniston, Ala	H L Cater	1 55	150	358	3	30	EC	SS	Pn	–	–	PP	7.2	O	Ov	Pr Se	90	–
Collingswood (N J) School, Collingswood, N J	H E Lenz Co	6 56	150	366	1	25	Ke	TG SS	Pn	–	–	PP	2.3	O	Ov	Pr	81	–
National Steel Corp, Hamilton, Ont		–	150	366	3	25	FWL	SS	Mc	–	–	PP	13.8	O	Ov	N	100	–
Maxwell Air Force Base, Alabama	Evans & Phillips	9-55	150	366	3	22	CE	O G	–	–	–	PP	4.16	O	–	–	66	–
General Aniline & Film Co, Johnson City, N Y	St. John Pfaff & Carlson	55-56	150	–	2	21	BW	O	–	–	–	PP	0.22	O	–	Pr Se	21	–
Lawrence Mills Inc, Lawrence, Mass		6-56	150	–	1	17	OS	O	–	–	–	–	–	–	–	–	50	–
Raybestos-Manhattan Co, Charleston, Miss	C J Luckett Co	3 56	150	366	1	–	CE	G Sa	Me	–	–	–	–	–	–	–	–	–
Sheffield Steel Co, Oklahoma, Kans		–	150	–	4	15	Wi	O G	–	–	–	PP	0.22	O	Ov	Pr Se	60	–
Dixie Aluminum Products, Sheffield, Ala		11 55	145	–	1	30	BW	UF	Me	–	–	–	–	–	–	–	–	–
K L Fetherston Ltd, Prescott, Ont.	Koch Eng	3 56	145	–	2	17 2	JI	G	–	–	–	PP	0.44	O	Ov	Pr	35	–
Wolff Coal Cleaning Co, Sidney, N J		6 55	140	Sat	1	75	BW	O	–	–	–	–	–	–	–	–	–	–
Dartmouth College, Hanover, N H		9 56	140	–	1	45	BW	O	–	Co	GE	GP,PP	2.3	O	Ov	Pr Se	110	–
U S Gypsum, Iowa, Mississippi, Ill	Kennedy, Reiley, Gooch	11 55	140	Sat	2	40	CE	O	–	–	–	PP	–	–	–	–	160	–
American Viscose Corp, Front Royal, Va		1956	140	Sat	1	30	Wi	O	–	–	–	PP	–	–	–	Pr	60	–

As – Asbestel
B – Bark
BW – Babcock & Wilcox Co
BWG – Babcock & Wilcox Combe McCullough
C – Coal, bituminous
Co – Condensing
CV – Canadian Vickers
CB – Cleaver-Brooks Co
CE – Combustion Engineering, Inc
Di – Differential
Dr – Dry type
EC – Erie City Iron Works
El – Elliott Co
FW – Foster Wheeler Corp
FWL – Foster Wheeler Limited
G – Gas
GE – General Electric Co
GP – Self generated power
Gr – Ground
Hy – Hydraulic
JI – John Inglis Co, Ltd
Ke – F Keeler Co
KR – Kewanee Ross Corp
Me – Mechanical
Mn – Manual
N – None
NC – Non-condensing
O – Oil
OS – Ort & Sembower, Inc

Compiled by R C Bellas, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	BOILERS: Capacity, each, 1000 lb per hr	BOILERS: Manufacturer	BOILERS: Firing	Ash handling	TURBINES: Type	TURBINES: Manufacturer	ELECTRICAL POWER: Source	ELECTRICAL POWER: Plant distribution voltage, kv	ELECTRICAL POWER: Transformer type	ELECTRICAL POWER: Switchgear relay protection	ELECTRICAL POWER: Neutral grounding	Total boiler capacity including new units, 1000 lb per hr	Total generator capacity including new units, 1000 kw
125 TO 149 PSIG																		
