

Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Division	District	Type	River, County, State	Turbine Mfr.	HP	RPM	Rated Head	Max. Head	Min. Head	Unit Spacing	CI Dist. To Draft Tube	CI Dist. To Min. Tw	Discharge Dia.
Albeni Falls	1-3	CENPD	Seattle	Kaplan	Pend Oreille Rr, Bonner Co, ID	Baldwin-Lima-Hamilton	19,600	54.5	22'	34'	8'	78'	65'	-2'	282"
Allatoona	1 & 2	CESAD	Mobile	Francis	Etowah River, Bartow Co, GA	S. Morgan Smith	50,000	112.5	135'	170'	104.3'	54'	33'	13'	165"
Allatoona	4	CESAD	Mobile	Francis	Etowah River, Bartow Co, GA	Allis-Chalmers	4,050	450	152'	170'	104.5'		18.5'	7'	39.25"
Barkley	1-4	CEORN	Nashville	Kaplan	Cumberland Rr, Lyon Co, KY	Newport News Shipbldg. & Drydk. Co.	58,000	65.5	44'	72'	18'	86'	69'	7'	300"
Beaver	1 & 2	CESWD	Little Rock	Francis	White River, Carroll Co, AR	Newport News Shipbldg. & Drydk. Co.	77,400	105.9	164'	206'	122'	61'	42'	7.2'	185.25"
Big Bend	1-3	CEMRD	Omaha	Fixed Blade Prop.	Missouri River, Buffalo Co, SD	English Elect. Export & Trading Co.	90,300	81.8	67'	75'	50'	86'	70'	-2'	278"
Big Bend	4-8	CEMRD	Omaha	Fixed Blade Prop.	Missouri River, Buffalo Co, SD	English Elect. Export & Trading Co.	90,300	81.8	67'	75'	50'	86'	70'	-2'	278"
Big Cliff	1	CENPD	Portland	Kaplan	North Santiam Rr, Linn Co, OR	Baldwin-Lima-Hamilton	26,500	163.5	91'	98'	73'	48.67'	33.7'	-2'	148.2"
Blakely Mt.	1 & 2	CELMV	Vicksburg	Vertical Shaft	Ouachita River, Garland Co, AR	S. Morgan Smith	52,000	120	168'	196'	135'	56'	40'	7'	180"
Bonneville 1	0	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	S. Morgan Smith	5,000	257	50'	70'	32'				81"
Bonneville 1	2	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	S. Morgan Smith	66,000	75	50'	69'	25.7'	82'	59.6'	5.5'	280"
Bonneville 1	1	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	S. Morgan Smith	66,000	75	50'	69'	25.7'	82'	59.6'	5.5'	280"
Bonneville 1	3-6	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	S. Morgan Smith	74,000	75	60'	69'	25.7'	82'	59.6'	5.5'	280"
Bonneville 1	7-10	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	S. Morgan Smith	74,000	75	60'	69'	25.7'	82'	59.6'	5.5'	280"
Bonneville 2	11-14	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	Allis-Chalmers	105,000	69.2	52'	70'	32.5'	94'	72.12'	-7.87'	331.2"
Bonneville 2	15-18	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	Allis-Chalmers	105,000	69.2	52'	70'	32.5'	94'	72.12'	-7.87'	331.2"
Bonneville 2	F1 & F2	CENPD	Portland	Kaplan	Columbia Rr, Multnomah Co, OR	Sulzer/Escher-Wyss	20,700	156.5	59'	68'	32.5'	43'	30.5'	-20'	140"
Broken Bow	1 & 2	CESWD	Tulsa	Francis	Mountain Fork Rr, McCurtain Co, OK	Allis-Chalmers	69,000	128.6	599.5'	639.7'	559'	55'	35'	4.2'	152.1"
Buford	3	CESAD	Mobile	Francis	Chattahoochee Rr, Forsyth Co, GA	Newport News Shipbldg. & Drydk. Co.	55,000	277	136'	151'	101'	43'	16'	2'	66"
Buford	1 & 2	CESAD	Mobile	Francis	Chattahoochee Rr, Forsyth Co, GA	Newport News Shipbldg. & Drydk. Co.	55,000	100	136'	153'	107'	62'	39'	7'	180"
Bull Shoals	1-4	CESWD	Little Rock	Francis	White River, Baxter Co, AR	Allis-Chalmers	52,000	128.6	190'	237'	127'	54'	33'	11'	152.5"
Bull Shoals	5-8	CESWD	Little Rock	Francis	White River, Baxter Co, AR	Newport News Shipbldg. & Drydk. Co.	62,200	128.6	190'	237'	127'	54'	33'	10.7'	152.5"
Carter's	1 & 2	CESAD	Mobile	Francis	Coosawattee Rr, Murray Co, GA	Newport News Shipbldg. & Drydk. Co.	172,000	163.6	345'	403'	315'	63'	38'	-13'	166"
Carter's	3 & 4	CESAD	Mobile	Francis	Coosawattee Rr, Murray Co, GA	Allis-Chalmers	173,000	150	345'	403'	315'	63'	33'	-22'	170"
Center Hill	1-3	CEORD	Nashville	Francis	Cumberland Rr, Dekalb Co, TN	Baldwin-Lima-Hamilton	62,500	105.9	160'	207'	131'	58'	38'	3.8'	180.5"
Center Hill	SS	CEORD	Nashville	Francis	Cumberland Rr, Dekalb Co, TN	S. Morgan Smith	1,400	720	160'	207'	131'		15'	2'	26.25"
Cheatham	1-3	CEORD	Nashville	Kaplan	Cumberland Rr, Cheatham Co, TN	Newport News Shipbldg. & Drydk. Co.	20,000	60	22'	29'	9'	82'	65'	6.6'	274"
Chief Joseph	1-4, 15&16.	CENPD	Seattle	Francis	Columbia River, Douglas Co, WA	S. Morgan Smith	100,000	100	165'	178.5'	148'	70'	42'	7'	192"
Chief Joseph	17-27	CENPD	Seattle	Francis	Columbia River, Douglas Co, WA	Hitachi	136,000	112.5	163'	196'	130'	70'	42'	7'	215"
Chief Joseph	5 - 14	CENPD	Seattle	Francis	Columbia River, Douglas Co, WA	Newport News Shipbldg. & Drydk. Co.	100,000	100	165'	178.5'	148'	70'	42'	7'	196.9"
Chief Joseph	SS 1 & 2	CENPD	Seattle	Francis	Columbia River, Douglas Co, WA	Pelton	3,500	514	171'	184'	148'	22'	28.5'	4'	39"
Clarence Cannon	1	CELMV	St. Louis	Kaplan	Salt River, Ralls Co, MO	Allis-Chalmers	42,900	128.6	75'	107'	69'	75'	47.2'	-9'	185"
Clarence Cannon	2	CELMV	St. Louis	Francis	Salt River, Ralls Co, MO	Allis-Chalmers	42,900	75	75'	107'	69'	82'	50'	-9'	231"
Cordell Hull	1-3	CEORD	Nashville	Kaplan	Cumberland Rr, Smith Co, TN	Baldwin-Lima-Hamilton	58,200	65.5	44'	58'	26'	86'	69'	6.5'	290"
Cougar	1 & 2	CENPD	Portland	Francis	McKenzie River, Lane Co, OR	James Leffel, (See Notes)	17,250	400	321'	448'	257.2'	34'	15'	5.5'	64.2"
Dale Hollow	1-3	CEORD	Nashville	Francis	Obey River, Clay Co, TN	S. Morgan Smith	25,000	163.6	140'	154'	115'	42'	24'	7'	113.5"
Dardanelle	1-4	CESWD	Little Rock	Kaplan	Arkansas River, Yell Co, AR	D-WI&S	42,850	75	38'	53'	20'	80'	60'	4.5'	257"
De Gray	1	CELMV	Vicksburg	Francis	Caddo River, Clark Co, AR	Newport News Shipbldg. & Drydk. Co.	63,000	150	171'	216'	144'	49'	varies	varies	156.5"
De Gray	2	CELMV	Vicksburg	Francis	Caddo River, Clark Co, AR	Newport News Shipbldg. & Drydk. Co.	43,240	128.5	171'	216'	144'	49'	varies	varies	194.38"
Denison	1 & 2	CESWD	Tulsa	Francis	Red River, Bryan Co, OK	S. Morgan Smith	56,000	90	102.5'	131'	75.5'	64'	43'	7.4'	191.5"
Detroit	1 & 2	CENPD	Portland	Francis	N. Santiam Rr, Linn Co, OR	Baldwin-Lima-Hamilton	70,000	163.6	285'	375'	225'	54'	32'	5'	130"
Dexter	1	CENPD	Portland	Kaplan	Willamette River, Lane Co, OR	Newport News Shipbldg. & Drydk. Co.	20,700	128.6	51'	58.3'	51'	51'	36'	-4.6'	159"
Dworshak	3	CENPD	Walla Walla	Francis	Clearwater Rr, Clearwater Co, ID	Allis-Chalmers	346,000	128.6	560'	615.5'	460.5'	54'	46'	7'	192"
Dworshak	1 & 2	CENPD	Walla Walla	Francis	Clearwater Rr, Clearwater Co, ID	Allis-Chalmers	142,000	200	560'	625'	470'	47'	36'	1'	125"
Eufaula	1-3	CESWD	Tulsa	Francis	Canadian River, McIntosh Co, OK	Newport News Shipbldg. & Drydk. Co.	41,500	100	96'	125'	70'	61'	42'	8.2'	182"
Fort Gibson	1-4	CESWD	Tulsa	Francis	Grand Neosho Rr, Wagoner Co, OK	Baldwin-Lima-Hamilton	16,000	100	59'	90'	56'	53'	34.25'	8'	151.25"
Fort Peck, Plant No.1	2	CEMRD	Omaha	Francis	Missouri River, McCone Co, MT	S. Morgan Smith	20,000	164	140'	216'	120'	46'	32'	9.45'	104.88"
Fort Peck, Plant No.1	1 & 3	CEMRD	Omaha	Francis	Missouri River, McCone Co, MT	S. Morgan Smith	50,000	128.6	170'	216'	120'	46'	32'	9.45'	146.56"
Fort Peck, Plant No.2	4 & 5	CEMRD	Omaha	Francis	Missouri River, McCone Co, MT	Allis-Chalmers	63,500	128.6	170'	210'	115'	56'	36'	5'	155.5"
Fort Randall	1-4	CEMRD	Omaha	Francis	Missouri River, Charles Mix Co, SD	Allis-Chalmers	57,500	85.7	112'	145'	75.5'	70'	42'	9'	204"
Fort Randall	5-8	CEMRD	Omaha	Francis	Missouri River, Charles Mix Co, SD	Allis-Chalmers	57,500	85.7	112'	145'	75.5'	70'	42'	9'	204"
Foster	1 & 2	CENPD	Portland	Kaplan	S. Santiam River, Linn Co, OR	Baldwin-Lima-Hamilton	13,800	257	101'	115'	80'	40'	24'	-10'	95.84"
Garrison	1-5	CEMRD	Omaha	Francis	Missouri River, McLean Co, ND	Baldwin-Lima-Hamilton	88,000	90	150'	184'	99'	75'	46'	47'	210.5"
Gavin's Point	1-3	CEMRD	Omaha	Kaplan	Missouri River, Yankton Co, SD	Baldwin-Lima-Hamilton	54,000	75	48'	80'	40'	80'	60'	8'	264"
Green Peter	1 & 2	CENPD	Portland	Francis	Santiam River, Linn Co, OR	Allis-Chalmers	55,000	163.6	265'	321'	186'	45'	28'	6'	150"
Green Peter	F 1	CENPD	Portland	Francis	Santiam River, Linn Co, OR	James Leffel	2,000	900	290'	290'	161'	45'	28'	-15'	23.4"
Greers Ferry	1 & 2	CESWD	Little Rock	Francis	Little Red River, Cleburne, AR	Baldwin-Lima-Hamilton	66,300	120	176'	214'	156'	56'	37'	left	162"
Harry S. Truman	1-6	CEMRD	Kansas	Adj. Blade Incl. Axis	Osage River, Benton Co, MO	Baldwin-Lima-Hamilton	42,400	100	42.5'	79.2'	41'	52'	30.9'	20'	255.6"
Hartwell	5	CESAD	Savannah	Francis	Savannah River, Hart Co, GA	Voest - Alpine	109,500	112.5	170'	187'	143'	68'	42'	11'	192"
Hartwell	1-4	CESAD	Savannah	Francis	Savannah River, Hart Co, GA	Newport News Shipbldg. & Drydk. Co.	91,500	100	170'	187'	144'	68'	42'	7'	
Hill's Creek	1 & 2	CENPD	Portland	Francis	Willamette River, Lane Co, OR	Baldwin-Lima-Hamilton	21,700	277	256'	320'	181.5'	38'	17'	6.2'	74"
Ice Harbor	1-3	CENPD	Walla Walla	Kaplan	Snake River, Walla Walla Co, WA	Allis-Chalmers	143,000	90	89'	105'	78'	86'	70.67'	-16.5'	280"
Ice Harbor	4-6	CENPD	Walla Walla	Kaplan	Snake River, Walla Walla Co, WA	Allis-Chalmers	174,000	85.7	89'	102'	72'	86'	70.67'	-16.5'	300"
Island Creek	1-3	CESAD	Wilmington	Axial & Adj. Blade	Roanoke River, Mecklenburg Co, VA	S. Morgan Smith	1,250	600	40'	50'		14'			57"
J. Percy Priest	1	CEORD	Nashville	Fixed Blade Prop.	Stones River, Davidson Co, TN	Allis-Chalmers	42,700	128.6	78'	100'	65'		42'	-1'	180"
J. Strom Thurmond	1-7	CESAD	Savannah	Francis	Savannah River, McCormack Co, SC	Newport News Shipbldg. & Drydk. Co.	55,000	100	136'	152'	118'	62'	39'	8'	178"