Mallinckrodt Chemical Works, Weldon Spring, Mo[5]	Burns & McDonnell Eng Co	10 56	135	400	3	80	EC	SS	Hy	–	–	–	–	–	–	–	–	–
Star Colony, Woodbine, N J		1 57	135	Sat	1	35	Ty	O	–	–	–	–	–	–	–	–	–	–
Fulton DeKalb Hospital Authority, Atlanta, Ga	Robert A Cox Assoc	9 56	135	Sat	4	33	CE	O G	–	–	–	PP	0.44	O	–	Pr	132	0.64 3
Department of Welfare, Jeffersonville, Ind	Gilbert Assoc Inc	12 56	135	–	3	30	Ke	TG,SS	Pn	–	–	PP	0.20	O	–	–	–	–
Katherine Rug Mill, Dalton, Ga	–	–	130	336	1	27	CE	O G	–	–	–	PP	0.44	O	Ov	Se	45	–
Ford Motor Co, Nashville, Tenn	Giffels & Vallet	9 56	125	343	3	80	UI	G	–	–	–	PP	13.2	O	Ov Gr	N	240	–
Brookhaven National Laboratory, Upton, N Y	Stone & Webster Engrg	1956	125	Sat	1	60	CE	O	–	–	–	–	–	–	–	–	100	–
Ralston Purina Co, St. Louis, Mo		12 55	125	Sat	3	35	CF	O G	–	–	–	–	–	–	–	–	–	–
E I duPont de Nemours & Co, Pompton Lakes, N Y		–	125	Sat	1	30	CE	O	–	–	–	–	–	–	–	–	–	–
Leeds & Northrup Co, North Wales, Pa	Giffels & Vallet, Inc	12 55	125	345	2	30	CF	O	–	–	–	PP	4.16	O	Ov Gr	Se	66	–
Hamilton Mfg Corp, Columbus, Ind		–	125	–	1	25	Vo	TG	Me	–	–	PP	–	O	–	–	25	–
Blue Ridge Glass Co, Kingsport, Tenn		9 56	125	Sat	1	24 5	Bk	SS	Me	–	–	PP	–	O	–	–	50	–
J W Lay & Co, Chamblee, Ga	A O White	12 55	125	–	1	21 5	Bk	–	–	–	–	–	–	–	–	–	–	–
Parker-Kalon Division, Clifton, N J	Walter Kidde Constructors	10 55	125	340	2	20	FW	O	–	–	–	PP	0.44	O	Ov	Se	40	–
Babcock & Wilcox Co, Lynchburg, Va	–	–	125	345	1	20	Bk	O G	–	–	–	–	–	–	–	–	–	–
Pratt Institute, Brooklyn, N Y	Meyer Strong and Jones	8 55	125	335	1	20	FW	O	–	–	–	PP,GP	–	–	–	–	20	–
Hamilton Manufacturing Corp, Columbus, Ind.		10 56	125	353	1	20	Vo	TG	–	–	–	PP	0.40	O	Ov	Pr Se	22	–
Trojan Powder Co, Neff Lake, Ill		4 55	125	Sat	1	19	CF	SS	Me	–	–	–	–	–	–	–	–	–
American Sterilizer Erie, Pa	Donald Kennedy	9 54	125	338	1	12	} III	O G	–	–	–	PP	0.44	O	Ov	Pr Se	36 5	–
					1	22 5												
Kraft Foods Ltd, Mt Royal, Quebec		9 55	125	Sat	2	20	CV	O	–	–	–	PP	–	Or	Ov	N	–	–
United States Steel & Wire Co, Battle Creek, Mich	–	8 56	125	–	1	16 5	Wi	O G	–	–	–	PP	0.48	O	Ov	Pr Se	–	–
Pequot Community Hospital Authority, Wayne, Mich.	Smith, Hinchman & Grills	1957	125	Sat	2	15	CE	O	–	–	–	–	–	–	–	–	32	–
Acadia University, Wolfville, N S		8 56	125	–	2	15	FWL	O	–	–	–	PP	2.2	O	–	–	48	–
Quaker Oats Co, Chattanooga, Tenn		7 56	125	352	1	14	Sn	O G	–	–	–	PP	–	–	–	–	–	–
Easthampton Rubber Thread Co, Stuart, Va		1 57	125	360	2	8	RH	O	–	–	–	–	–	–	–	–	–	–
Allegheny County Institution, Morganville, Pa	Edward Dziuby & Bostok	11 56	125	–	3	15	RH	O G	–	–	–	–	–	–	–	–	–	–