ABB = Asea Brown Boveri
Note: Before using any dimensional data, consult the equipment drawings.
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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Turb. Wt. (tons)	Turbine Upgrade	Upgraded Turbine Mfr.	Upgrade Date	Upgraded Max Power	Upgraded Rated Power	Upgraded Rated Head	Notes	Generator Mfr.	KVA	PF
Albeni Falls	1-3	232.5								General Electric	15,778	90%
Allatoona	1 & 2	550.8								Westinghouse	40,000	90%
Allatoona	4	25								Westinghouse	2,500	80%
Barkley	1-4	115								General Electric	36,111	90%
Beaver	1 & 2	81.5								Westinghouse	58,947	95%
Big Bend	1-3	250.5								Westinghouse	61,579	95%
Big Bend	4-8	250.5								Westinghouse	61,579	95%
Big Cliff	1									Westinghouse	20,000	90%
Blakely Mt.	1 & 2	70								Westinghouse	41,667	90%
Bonneville 1	0									Elec. Mach. Corp.	5,000	80%
Bonneville 1	2	900	Y	Voith Siemens	12/30/1994	80,000	76,000	60'	Max NH 70', Min NH 32.5'	General Electric	48,000	90%
Bonneville 1	1	142	Y	Voith Siemens	12/30/1994	80,000	76,000	60'	Max NH 70', Min NH 32.5'	General Electric	48,000	90%
Bonneville 1	3-6	900	Y	Voith Siemens	12/30/1994	85,000	76,000	60'	Max NH 70', Min NH 32.5'	General Electric	60,000	90%
Bonneville 1	7-10	900	Y	Voith Siemens	12/30/1994	85,000	76,000	60'	Max NH 70', Min NH 32.5', As of 03/25/08 U8 & U9 are in process of being completed	General Electric	60,000	90%
Bonneville 2	11-14	1,125								General Electric	70,000	95%
Bonneville 2	15-18	1,125								General Electric	70,000	95%
Bonneville 2	F1 & F2	175								Westinghouse	13,800	95%
Broken Bow	1 & 2	325								Allis-Chalmers	52,632	95%
Buford	3	74.5	Y	Alstom	6/14/1999		9,770	157.4'	Max NH 173.48', Min NH 131.7'	Westinghouse	6,667	90%
Buford	1 & 2	423.25	Y	Alstom	6/14/1999	79,500	79,500	148.7'	Max NH 169', Min NH 131.7'	Westinghouse	44,444	90%
Bull Shoals	1-4	30								Allis-Chalmers	45,105	95%
Bull Shoals	5-8	36								Allis-Chalmers	47,368	95%
Carter's	1 & 2	40								Allis-Chalmers	131,579	95%
Carter's	3 & 4	40								General Electric	131,579	90%
Center Hill	1-3	80								General Electric	50,000	90%
Center Hill	SS									Elliott	1,000	80%
Cheatham	1-3	550								Westinghouse	13,333	90%
Chief Joseph	1-4, 15&16.	332.5								Westinghouse	67,368	95%
Chief Joseph	17-27									General Electric	100,000	95%
Chief Joseph	5 - 14	332.5								Westinghouse	67,368	95%
Chief Joseph	SS 1 & 2									Elliott	721	4%
Clarence Cannon	1	520								General Electric	28,421	95%
Clarence Cannon	2	1,036								General Electric	28,421	95%
Cordell Hull	1-3	246								General Electric	37,037	90%
Cougar	1 & 2	79	Y	GE	12/3/2002	22,100	19,700	321'		Elliott	13,158	95%
Dale Hollow	1-3	246								Westinghouse	20,000	90%
Dardanelle	1-4	720	Y	Voith Siemens	8/8/1994	56,000	55,350	46.75'	Max NH 51', Min NH 24'	Westinghouse	32,632	95%
De Gray	1	50.5								Allis-Chalmers	42,105	95%
De Gray	2	69.5								Allis-Chalmers	29,474	95%
Denison	1 & 2	501.3								Westinghouse	36,482	95%
Detroit	1 & 2	437								Westinghouse	55,556	90%
Dexter	1	206.6								General Electric	15,000	100%
Dworshak	3	860								Allis-Chalmers	233,684	95%
Dworshak	1 & 2	206.5								Allis-Chalmers	94,737	95%
Eufaula	1-3	443.2								Westinghouse	31,579	95%
Fort Gibson	1-4	51								Allis-Chalmers	12,500	90%
Fort Peck, Plant No.1	2	25.1								Allis-Chalmers	16,667	90%
Fort Peck, Plant No.1	1 & 3	50.9								Allis-Chalmers	38,889	90%
Fort Peck, Plant No.2	4 & 5	54.7								Elliott	42,105	95%
Fort Randall	1-4	55								Westinghouse	42,105	95%
Fort Randall	5-8	55								Westinghouse	42,105	95%
Foster	1 & 2	54.7								Allis-Chalmers	10,526	95%
Garrison	1-5	178.5	Y	Alstom	2/12/1998	149,500	149,500	163'	Max NH 178', Min NH 140'	General Electric	84,211	95%
Gavin's Point	1-3	195								General Electric	35,100	95%
Green Peter	1 & 2	178.5								Westinghouse	42,105	95%
Green Peter	F 1	195								General Electric	1,500	95%
Greers Ferry	1 & 2	39								Elliott	50,526	95%
Harry S. Truman	1-6	136								General Electric	28,386	95%
Hartwell	5	136								Canadian Gen. Elec	84,211	95%
Hartwell	1-4	39								Westinghouse	73,333	90%
Hill's Creek	1 & 2	45								BB	15,789	95%
Ice Harbor	1-3	940								General Electric	99,723	95%
Ice Harbor	4-6	45								General Electric	122,947	95%
Island Creek	1-3	30								Westinghouse	1,000	100%
J. Percy Priest	1	380								Allis-Chalmers	31,111	90%
J. Strom Thurmond	1-7	480	Y	Voith Siemens	9/30/1998	79,000	72,500	129'	Max NH 148.5', Min NH 114'	General Electric	44,444	90%