General Electric Co, Waynesboro, Va	–	–	125	345	2	15	RH	O G	–	–	–	PP	4.16	O	Ov	Se	–	–
Line Material Co, Zanesville, Ohio		1956	125	340	1	10	Ke	UF	Me	–	–	PP	4.16	O,Or,As	Ov	Pr Se	10	–
Westfield State Sanatorium, Westfield, Mass.	McClymock & Craig	10 55	125	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
St Bede College, Peru, Ill	Boeing Engineering Co	1956	125	–	1	7	KR	O	–	–	–	PP	–	O	–	–	–	–
BELOW 125 PSIG																		
Medical College of Virginia, Richmond, Va		12 55	120	350	1	44	UI	SS	Me	–	–	PP	–	O	Ov	Se	132	–
Fort Belvoir, Fort Belvoir, Va		9 56	120	Sat	3	35	Ke	O	–	–	–	PP	–	–	–	–	–	–
West Suburban Hospital, Oak Park, Ill		7-56	120	–	2	17 25	WB	O G	–	–	–	PP	12	O	Ov	–	–	–
Craddock Furniture Corp, Evansville, Ind		12 55	120	338	2	24	KR	S[4]	–	–	–	PP	0.24	Or	–	As	48	–
St Margaret Hospital, Hammond, Ind		8 56	110	335	1	24	RH	SS O	Pn	–	–	PP	0.24	Or	Ov Gr	Se	24	–
Mt. Alto Hospital, Washington, D C		1956	110	340	1	16	Sa	O	–	–	–	–	–	–	–	–	11	–
National Sea Products Ltd, Halifax, N S		4 55	110	345	1	15	FWL	O	–	–	–	–	–	–	–	–	–	–
Sinclair & Valentine Co, Ridgway, Pa		9 55	110	350	2	12	CE	O	–	–	–	PP	0.22	O	Ov	Se	24	–
Buckeye Uldridge Worsted Co, Cedartown, Ga		7 56	100	Sat	2	30	EC	O	–	–	–	PP	0.44	O	Ov	N	60	–
South Corona Inc, Groton, N Y		–	100	340	1	30	Ke	SS	–	–	–	PP	–	–	–	–	–	–
General Motors Proving Ground, Milford, Mich		10 55	100	–	1	27	GF	O	–	–	–	PP	0.48	O	Ov	Se	27	–
San Jose State College, San Jose, Calif		6-56	100	338	1	22	Ke	O G	–	–	–	–	–	–	–	–	–	–
Nordblom, Inc, Hartford, Conn		8 55	100	–	1	20	RH	O	–	–	–	–	–	–	–	–	20	–
– – – – – – – – – – – –	Conshohocken, Pa	7 56	100	–	2	15	Pa	O	–	–	–	PP	0.44	O	Ov	N	–	–
Oshkosh State College, Oshkosh, Wis		1956	100	–	3	12	Ke	UF	Pn	–	–	–	–	–	–	–	–	–
Allegheny County Workhouse, Blawnox, Pa	T F Rockwell	9 56	100	–	3	12	Ty	C	–	–	–	GP	0.23	–	–	–	6	–
Avon Products Inc, Morton Grove, Ill	Swanson Owings & Merrill	7 56	100	–	3	10 5	CB	O	–	–	–	PP	0.44	O	Ov	–	32 5	–
Westinghouse Electric Corp, Youngwood, Pa	Austin Co	1 56	100	Sat	2	10	RH	O G	–	–	–	PP	4.16	O	Ov,Gr	–	20	–
Lindsey Robinson & Co Inc, Roanoke, Va	Hayes Seay, Mattern,	3 56	100	Sat	1	10	Sp	G	–	–	–	–	–	–	–	–	–	–
Hotel Penn Alto, Altoona, Pa	Gilbert Associates Inc	10 54	100	Sat	1	10	Ke	UF	Me	–	–	PP	0.24	O	–	Pr	12 5	–
Victory Memorial Hospital Assoc, Waukegan, Ill		1 57	100	338	2	10	CB	O	–	–	–	PP,GF	–	As	Ov,Gr	–	–	–
Pet Dairy Products Co, Kingsport, Tenn.		–	100	–	1	9	KR	O,G	–	–	–	PP	–	O	Ov	Pr Se	–	–
Marymount College, Salina, Kansas		1 57	100	–	1	–	Ke	G	–	–	–	PP	0.48	O Or	Ov	Pr Se	–	–
Reading Hospital, Reading, Pa	Gilbert Associates, Inc	8 55	100	–	3	10	Ke	O	–	–	–	PP	0.22	O	N	Se	36	–
King-Seeley Corp, Ann Arbor, Mich		8 56	100	–	1	8	Wi	O	–	–	–	PP	0.22	C	Ov	Se	–	–
Galt Malleable Iron Co, Galt, Ontario		11 56	100	–	2	10	FWL	UF	–	–	–	PP	–	O Or	–	–	20	–
Harris-Rockwell Corp, Jamestown, N Y	Zack C Hinds	5 56	100	–	1	20	UI	UF	Me	–	–	–	–	–	–	–	–	–

O – Overload
Pulverized fuel firing
Pneumatic
Purchased power
Primary
Riley Stoker Corp
Sa – Sawdust
Se – Secondary
Sp – Springfield Boiler Co
SS – Spreader stoker
Su – Superior Combustion Industries Inc
T – Terry Steam Turbine Co
TG – Traveling grate stoker
Ty – Titusville Iron Works Co
UF – Underfeed stoker
UI – Unitrec Iron Works
Vo – Henry Vogt Machine Co
W – Waste gas
WB – William Bros Boiler & Mfg Co
Wi – Wickes Boiler Co
Wo – Northington Corp
1 – All types Or, Or, Gr
2 – Future press and temp, 650 psig, 750 F
3 – Emergency capacity
4 – Bituminous coal as standby
5 – Operated for U S Atomic Energy Commission

1956 Design Survey: Typical Industrial, Institutional Plants, 250 psi and Above

Compiled by R C Beltas, Assistant Editor

Company & Location	Consulting Engineers	First operation, new units	Operating steam pressure, psig	Operating steam temperature, F	BOILERS: Number	Capacity, each, 1000 lb per hr	Manufacturer	Boiler & WW surfaces, 1000 sq ft	Superheater surface, 1000 sq ft	Furnace volume, 1000 cu ft	Heat release, 1000 Btu per cu ft per hr	Economizer surface per boiler, 1000 sq ft	Air-heater surface per boiler, 1000 sq ft	Air-heater type	Dust-collector type	Firing
600 TO 1450 PRESSURE																
Soneco Products Co, Hartsville, S C	Lockwood-Greene	1-58	1330	950	1	275	RS	19 5	–	11.8	26 2	7.1	20 6	Tu	Me	SS
United States Steel Corp, Gary, Ind	United Engrs & Const, Inc	12-55	900	825	2	100	CE	17 6	3 3	8 3	18 1	1.6	6.4	Tu	Me	TG
Reynolds Metals Co, Gregory Texas	Bechtel Corp	6-57	875	825	1	225	BW	–	–	–	–	–	–	–	–	G
			315	425	1	225	BW	–	–	–	–	–	–	–	–	G
			315	425	2	40	BW	–	–	–	–	–	–	–	–	G
John Deere Waterloo Tractor Wks, Waterloo, Iowa		8-54	850	835	1	185	So	19 4	–	10 5	–	11 4	N	N	Me	SS
U S. Marine Corps, Cherry Point, N.C.	W C Olson Associates	10-55	850	825	1	180	RS	–	–	–	–	–	–	–	–	P O
[redacted]		9-55	750	640	1	17 3	FW	24 2	0 18	0 74	29 3	–	–	–	–	G
Escambia Bay Chemical Co, Pensacola, Fla	Chemical Construction Co	11-56	630	750	1	90	RS	8 23	1 47	4 25	30 3	N	9 3	Re	N	O,G
St Regis Paper Co, Eastport, Fla	J E Sirrine Co	1 57	625	750	2	200	CE	15 1	–	9 1	27 0	N	22 9	Tu	–	O