ABB = Asea Brown Boveri

Note: Before using any dimensional data, consult the equipment drawings.

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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	KW	Max. KW	KV	SC Ratio	Reactance	WK^2	Gen. Dia.	Gen. Wt. (tons)	Power on Line	Rewind Mfr.	Rewind Capacity (kVA)	Rewind Above Cap. (kVA)	Rewind Date
Albeni Falls	1-3	14,200	16,330	13.8	1.100	55.0%	55,000,000	48.5'	157.5					
Allatoona	1 & 2	36,000	41,400	13.8	1.293	43.0%	Rotor: 39000000	38'	418	See notes.	ABB Power Generation, Inc.	47,000	1,000	See notes.
Allatoona	4	2,000	2,300	2.3	1.100	Normal	89,000	6.33'	28.25	2/17/1950	NEC Magnetek	3,000	125	1984
Barkley	1-4	32,500	42,500	13.8	1.100	51.0%	114,000,000	50'	676.9	1/20/1966				
Beaver	1 & 2	56,000	84,000	13.8	1.175	31.5%		41'	486.5					1/1/1983
Big Bend	1-3	58,500	58,500	13.8	1.175	31.5%	109,400,000	45'	677.5	See notes.	Magnetek Ntl Elec Coil	67,274	5,695	See notes.
Big Bend	4-8	58,500	58,500	13.8	1.175	31.5%	109,400,000	45'	677.5	See notes.				
Big Cliff	1	18,000	18,000	14.4	1.100			31'	237.3		National Electric Coil	25,000	5,000	
Blakely Mt.	1 & 2	37,500	43,000	13.8	1.100	42.0%	114,000,000	40'	484	10/1/1955				
Bonneville 1	0	4,000		2.4						9/28/1937				
Bonneville 1	2	43,200	49,680	13.8	1.100	44.0%	113,000,000	48'		6/6/1938	Voith Siemens	55,200	0	2007
Bonneville 1	1	43,200	49,680	13.8	1.100	44.0%	113,000,000	48'	335	5/17/1938	Voith Siemens	55,200	0	2004
Bonneville 1	3-6	54,000	62,100	13.8	1.300	44.0%	113,000,000	48'	1,000	See notes.	Voith Siemens	69,000	0	U3: 02, U4:99, U5: 02, U6:99
Bonneville 1	7-10	54,000	62,100	13.8	1.300	44.0%	113,000,000	48'	1,000	See notes.	U 10: Voith Seimens	69,000	0	U 10: 2000
Bonneville 2	11-14	66,500	66,500	13.8	1.175	42.0%	164,960,000	52.17'	850	See notes.				See notes.
Bonneville 2	15-18	66,500	66,500	13.8	1.175	42.0%	164,960,000	52.17'	850	See notes.				
Bonneville 2	F1 & F2	13,110	13,110	13.8	1.175	45.0%	4,231,000	22' x 30'	165					
Broken Bow	1 & 2	50,000	57,500	13.8	1.175	41.0%	34,400,000	40'	348.5	See notes.	U1: National Electric Coil	U1: 15,780	0	U1: 5/1/2003
Buford	3	6,000	6,900	13.8	1.100	44.0%	Rotor: 765,703	12.5'	91	7/26/1957	Alstom	7,870	203	
Buford	1 & 2	40,000	46,000	13.8	1.100	43.0%	Rotor: 83,288,687	35'	638	See notes.	Alstom	69,300	0	U1: 2003, U2: 2004
Bull Shoals	1-4	42,750	49,000	13.8	1.170	42.0%	34,000,000	40'	360	See notes.	Alstom	45,000	9,473	2004
Bull Shoals	5-8	47,500	55,000	13.8	1.175	41.0%	34,000,000	40'	362.8	See notes.	NEC	50,000	2,633	4/6/1983
Carter's	1 & 2	125,000	143,750	13.8	1.175	37.0%	Rotor: 95,700,000	42'	775	See notes.	NEC	131,500	19,815	6/13/1905
Carter's	3 & 4	125,000	143,750	13.8	1.175		Rotor: 90,200,100	44'	651	See notes.	ABB Power Generation, Inc.	131,500	19,815	U1, 03/12/92; U2, 02/12/92.
Center Hill	1-3	45,000	52,000	13.8	1.100	43.0%	55,000,000	40'	450	1951				
Center Hill	SS	15	15	480V		35.0%		5.83'	7.5	1951				1/1/1983
Cheatham	1-3	12,000	13,500	13.8	1.100	54.0%	47,500,000	44.17'	431.6					
Chief Joseph	1-4, 15&16.	64,000	67,368	13.8	1.170	43.0%	84,000,000	42.5'	600	See notes.	Westinghouse	88,270	10,796	1/1/1987
Chief Joseph	17-27	95,000	100,000	13.8	1.175	32.4%	96,600,000	46'	540					
Chief Joseph	5 - 14	64,000	67,368	13.8	1.170	43.0%	84,000,000	42.5'	600	See notes.	Westinghouse	88,270	10,796	1/1/1987
Chief Joseph	SS 1 & 2	3,000	3,000	2.4	1.000	Normal	75,000	12.33' Max.	29.5	Jun-55				Rewedge date: 1/1/1983
Clarence Cannon	1	27,000	27,000	13.8	1.175	43.0%	15,500,000	35'	265	Nov-84				
Clarence Cannon	2	27,000	27,000	13.8				45'	432.5	Nov-84				
Cordell Hull	1-3	33,333	33,333	13.8	1.100	45.0%	114,000,000	54.17' Max.	584.5					
Cougar	1 & 2	12,500	14,375	6.9	1.175	38.0%	1,498,000	22'	101.9		GE Hydro	15,132	3,500	2005
Dale Hollow	1-3	18,000	18,630	13.8	1.100	42.0%	7,500,000	28.33'	195.8					1/1/1981
Dardanelle	1-4	31,000	35,600	13.8	1.175	48.0%	54,500,000	42.67'	460		U1: Siemens	U1: 42,368	1,077	U1: 1998
De Gray	1	40,000	46,000	13.8	1.175	40.0%	34,000,000	38'	331	See notes.				
De Gray	2	28,000	32,200	13.8	1.175	36.0%	19,200,000	39'	124.18	See notes.				
Denison	1 & 2	35,000	40,200	13.8	1.500	43.0%	55,000,000	39.17'	497		Alstom	53,500	17,019	5/2005-5/2006
Detroit	1 & 2	50,000	57,500	13.8	1.760	31.0%	29,000,000	38.25'	590		National Electric Coil	70,032	6,142	U1: 3/15/2008, U2: Ongoing
Dexter	1	15,000	17,250	13.8	1.250	46.0%	9,000,000	31.67'	262		GE	22,364	5,114	1997
Dworshak	3	222,000	222,000	13.8	1.175	25.4%	200,000,000	48.17'	921	4/20/1973				
Dworshak	1 & 2	90,000	90,000	13.8	1.175	63.0%	36,200,000	36.08'						
Eufaula	1-3	30,000	34,500	13.8	1.175	44.0%	31,900,000	39.17'	345	7/27/1964				
Fort Gibson	1-4	11,250	12,938	13.8	1.100	49.0%	13,500,000	23'	226.5	Mar-53				
Fort Peck, Plant No.1	2	15,000	17,250	13.8	1.260	40.0%	7,000,000	25.5'	165	See notes.	NEC	18,250	0	1978
Fort Peck, Plant No.1	1 & 3	35,000	40,250	13.8	1.100	39.0%	30,000,000	36'	350	See notes.	NEC	43,500	0	1978
Fort Peck, Plant No.2	4 & 5	40,000	46,000	13.8	1.170	42.0%	39,500,000	35.33'	411.4					
Fort Randall	1-4	40,000	46,000	13.8	1.170	46.0%	82,000,000	43'	614	See notes.				
Fort Randall	5-8	40,000	46,000	13.8	1.170	46.0%	82,000,000	43'	614	See notes.				
Foster	1 & 2	10,000	11,500	4.2	1.750	42.0%	2,000,000	See notes.	115.5					
Garrison	1-5	80,000	92,000	13.8	1.960	34.0%	150,000,000	50'	1,122.50		Alstom	28,000, U4&5 115,000	3:16474, U4&5: 3,474	5/2002-7/2005
Gavin's Point	1-3	33,345	38,346	13.8	1.170	48.0%	80,200,000	47.83'	317	See notes.	Magnetik	44,099	3,734	All three units 1987-1990.
Green Peter	1 & 2	40,000	46,000	13.8	1.175	40.0%	22,000,000	32.17'	342.5		Alstom	48,421	0	U1: 1999, U2:2000
Green Peter	F 1	1,425	1,639	0.5	1.175	Normal	5,350				RAM Inc.			1/1/1986
Greers Ferry	1 & 2	48,000	55,200	13.8	1.175	41.0%	40,000,000	38'	424	See notes.				
Harry S. Truman	1-6	26,967	31,050	13.8	1.175	45.0%	27,600,000	40'	328	Dec-79				
Hartwell	5	80,000	80,000	13.8	1.175	42.0%	77,614,000							
Hartwell	1-4	66,000	66,000	13.8	1.100	43.0%	96,000,000	44'	615		National Electric Coil	95,000	26,741	6/99-9/00
Hill's Creek	1 & 2	15,000	17,250	6.9	1.175	40.0%	1,600,000	21.67'	113					
Ice Harbor	1-3	94,737	94,737	13.8	1.175	43.0%	156,500,000	49'	1,013	See notes.				
Ice Harbor	4-6	116,800	116,800	13.8	1.186	32.4%	205,208,000	54'	915	See notes.				
Island Creek	1-3	1,000	1,150	4.16				10.33'						
J. Percy Priest	1	28,000	30,000	13.8	1.100	42.0%	28,000,000	38.5'	310		Westinghouse	31,110	0	1998
J. Strom Thurmond	1-7	40,000	46,000	13.8	1.100		56,000,000	41'	569	See notes.	ABB/ Alstom	57,500	0	6/2000-6/2003

ABB = Asea Brown Boveri

Note: Before using any dimensional data, consult the equipment drawings.

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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Notes
Albeni Falls	1-3	
Allatoona	1 & 2	POL: U1,1/31/50; U2,5/25/50; Rewind Date: U1,12/12/94; U2,4/17/94.
Allatoona	4	Rewind PF: 0.925; Rewind KV: 2.4.
Barkley	1-4	
Beaver	1 & 2	
Big Bend	1-3	POL Rewind: U1,12/06/90; U2,04/10/91; U3,05/16/91.
Big Bend	4-8	POL: U4 to U8, OCT64 - JUL66.
Big Cliff	1	
Blakely Mt.	1 & 2	
Bonneville 1	0	
Bonneville 1	2	
Bonneville 1	1	
Bonneville 1	3-6	POL: U3,1/9/41; U4,12/23/40; U5,09/05/41; U6,05/18/42.
Bonneville 1	7-10	POL: U7,04/01/43; U8,06/16/43; U9,09/15/43; U10,12/15/43.
Bonneville 2	11-14	Rewind Dates: U7,10/69; U8,10/60; U9,10/70; U10,10/58.
Bonneville 2	15-18	POL: U11,09/30/82; U12,09/21/82; U13,10/18,82; U14,05/13/82.
Bonneville 2	F1 & F2	POL: U15, 04/12/82; U16, 01/06/82; U17, 10/21/81; U18, 05/22/81.
Broken Bow	1 & 2	
Buford	3	
Buford	1 & 2	POL: U1,10/10/57; U2,06/19/57.
Bull Shoals	1-4	
Bull Shoals	5-8	POL: U1,09/18/52; U2,09/29/52; U3,12/01/52; U4,06/12/53. All generator info. after 04/06/83 rewind
Carter's	1 & 2	POL: U5,12/16/62; U6,02/08/62; U7,08/01/63; U8,09/17/63. All generator info. after 1991 rewind
Carter's	3 & 4	POL: U1,11/17/75; U2,07/23/75
Center Hill	1-3	POL: U3,04/17/77; U4,06/01/77.
Center Hill	SS	
Cheatham	1-3	
Chief Joseph	1-4, 15&16.	POL: AUG55 - SEP58.
Chief Joseph	17-27	
Chief Joseph	5 - 14	POL: AUG55 - SEP58.
Chief Joseph	SS 1 & 2	
Clarence Cannon	1	
Clarence Cannon	2	
Cordell Hull	1-3	
Cougar	1 & 2	Voith runners installed in 1988.
Dale Hollow	1-3	
Dardanelle	1-4	
De Gray	1	POL: Comm. Oper. 02/29/72; Tot. Gen. Sh. Wt. 728000lbs; Tailwater Min. 210', Top of Weir Lower Dam, 223'.
De Gray	2	POL: Comm. Oper. 02/29/72; Tot. Gen. Sh. Wt. 570000lbs; Gen&Motor 20.42x10^6 WK^2.
Denison	1 & 2	
Detroit	1 & 2	
Dexter	1	
Dworshak	3	POL: U1,03/01/73; U2,04/06/73.
Dworshak	1 & 2	
Eufaula	1-3	
Fort Gibson	1-4	Turb. Wt.: 51 tons, shaft & runner.
Fort Peck, Plant No.1	2	Rewind KVA: 19211; Rewind PF: 95%
Fort Peck, Plant No.1	1 & 3	Rewind KVA: 45789; Rewind PF: 95%.
Fort Peck, Plant No.2	4 & 5	
Fort Randall	1-4	POL: U1,03/15/54; U2,05/18/54; U3,10/30/54; U4,10/30/54.
Fort Randall	5-8	POL: U5,02/04/55; U6,06/02/55; U7,09/21/55; U8,01/11/56.
Foster	1 & 2	Gen. Dia.: 17'-10" x 22'-1"
Garrison	1-5	Units 1-3 and Units 4&5 Rewound w/ differing capacities.
Gavin's Point	1-3	POL: U1,09/10/56; U2,10/15/56; U3,01/09/57.
Green Peter	1 & 2	
Green Peter	F 1	
Greers Ferry	1 & 2	POL: U1,03/64; U2,05/64.
Harry S. Truman	1-6	Formally "Kaysinger Bluff".
Hartwell	5	
Hartwell	1-4	
Hill's Creek	1 & 2	
Ice Harbor	1-3	POL: U1,12/18/61; U2,02/27/62; U3,02/08/62.
Ice Harbor	4-6	POL: U4,11/24/75; U5,11/18/75; U6,01/07/76.
Island Creek	1-3	See Pumping Data.
J. Percy Priest	1	
J. Strom Thurmond	1-7	POL: U1,01/05/53; U2,02/23/53; U3,05/28/53; U4,10/06/53; U5,01/26/54; U6,05/27/54; U7,07/28/54. Formally "Clark Hill"

ABB = Asea Brown Boveri

Note: Before using any dimensional data, consult the equipment drawings.