					1	135	CE	13 4	–	5 7	34 7	N	12 8	Tu	Me	B
Restigouche Co, Ltd, Athohville, N B	H G Acres & Co, Ltd	4-56	625	700	2	125	FW	16 2	2 7	10 7[8]	16 5	–	16 0	Tu	Me	P,B
Franconia Paper Corp, Lincoln, N H.,	Z C Hinds	10-56	625	700	1	65	BW	6 6	–	2 9	–	2 5	–	–	Me	SS B
Elk Falls Co, Ltd, Duncan Bay, B C	H A Simons	8-56	600	675	1	217	BW	27 4	5 4	–	–	6 5	–	Tu	E	BL
Transcontinental Gas Pipe Line Corp, Tylertown, Miss.		1 57	600	750	1	75	CE	7 3	–	3 2	–	N	9 3	Tu	N	G
BELOW 600 PSI PRESSURE																
West Virginia Pulp & Paper Co, Covington, Va		10-55	565	700	1	325	BW	31 2	6 0	21 0	21 2	16 3	–	–	Me	SS,B
E I du Pont de Nemours & Co, Orange, Texas		–	550	725	1	165	BW	–	–	7 4	30 9	N	7 6	Tu	–	G
Parke, Davis & Co, Detroit, Mich	Boddy, Benjamin & Woorthouse	8-56	550	720	–	–	–	–	–	–	–	–	–	–	–	–
Sun Oil Co, Toledo, Ohio		3-55	475	560	1	60	BW	7 4	0 6	–	–	2 0	N	N	N	O,G,WH
Aluminum Co of America, Point Comfort, Texas		5 56	470	750	1	2 5	BW	0 45	0 20	–	–	0 47	–	–	–	WH
Ashland Oil & Refining Co, Ashland, Ky	Lacamoe & Douglass, Inc	8 56	450	725	1	200	BW	16 1	–	14 7	–	–	–	Tu	N	P,O,G
Steel Co of Canada Ltd, Hamilton, Ont		11 56	450	750	1	175	CE	–	–	–	–	–	–	–	–	G
E I duPont de Nemours, Niagara Falls, N Y		1 56	450	Sat	1	150	RS	16 9	–	10 1	17 5	–	20 8	Tu	Me	P,O
Keystone Steel & Wire Co, Peoria, Ill		12 55	450	750	1	140	CE	13 4	1 9	6 8	29 5	8 7	–	–	Me	SS
Northwest Nitro-Chemicals Ltd, Medicine Hat, Alb	Ford, Bacon & Davis, Inc	10 56	450	600	2	33	FW	3 6	0 2	–	–	–	–	–	–	G
Libby-Owens Ford Glass Co, Rossford, Ohio	Emery, Marker & Campbell	11 55	425	750	1	160	BW	–	–	–	–	–	–	–	–	SS
A E Staley Mfg Co, Decatur, Ill	Burns & McDonnell Engrg Co	8 57	425	700	1	125	RS	15 6	–	8 5	20 2	5 4	N	N	N	TG
U S. Pipe & Foundry Co, Birmingham, Ala		7 57	425	750	3	120	BW	16 4	–	12 5	14 0	N	18 1	To	N	BF P
Florida State Hospital, Chattahoochee, Fla	Reynolds, Smith & Hills	10-55	425	575	1	60	RS	7 99	0 6	3 3	–	–	5 7	Tu	Me	P,O
Magnolia Petroleum Co, Beaumont, Texas		12 56	425	675	2	250	CE	21 0	3 31	11 8	29 7	N	14 8	Re	N	O,G
St Regis Paper Co, Pensacola, Fla		–	420	650	1	140	BW	12 2	–	–	–	N	14 3	–	–	–
Rohm & Haas Co, Pasadena, Texas		6-55	400	500	1	70	BW	6 9	0 7	3 1	28 8	N	N	N	–	–
Scott Paper Co, Everett, Wash	Chas T Main, Inc	55 56	300	550	2	150	CE	14 1	1 3	7 3	24 8	–	12 8	Tu	N	O
Frontier Refining, Cheyenne, Wyoming		10 55	300	Sat	2	45	Mi	5 4	N	4 7 5	–	–	–	–	–	O,G
Diamond Match Co, Pittsburgh, N Y	Gibbs & Hill	7 56	270	412	2	25	K	3 6	N	–	–	N	–	–	Me	SS