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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Division	District	Type	River, County, State	Turbine Mfr.	HP	RPM	Rated Head	Max. Head	Min. Head	Unit Spacing	CI Dist. To Draft Tube	CI Dist. To Min. Tw	Discharge Dia.
Jim Woodruff	1-3	CESAD	Mobile	Adj. Blade Terry	Apalachicola River, Gadsden Co, FL	Newport News Shipbldg. & Drydk. Co.	14,000	75	26.5'	33'	14'	65'	48'	8'	208"
John Day	1-16	CENPD	Portland	Kaplan	Columbia River, Sherman Co, OR	Baldwin-Lima-Hamilton	212,400	90	94'	110'	83.5'	90'	76'	-40.5'	312"
John Day	13 Rew'd	CENPD	Portland	Kaplan	Columbia River, Sherman Co, OR	Baldwin-Lima-Hamilton	212,400	90	94'	110'	83.5'	90'	76'	-40.5'	312"
John Day	1-4 Rew'd	CENPD	Portland	Kaplan	Columbia River, Sherman Co, OR	Baldwin-Lima-Hamilton	212,400	90	94'	110'	83.5'	90'	76'	-40.5'	208"
John Day	15 Rew'd	CENPD	Portland	Kaplan	Columbia River, Sherman Co, OR	Baldwin-Lima-Hamilton	212,400	90	94'	110'	83.5'	90'	76'	-40.5'	312"
John Day	6-11 Rew'd	CENPD	Portland	Kaplan	Columbia River, Sherman Co, OR	Baldwin-Lima-Hamilton	212,400	90	94'	110'	83.5'	90'	76'	-40.5'	312"
John H. Kerr	1	CESAD	Wilmington	Francis	Roanoke River, Mechlenburg Co, VA	Baldwin-Lima-Hamilton	17,000	138.5	90'	108'	60'	60.33'	30'	5'	123.63"
John H. Kerr	2-5	CESAD	Wilmington	Francis	Roanoke River, Mechlenburg Co, VA	Newport News Shipbldg. & Drydk. Co.	45,000	85.7	90'	108'	60'	70'	43'	7'	205"
John H. Kerr	6 & 7	CESAD	Wilmington	Francis	Roanoke River, Mechlenburg Co, VA	Newport News Shipbldg. & Drydk. Co.	45,000	85.7	90'	108'	60'	70'	43'	7'	205"
John H. Kerr	SS A & B	CESAD	Wilmington	Francis	Roanoke River, Mecklenburg Co, VA	James Leffel	1,600	450	90'	108'	60'	20'	14'	4'	29.25"
Jones Bluff	1-4	CESAD	Mobile	Fixed Bl. Prop. (4 Blade)	Alabama River, Autauga Co, AL	Newport News Shipbldg. & Drydk. Co.	23,480	72	28.2'	41.5'	10'	73'	59'	16.5'	256.63"
Jones Bluff	1-4	CESAD	Mobile	Fixed Bl. Prop. (4 Blade)	Alabama River, Autauga Co, AL	Newport News Shipbldg. & Drydk. Co.	23,480	72	28.2'	41.5'	10'	73'	59'	16.5'	256.63"
Keystone	1 & 2	CEWSD	Tulsa	Fixed Blade Prop.	Arkansas River, Osage Co, OK	Allis-Chalmers	49,000	120	74'	97'	66'	71'	45.5'	7.4'	192.25"
Laurel	1	CEORD	Nashville	Francis	Laurel River, Laurel Co, KY	Allis-Chalmers	98,000	144	237'	1030.5'	982'		33.5'	3'	166.75"
Libby	1-4	CENPD	Seattle	Francis	Kootenai River, Lincoln Co, MT	Allis-Chalmers	165,000	128.6	300'	341'	165'	63'	42'	-1'	179"
Libby	1-5	CENPD	Seattle	Francis	Kootenai River, Lincoln Co, MT	Allis-Chalmers	165,000	128.6	300'	341'	165'	63'	42'	-1'	179"
Little Goose	1-3	CENPD	Walla Walla	Kaplan	Snake River, Columbia Co, WA	Baldwin-Lima-Hamilton	212,400	90	93'	98'	90.5'	90'	76'	-39'	312"
Little Goose	4-6	CENPD	Walla Walla	Kaplan	Snake River, Columbia Co, WA	Allis-Chalmers	212,400	90	93'	98'	90.5'	90'	76'	-39'	312"
Lookout Point	1-3	CENPD	Portland	Francis	Willamette River, Lane Co, OR	Pelton	52,500	128.6	185'	233'	126'	60'	33'	11.2'	157"
Lost Creek	1 & 2	CENPD	Portland	Francis	Rogue River, Jackson Co, OR	Boving	33,800	240	275'	321'	197'	36'	24' (EL 1549)	6' (EL 1548.4)	94"
Lower Granite	1-3	CENPD	Walla Walla	Kaplan	Snake River, Columbia Co, WA	Baldwin-Lima-Hamilton	212,400	90	93'	105'	76'	90'	76'	-41'	312"
Lower Granite	4-6	CENPD	Walla Walla	Kaplan	Snake River, Columbia Co, WA	Allis-Chalmers	212,400	90	93'	105'	76'	90'	76'	-41'	312"
Lower Monumental	1-3	CENPD	Walla Walla	Kaplan	Snake River, Walla Walla Co, WA	Baldwin-Lima-Hamilton	212,400	90	94'	100'	87'	90'	76'	-40.5'	312"
Lower Monumental	4-6	CENPD	Walla Walla	Kaplan	Snake River, Walla Walla Co, WA	Allis-Chalmers	212,400	90	93'	103'	87'	90'	76'	-40.5'	312"
McNary	1-12	CENPD	Walla Walla	Kaplan	Columbia River, Umatilla Co, OR	S. Morgan Smith	111,300	85.7	80'	92'	62'	86'	59.5'	-8.5'	280"
McNary	13 & 14	CENPD	Walla Walla	Kaplan	Columbia River, Umatilla Co, OR	S. Morgan Smith	111,300	85.7	80'	92'	62'	86'	59.5'	-8.5'	280"
McNary	SS 1 & 2	CENPD	Walla Walla	Francis	Columbia River, Umatilla Co, OR	Pelton	4,500	277	80'	92'	62'	27'	38'	-4'	63.6"
Miller's Ferry	1-3	CESAD	Mobile	Fixed Bl. Prop. (5 Blade)	Alabama River, Wilcox Co, AL	Newport News Shipbldg. & Drydk. Co.	34,000	69.3	35.5'	47.5'	14'	80'	28'	16'	267"
Narrows	3	CELMV	Vicksburg	Francis	Lower Miss. River, Pike Co, AR	Baldwin-Lima-Hamilton	12,000	225	132'	153.5'	98'	32'	18'	7'	83"
Narrows	1 & 2	CELMV	Vicksburg	Francis	Lower Miss. River, Pike Co, AR	Baldwin-Lima-Hamilton	12,000	225	132'	153.5'	98'	32'	18'	7'	83"
Norfolk	1 & 2	CESWD	Little Rock	Francis	White River, Baxter Co, AR	S. Morgan Smith	42,000	128.6	160'	202'	130'	54'	32'	10'	145.5"
Oahe	1-7	CEMRD	Omaha	Francis	Missouri River, Hughes Co, SD	Allis-Chalmers	128,500	100	185'	203'	114'	76'	44'	4'	204"
Old Hickory	1-4	CEORD	Nashville	Kaplan	Cumberland Rr, Davidson Co, TN	Baldwin-Lima-Hamilton	45,000	75	45'	60'	23'	80'	60'	8'	264"
Ozark	1-5	CESWD	Little Rock	Adj. Blade Incl. Axis	Arkansas River, Franklin Co, AR	Allis-Chalmers	27,900	514	27'	35'	17'	65'	39.78'	-14.7'	315"
Phillpott	3	CESAD	Wilmington	Francis	Smith River, Henry Co, VA	James Leffel	860	720	152'	176'	108'	22.833'	18.5'	4.4'	
Phillpott	1 & 2	CESAD	Wilmington	Francis	Smith River, Henry Co, VA	James Leffel	9,400	277	152'	176'	108'	32'	18.5'	3.7'	64.97"
Phillpott	SS 1	CESAD	Wilmington	Francis	Smith River, Henry Co, VA	James Leffel	860	720	152'	176'	108'				
R.D. Willis	1 & 2	CESWD	Fort Worth	See notes.	Neches River, Tyler Co, TX	Bell (Switzerland)	5,632	163.64	10.648M	30'	12'	25'	24'		110"
Richard B. Russell	1-4	CESAD	Savannah	Francis	Savannah River, Elbert Co, GA	Voest - Alpine	104,000	120	144'	162'	134'	80'	53'	12.5'	197.19"
Richard B. Russell	5-8	CESAD	Savannah	Francis	Savannah River, Elbert Co, GA	Dominion Engineering Works	104,000	120	144'	162'	134'	80'	44.67'	12.5'	228"
Robert S. Kerr	1-4	CESWD	Tulsa	Kaplan	Arkansas River, Sequoia Co, OK	Allis-Chalmers	46,000	75	40.5'	47'	20'	87'	67'	8'	290"
Sam Rayburn	1 & 2	CESWD	Fort Worth	Kaplan	Angelina River, Jasper Co, TX	Allis-Chalmers	41,300	120	70'	88'	53'	57'	45.5'	85.8'	180"
St. Mary's Falls	10	CENCD	Detroit	Fixed Blade Prop.	St. Mary's Rr, Chippewa Co, MI	Allis-Chalmers	3,000	128.6	20'	22.6'	18.3'	28'	21.2'	5'	114"
St. Mary's Falls	1-3	CENCD	Detroit	Fixed Blade Prop.	St. Mary's Rr, Chippewa Co, MI	Allis-Chalmers	6,975	80	21'	22.6'	18.3'	54'	42'	8.9'	
St. Mary's Falls	3A	CENCD	Detroit	Kaplan	St. Mary's Rr, Chippewa Co, MI	S. Morgan Smith	3,000	128.6	18.3'	22.6'	18.3'	28'	31'	-0.9'	110"
St. Stephens	1-3	CESAD	Charleston	Fixed Blade Prop.	Santee/Cooper Rrs, Berkeley Co, SC	Allis-Chalmers	39,000	100	49'	57.9'	44.3'	70'	52'	-1.6'	222"
Stockton	1	CEMRD	Kansas City	Kaplan	Sac River, Cedar Co, MO	Newport News Shipbldg. & Drydk. Co.	71,800	75	81'	108'	77'		71'	12'	280"
Table Rock	1-4	CESWD	Little Rock	Francis	White River, Taney Co, MO	English Elect. Export & Trading Co.	68,000	128.6	190'	228'	134'	54'	36'	7.2'	159.5"
Tenkiller Ferry	1 & 2	CESWD	Tulsa	HYDRO	Illinois River, Cherokee Co, OK	S. Morgan Smith	23,500	150	132'	181'	103.5'	42'	See notes.	7.9'	116.13"
The Dalles	1-14	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Baldwin-Lima-Hamilton	123,000	85.7	81'	90.5'	60'	86'	70.7'	-16'	280"
The Dalles	12 Rew'd	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Baldwin-Lima-Hamilton	123,800	85.7	81'	90.5'	60'	86'	70.7'	-16'	280"
The Dalles	13 Rew'd	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Baldwin-Lima-Hamilton	123,800	85.7	81'	90.5'	60'	86'	70.7'	-16'	280"
The Dalles	15-22	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Baldwin-Lima-Hamilton	136,000	80	73'	90'	58'	86'	70.7'	-14'	300"
The Dalles	5 Rew'd	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Baldwin-Lima-Hamilton	123,800	85.7	81'	90.5'	60'	86'	70.7'	-16'	280"
The Dalles	F 1 & 2	CENPD	Portland	Kaplan	Columbia River, Wasco Co, OR	Allis-Chalmers	18,800	200	74'	88'	55'	40'	35.5'	-14.5'	120"
The Dalles	SS 1 & 2	CENPD	Portland	Francis	Columbia River, Wasco Co, OR	Pelton	4,500	277	81'	90.5'	60'	27'	50.3'	-5.5'	63.5"
Walter F. George	1-4	CESAD	Mobile	Kaplan	Chattahoochee Rr, Henry Co, AL	Newport News Shipbldg. & Drydk. Co.	45,500	112.5	70'	88'	37'	67'	45.5'	1.2'	196"
Webber's Falls	1-3	CESWD	Tulsa	Kaplan (Tube Type)	Arkansas River, Muskogee Co, OK	Allis-Chalmers	33,800	60.2	26.5' to 31'	31'	17'	65'	42.5'	14.5'	215"
West Point	1	CESAD	Mobile	Fixed Blade Prop.	Chattahoochee Rr, Troup Co, GA	James Leffel	5,400	327	77'	77'	62'	61.5'	18'	5'	72"
West Point	2 & 3	CESAD	Mobile	Fixed Blade Prop.	Chattahoochee Rr, Troup Co, GA	Newport News Shipbldg. & Drydk. Co.	51,500	100	58'	73'	52'	77'	52'	3'	230.63"
Whitney	1 & 2	CESWD	Fort Worth	Francis	Brazos River, Bosque Co, TX	Newport News Shipbldg. & Drydk. Co.	20,700	128.6	91.5'	126'	77.5'	46'	30'	8.5'	130.75"
Wolf Creek	1-3	CEORD	Nashville	Francis	Cumberland Rr, Russell Co, KY	Baldwin-Lima-Hamilton	62,500	105.9	160'	214'	111'	58'	38'	7'	175"
Wolf Creek	4-6	CEORD	Nashville	Francis	Cumberland Rr, Russell Co, KY	Baldwin-Lima-Hamilton	62,500	105.9	160'	214'	111'	58'	38'	7'	175"
Wolf Creek	SS	CEORD	Nashville	Francis	Cumberland Rr, Russell Co, KY	James Leffel	2,000	600	160'	214'	111'		17'	8'	324.69"