Savannah Memorial Hospital, Savannah, Ga	Thomas & Hutton	11 55	265	500	2	25	BW	3 8	0 5	1 1	–	–	–	–	–	O,G
Libby-Owens Ford Glass Co, Ottawa, Ill	Vern E. Alden Co	56 57	260	825	1	170	BW	19 3	4 5	9 5	25 5	11.5	–	–	Me	SS
University of Florida, Gainesville, Fla	Ebaugh & Goethe	–	260	500	2	60	CE	–	–	–	25 0	–	–	–	–	O
Dunlop Tire & Rubber Corp, Buffalo, N Y	Zack C Hinds	10-55	250	505	2	40	BW	4 8	0 66	1 8	28 5	–	2 3	Tu	Me	SS
St Marys Hospital, Rochester, Minn	[redacted]	9 56	250	650	1	40	RS	3 9	0 13	–	–	0 89	N	N	N	O,G
Hercules Powder Co, Franklin, Va		5 56	250	Sat	2	30	K	–	–	–	–	–	–	–	–	O I

Company & Location	FUEL: Type	Heating value, 1000 Btu per lb	Ash-softening temperature, F	F-D FANS: Drive	Air-volume control	I-D FANS: Drive	Gas-volume control	Water treatment	Ash handling	FEED PUMPS: Drive	Flow control	TURBINES: Capacity, each, 1000 hp	Manufacturer	Backpressure, psia	No of bleed or side-extraction jets	Type	CONDENSER: Surface, 1000 sq ft	No. water passes	Tube material	ELECTRICAL POWER: Source	Generator nameplate voltage, kv	Plant distribution voltage, kv	Transformer type	Switchgear relay protection	Neutral grounding	Total boiler capacity, incl new units, 1000 lb per hr	Total generator capacity, incl new units, 1000 kw
600 TO 1450 PRESSURE																											
Soneco Products Co, Hartsville, S C	C,B	13 5	2200	M	V	M	D	De	Hy	M,T	R	12 5	GE	0 5	4	AE Co	9 5	1	Ad	PP GP	12 2	13 2	O A<	All[4]	Pr Se	–	–
United States Steel Corp, Gary, Ind	C,B,CO	10 2	–	T	O	T	O	So	Me	M	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	540	–
Reynolds Metals Co, Gregory Texas	G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	PP GP	11 5	4 2	O	All[4]	Pr,Se	980	18
	G	–	–	–	–	–	–	–	–	–	–	7 5	GE	60	1	NC	–	–	–								
John Deere Waterloo Tractor Wks, Waterloo, Iowa	C,G	10 7	–	T	S D	T	S	De	Pn	2T	S	7 5	GE	–	2	Co	–	2	Ad	PP GP	13 7	13 2-4 7	O	Di Ov	Pr,Se	204	7 5
U S. Marine Corps, Cherry Point, N.C.	C,O	–	–	–	–	–	–	–	Hy	–	–	6 3[5]	–	1	2	Co	–	–	Ad	PP GP	12 5	12 5	O	Di	Se	380	18
[redacted]	G	10[6]	–	M	U	–	–	So	–	2Du	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	17 3	–
Escambia Bay Chemical Co, Pensacola, Fla	O,G[7]	10[6]	–	M	V	M	D	So	–	M,T	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
St Regis Paper Co, Eastport, Fla	O	–	–	M	V	M	V	So	–	2T	S																
	B	5 1	–	M	V	M	Hy	So	Pn	1M	R	30	GE	1 0	2	Co	19 0	2	AlH	GP	13 8	–	Ac	All[4]	Se	1319	42
Restigouche Co, Ltd, Athohville, N B	C	11 7	2000	M	V	M	O Hy	So	Pn	1M2T	R	5	BR	30	2	AE, NC	–	–	–	GP	6 9	6 9	O,Dr Ac	All[4]	Pr	220	12
Franconia Paper Corp, Lincoln, N H.,	C,B	14 0	2650	Du	V	Du	D	De	Pn	M,T	R	5[5]	GE	30	1	AE	–	–	–	PP GP	13 R	0 4,2 2	O	Di	N	130	5
Elk Falls Co, Ltd, Duncan Bay, B C	BL	6 0	–	T	V	T	S	So	–	M T	R	–	Wo	–	–	–	–	–	–	PP,GP	0 6	13	O	All[4]	N	457	40
Transcontinental Gas Pipe Line Corp, Tylertown, Miss.	G	11[6]	–	M	D	M	D	De	–	2T	R	4 2	DeL	28	–	NC	–	2	Ad	GP	0 48	–	–	–	–	275	–
BELOW 600 PSI PRESSURE																											
West Virginia Pulp & Paper Co, Covington, Va	C,B	13 3	2400	M	V	2T	S,D	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E I du Pont de Nemours & Co, Orange, Texas	G	11[6]	–	T	S,D	T	D,V	So	–	T	S	–	–	–	–	–	–	–	–	PP GP	6 9	6 9	O	Di	N	980	35
Parke, Davis & Co, Detroit, Mich	–	–	–	–	–	–	–	–	–	–	–	2 5	DeL	20	1	AE, NC	–	–	–	PP GP	4 8	0 44	O Dr	Dr Ov	N	230	2 5
Sun Oil Co, Toledo, Ohio	O,G,Co	–	–	M	V	–	–	So	N	M,T	R	–	–	–	–	–	–	–	–	PP	–	12 5	O		Se	1000	–
Aluminum Co of America, Point Comfort, Texas	WH	–	–	–	–	–	–	Ev	–	M	R	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ashland Oil & Refining Co, Ashland, Ky	C,O,G	12 4	1900	M	D	T	D	De So	Hy	2M,1T	R	–	–	–	–	–	–	–	–	PP	–	–	O	Ov	–	250	–
Steel Co of Canada Ltd, Hamilton, Ont	L,G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E I duPont de Nemours, Niagara Falls, N Y	C,O	13 5	2300	T	S,V	T	S D	So	Pn	M T	S	–	–	–	–	–	–	–	–	PP	–	–	–	–		415	–
Keystone Steel & Wire Co, Peoria, Ill	C	10 5	2100	M	D	Du	D	De So	Hy	M	R	15 6	GE	1	2	AE Co	–	2	CuAd	GP	6 6	6 6	–	All[4]	Pr Se	445	42 5
Northwest Nitro-Chemicals Ltd, Medicine Hat, Alb	G	1 0[6]	–	M	–	–	–	So	–	M,T	S	0 8	GE	5	–	Co	0 5	2	Ad	PP GP	0 48	4 2	O	Di Ov	Se	150	0 8
Libby-Owens Ford Glass Co, Rossford, Ohio	C	–	–	–	–	–	–	–	Hy	–	–	7 5	Wo	1	2	Co AE	–	–	–	PP GP	7 2	7 2	O	All[4]	N	540	19 5
A E Staley Mfg Co, Decatur, Ill	C	10 5	1350	M	V	M	Ma	So	Hy	T	S	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
U S. Pipe & Foundry Co, Birmingham, Ala	BF	0 095[6]	–	T	S	T	S	I	Hy	2T	S	12 5	Wo	1	–	Co	Bat	–	–	PP GP	6 9	6 9	O	All[4]	Pr Se	360	12 5
Florida State Hospital, Chattahoochee, Fla	C,O	13 7	2270	M	D	M	D	So	Hy	2M	R	2 0	We	1 25	1	AE,Co	2 5	2	Ad	GP	4 1	2 4	O D	Di Ov	Se	–	–
Magnolia Petroleum Co, Beaumont, Texas	G,S	18 5	–	T	S	N	N	So	–	T	S	7 5	GE	165	–	NC	–	–	–	GP	13 8	13 8	–	All[4]	Pr	2575	57 5
St Regis Paper Co, Pensacola, Fla		–	–	–	–	–	–	–	–	–	–	10 0	GE	165	–	NC	–	–	–	–	–	–	–	–	–	–	–
Rohm & Haas Co, Pasadena, Texas	–	–	–	–	–	–	–	Se	–	2T	S	–	–	–	–	–	–	–	–	PP	–	2 3	O	Di	N	140	–
Scott Paper Co, Everett, Wash	O	18 0	–	T	D	N	D	So	N	M,T	R	–	–	–	–	–	–	–	–	PP	–	15	O A	All[4]	Pr Se	820	–
Frontier Refining, Cheyenne, Wyoming	G,S	18 3	–	T	V	–	–	So	N	2T	R	–	–	–	–	–	–	–	–	PP	–	7 3	O	Ov	Pr Se	300	–
Diamond Match Co, Pittsburgh, N Y	C	13 5	2350	Du	–	Du	–	So	Pn	M T	R	–	–	–	–	–	–	–	–	PP	–	0 5	O	Di	–	25	–
Savannah Memorial Hospital, Savannah, Ga	G,S	18 9	–	Du	Ma	Du	Ma	So	–	M,T	R	0 3	Wo	100	–	NC	–	–	–	PP GP	0 5	0 5	–	–	Se	50	0 4
Libby-Owens Ford Glass Co, Ottawa, Ill	C	–	1950	M	V	M	D	So	Me	3M T	R	10	GE	–	3	AE Co	11 0	2	–	PP GP	4 2	4 2	O	All[4]	Pr	590	25 5
University of Florida, Gainesville, Fla	B	10 5	–	M	V	M	V	So	–	3M	R	1 0	El	75	–	NC	–	–	–	PP,GP	4 0	2 4	O	Ov	–	120	–
Dunlop Tire & Rubber Corp, Buffalo, N Y	C	13 7	–	Du	D	Du	D	So	Me	–	R	–	–	–	–	–	–	–	–	PP	–	4 2	O	Ov,Gr	Pr	200	–
St Marys Hospital, Rochester, Minn	G,S	–	–	Du	V	N	N	So	–	2M,1T	R	1 5	WE	–	–	AE	–	–	–	PP GP	2 4	–	O	Di Ov	Se	120	3
Hercules Powder Co, Franklin, Va	G,Pf	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

AC – Allis-Chalmers Mfg Co
Ad – Admiralty
Adl – Inhibited admiralty
AE – Automatic extraction
AlBr – Aluminum brass
As – Arsenal
AsCu – Arsenical copper
B – Bark
Bar – Barometric
BF – Blast furnace gas
Bi – Bigelow Co
BL – Black Liquor
Bw – Babcock & Wilcox Co
C – Coal, bituminous
CB – Coke breeze
CE – Combustion Engineering Co
CO – Coke oven gas
Co – Condensing
COx – Carbon monoxide
CuAd – Copper Admiralty
D – Damper
De – Deaerator
DeL – DeLaval Steam Turbine Co
Di – Differential
Dr – Dry type
Du – Dual drive
E – Electrostatic
EC – Erie City Iron Works
El – Elliott Co
Ev – Evaporator
FW – Foster Wheeler Corp
FWL – Foster Wheeler Ltd
G – Gas
GE – General Electric
GP – Self generated pc
Gr – Ground
Hy – Hydraulic
I – Internal
K – E Keeler Co
L – Lignite
Motor drive
Magnetic coupling
Mechanical
Murray Iron Works
None
Non-Condensing
Oil
Overload
P – Pulverized fuel firing
PF – Pressurized furnace
Pi – Pitch
Pl – Plate
Pn – Pneumatic
PP – Purchased power
Pr – Primary
R – Regulator
Re – Regenerative
RS – Riley Stoker Corp
S – Speed control
Sa – Sawdust
Se – Secondary
So – Softener
Sp – Springfield Boiler Co
SS – Spreader stoker
T – Turbine drive
TG – Traveling grate stoker
Tu – Tubular
US – Underfeed stoker
V – Vane control
WE – Westinghouse Electric Corp
WH – Waste heat
Wi – Wickes Boiler Co
Wo – Worthington Corp
1 – Revised from '55 report
3 – Two units installed
4 – All types Di, Ov, Gr
5 – Nya
6 – 1000 Btu per cu ft
7 – Off gas CO
8 – One boiler has additional 203 cu-ft bark furnace