ABB = Asea Brown Boveri
Note: Before using any dimensional data, consult the equipment drawings.
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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Turb. Wt. (tons)	Turbine Upgrade	Upgraded Turbine Mfr.	Upgrade Date	Upgraded Max Power	Upgraded Rated Power	Upgraded Rated Head	Notes	Generator Mfr.	KVA	PF
Jim Woodruff	1-3	86.5	Y	VA Tech	2/2/1998	20,000	20,000	32.5'	Max NH 38.6', Min NH 8'	Westinghouse	11,111	90%
John Day	1-16	1,075								General Electric	142,105	95%
John Day	13 Rew'd	1,075								General Electric	142,105	95%
John Day	1-4 Rew'd	1,075								General Electric	142,105	95%
John Day	15 Rew'd	1,075								General Electric	142,105	95%
John Day	6-11 Rew'd	1,075								General Electric	142,105	95%
John H. Kerr	1	35	Y	GE	5/1/2002	75,000	61,500	91.45'		Westinghouse	13,333	90%
John H. Kerr	2-5	135.5	Y	GE	5/1/2002	75,000	61,500	91.45'		Westinghouse	35,555	90%
John H. Kerr	6 & 7	135.5								Westinghouse	35,555	90%
John H. Kerr	SS A & B									Westinghouse	1,250	80%
Jones Bluff	1-4	62								Westinghouse	17,895	95%
Jones Bluff	1-4	62								Westinghouse	17,895	95%
Keystone	1 & 2	95								General Electric	36,842	95%
Laurel	1	488								General Electric	67,778	90%
Libby	1-4	502.5								Westinghouse	110,526	95%
Libby	1-5	502.5								Westinghouse	110,526	95%
Little Goose	1-3	1,075								General Electric	142,105	95%
Little Goose	4-6	1,250								General Electric	142,105	95%
Lookout Point	1-3	69								General Electric	42,105	95%
Lost Creek	1 & 2	12.33								Allis-Chalmers	25,789	95%
Lower Granite	1-3	380.5								Westinghouse	142,105	95%
Lower Granite	4-6	380.5								General Electric	142,105	95%
Lower Monumental	1-3	1,075								General Electric	142,105	95%
Lower Monumental	4-6	1,250								General Electric	142,105	95%
McNary	1-12	320								General Electric	73,684	95%
McNary	13 & 14	320								See notes.	73,684	95%
McNary	SS 1 & 2	50								Elec. Mach. Corp.	3,750	80%
Miller's Ferry	1-3	60								Westinghouse	26,316	95%
Narrows	3	87.3								Westinghouse	9,444	90%
Narrows	1 & 2	87.3								Elliott	9,444	90%
Norfolk	1 & 2	495.5								Westinghouse	38,889	90%
Oahe	1-7	142.5								General Electric	89,474	95%
Old Hickory	1-4	855.5								General Electric	31,250	80%
Ozark	1-5	745	Y	VA Tech	9/24/2003	33,800	33,800	26'	Max NH 36', Min NH 14'	General Electric	21,053	95%
Phillpott	3	4.55								General Electric	750	80%
Phillpott	1 & 2	34								General Electric	7,500	90%
Phillpott	SS 1									General Electric	750	80%
R.D. Willis	1 & 2									Canadian Gen. Elec	4,444	90%
Richard B. Russell	1-4	60								Siemens	78,947	95%
Richard B. Russell	5-8	109.75								GEC-Alstron	94,500	95%
Robert S. Kerr	1-4	242.5								General Electric	28,947	95%
Sam Rayburn	1 & 2	293.8								Westinghouse	27,368	95%
St. Mary's Falls	10									General Electric	2,500	80%
St. Mary's Falls	1-3									General Electric	See notes.	90%
St. Mary's Falls	3A		Y	American Hydro	8/24/1994	3,750	3,485	20'	Max GH 21.5', Min GH 17.8'	General Electric	3,125	80%
St. Stephens	1-3	46								Westinghouse	31,111	90%
Stockton	1	320								General Electric	47,579	95%
Table Rock	1-4	36								Westinghouse	52,632	95%
Tenkiller Ferry	1 & 2	98								Elliott	20,579	95%
The Dalles	1-14	1,085								General Electric	82,105	95%
The Dalles	12 Rew'd	1,085								General Electric	82,105	95%
The Dalles	13 Rew'd	1,085								General Electric	82,105	95%
The Dalles	15-22	1,085								General Electric	90,500	95%
The Dalles	5 Rew'd	1,085								General Electric	82,105	95%
The Dalles	F 1 & 2	167.5								Westinghouse	14,210	95%
The Dalles	SS 1 & 2	42.5								Elec. Mach. Corp.	3,750	80%
Walter F. George	1-4	150	Y	VA Tech	7/10/2000	57,300	55,390	70'	As of 03/25/08 upgrades are in process of being completed	Elliott	36,111	90%
Webber's Falls	1-3	745								General Electric	21,053	95%
West Point	1	4.5								General Electric	3,750	90%
West Point	2 & 3	49								General Electric	36,842	95%
Whitney	1 & 2	20	Y	Toshiba	7/2/2007	37,000	28,735	102'	Max NH 131', Min NH 79', As of 03/25/08 U1 & U2 are in process of being completed	Allis-Chalmers	16,667	90%
Wolf Creek	1-3	55								General Electric	50,000	90%
Wolf Creek	4-6	55								General Electric	50,000	90%
Wolf Creek	SS									Elliott	1,500	80%

Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	KW	Max. KW	KV	SC Ratio	Reactance	WK^2	Gen. Dia.	Gen. Wt. (tons)	Power on Line	Rewind Mfr.	Rewind Capacity (kVA)	Rewind Above Cap. (kVA)	Rewind Date
Jim Woodruff	1-3	10,000	11,500	13.8	1.100	53.0%	Rotor: 20,000,000	37.83'	267.5	See notes.	GE Canada	16,050	1,131	U1: 2001, U2:2000, U3: 1999
John Day	1-16	135,000	155,250	13.8	1.175	43.0%	245,000,000	54'	1,164		U:16 Sade Vigesa	163,420	0	7/6/1999
John Day	13 Rew'd	135,000	155,250	13.8				54'	1,164	01/11/85	Canadian General Electric	135,000	0	1/1/1986
John Day	1-4 Rew'd	135,000	155,250	13.8				54'	1,164	See notes.	Canadian General Electric	135,000	0	1/1/1986
John Day	15 Rew'd	135,000	155,250	13.8				54'	1,164	11/16/1992	Canadian General Electric	135,000	0	1/1/1986
John Day	6-11 Rew'd	135,000	155,250	13.8				54'	1,164	See notes.	Canadian General Electric	135,000	0	1/1/1986
John H. Kerr	1	12,000	13,800	13.8	1.100	45.0%	7,500,000	31.67'	170	12/15/1952	GE Hydro	52,000	18,430	U1: 2/07
John H. Kerr	2-5	32,000	36,800	13.8	1.100	45.0%	60,000,000	42.5'	215	See notes.	GE Hydro	52,000	0	U2: 3/08
John H. Kerr	6 & 7	32,000	36,800	13.8	1.100	45.0%	60,000,000	42.5'	215	See notes.				
John H. Kerr	SS A & B	1,000	1,150	480V			41,850	7.83'	17	See notes.				
Jones Bluff	1-4	17,000	19,950	13.8	1.181	52.0%	Rotor: 29,440,000	39.33'	285	See notes.				
Jones Bluff	1-4	17,000	19,950	13.8	1.181	52.0%	Rotor: 29,440,000	39.33'	285	See notes.	Magnetek	21,500	921	See notes
Keystone	1 & 2	35,000	40,200	13.8	1.175	Unsat'd = 37	30,200,000	38.17'	401.5	See notes.				
Laurel	1	61,000	70,000	13.8	1.100	40.0%	46,650,000	39.67'	421	Oct-77				
Libby	1-4	105,000	120,000	13.8	1.175	40.0%	97,500,000	41'	583		General Electric	105,000	0	1/1/1982
Libby	1-5	105,000	120,000	13.8	1.175	40.0%	84,362,000	45'	664.2		General Electric	105,000	0	1/1/1982
Little Goose	1-3	135,000	155,250	13.8	1.175	43.0%	245,000,000	54'	1,161	See notes.				
Little Goose	4-6	135,000	155,250	13.8	1.175	43.0%	241,300,000	54'	1,176	See notes.				
Lookout Point	1-3	40,000	46,000	13.8	1.100	42.0%	26,450,000	37'	454.8		General Electric	63,650	15,230	U1: 1997, U2: 1998, U3: 1996
Lost Creek	1 & 2	24,500	See notes.	13.8	1.175	38.0%	7,100,000	24' x 36'	106	See notes.				
Lower Granite	1-3	135,000	155,250	13.8	1.175	43.0%	245,000,000	54'	561	See notes.	NEC; Unit 1: GE	163,420	0	1/1/1981, Unit 1:2005
Lower Granite	4-6	135,000	155,250	13.8	1.175	43.0%	241,000,000	54'	561					
Lower Monumental	1-3	135,000	155,250	13.8	1.175	43.0%	245,000,000	54'	1,161			142,000	0	1989
Lower Monumental	4-6	135,000	155,250	13.8	1.175	43.0%	241,000,000	54'	1,090					
McNary	1-12	70,000	80,500	13.8	1.900	32.0%	130,000,000	51.67'	1,200		U5: GE, U6: Alstom	U5: 73,700, U6: 87000	U6: 2,263	U5:1999, U6:2006
McNary	13 & 14	70,000	80,500	13.8	1.900	32.0%	168,000,000	51.67'	1,165	See notes.	General Electric	73,700	0	1/1/1973
McNary	SS 1 & 2	3,000	3,000	416V	1.000	35.0%	3,600,000	17.58' Max.	50.5					
Miller's Ferry	1-3	25,000	28,750	13.8	1.175	52.0%	Rotor: 49,000,000	39.5'	396	See notes.	ABB	35,500	5,236	U1: 1997, U2& U3:1998
Narrows	3	8,500	9,775	13.8	1.100	43.0%	2,000,000	21.5'	91	See notes.				
Narrows	1 & 2	8,500	8,500	13.8	1.100	43.0%	2,000,000	22'	95	See notes.	NEC	10,860	1,416	5/2004-6/2005
Norfolk	1 & 2	40,000	46,000	13.8	1.100	43.0%	130,000,000	36.33'	386.5	See notes.	Westinghouse	36,250	8,472	U1, 02/08/79
Oahe	1-7	85,000	97,750	13.8	1.175	42.0%	165,000,000	49'	826.5		General Electric	112,290	9,394	See notes.
Old Hickory	1-4	25,000	29,000	13.8	1.000	48.0%	70,000,000	45.67'	559.5		MagneTek National Electric Co	41,300	5,362	1990
Ozark	1-5	20,000	23,000	13.8	1.175	50.0%	600,000	11.83'	113.5					
Phillpott	3	600	690	500V	1.000		9,000	6.25'	10.9	8/7/1953				
Phillpott	1 & 2	6,750	7,760	13.8	1.100	43.0%	1,000,000	15'.92'	93	See notes.				
Phillpott	SS 1	600	690	500V				6.25'	11					
R.D. Willis	1 & 2	3.7	4	4.1			Rotor: 547,170	12'	47.76					
Richard B. Russell	1-4	75,000	75,000	13.8	1.450		64,000,000	27.38'	300	1985				
Richard B. Russell	5-8	75,000	85,000	13.8	1.180		90,500,000	29.42'	290	See notes.				
Robert S. Kerr	1-4	27,500	31,625	13.8	1.175	42.0%	61,500,000	44.67'	451	See notes.				
Sam Rayburn	1 & 2	26,000	26,000	13.8	1.175	44.0%	20,700,000	32.67'	303					
St. Mary's Falls	10	2,000		4	1.400	24-.26%	1,500,000	16.33'			NEC	3,250	750	6/14/1988
St. Mary's Falls	1-3	5,000	5,000	13.8	1.100	40.0%	8,750,000	25.92'	156.5		General Electric	6,870	1,314	Finished 1995
St. Mary's Falls	3A	2,500	2,500	4.2	1.000	36.0%	1,500,000	17.3'	62.5		LS Electric	2,747	0	Begin 1995
St. Stephens	1-3	28,000	28,000	13.8			27,600,000	32'	334	Jan-85	NEC	3,250	0	
Stockton	1	45,200	51,980	13.8	1.175	37.0%	86,500,000	48'	415.3					
Table Rock	1-4	50,000	57,500	13.8	1.175	41.0%	40,000,000	38'	438	See notes.				
Tenkiller Ferry	1 & 2	19,550	22,500	13.8	1.700	44.0%	8,500,000	19.58'	75.5	1951	U1,Nat'l Coil;U2,West'gh'se	19,500	0	U1,05/20/83; U2,1978
The Dalles	1-14	78,000	89,000	13.8	1.175	44.0%	138,000,000	50.67'	949		Alstom	94,420	0	See Notes
The Dalles	12 Rew'd	78,000	89,000	13.8	1.175	44.0%	138,000,000	50.67'	949	06/02/82				
The Dalles	13 Rew'd	78,000	89,000	13.8	1.175	44.0%	138,000,000	50.67'	949	08/09/88				
The Dalles	15-22	85,975	99,000	13.8	1.175	44.0%	163,000,000	50.33'	807.9					
The Dalles	5 Rew'd	78,000	89,000	13.8	1.175	44.0%	138,000,000	50.67'	949	01/13/92	Alstom	94,420	0	1/13/1992
The Dalles	F 1 & 2	13,500	14,000	13.8	1.175	43.0%	2,900,000	24.58'	165			16,330	0	F1:1998, F2:1997
The Dalles	SS 1 & 2	3,000	3,000	4.2	1.000	Normal	300,000	16' Max.	50.5					
Walter F. George	1-4	32,500	37,375	13.8	1.100	37.0%	Rotor: 40,730,000	36'	464.5	See notes.	VATech/National Electric Coil	46,600	5,072	U1-12/2006, U2-8/2007
Webber's Falls	1-3	20,000	23,000	13.8	1.175	32.0%	600,000	11.83'	115	See notes.	Voith Siemens	U4&6: 75,000	U 4&6: 11,111	12/2007-Currently being rewound
West Point	1	3,375	3,881	13.8	1.642	37.0%	Rotor: 275,000	16'	43.9	4/10/1975				
West Point	2 & 3	35,000	40,250	13.8	1.176	38.0%	Rotor: 35,200,000	42'	289.9	See notes.				
Whitney	1 & 2	15,000	15,000	13.8	1.100	45.0%	11,000,000	33'	215.5	7/1/1953				
Wolf Creek	1-3	45,000	57,500	13.8	1.100	43.0%	55,000,000	40'	560	See notes.				1/1/1986
Wolf Creek	4-6	45,000	57,500	13.8	1.100	43.0%	55,000,000	40'	560	See notes.				1/1/1986
Wolf Creek	SS	1,200	1,500	480V				6.65'	12	9/18/1951				

ABB = Asea Brown Boveri
Note: Before using any dimensional data, consult the equipment drawings.
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Appendix B - Tabulation of Turbine and Generator Data

Powerplant	Unit Nos.	Notes
Jim Woodruff	1-3	POL: U1,02/01/57; U2,03/01/57; U3,04/26/57.
John Day	1-16	
John Day	13 Rew'd	
John Day	1-4 Rew'd	POL: U1,09/19/87; U2,1/25/87; U3,12/04/90; U4,12/14/84.
John Day	15 Rew'd	
John Day	6-11 Rew'd	POL: U6,03/21/89; U7,07/02/89; U8,03/16/89; U9,07/19/85; U10,09/19/83; U11,03/09/90
John H. Kerr	1	Rewind: U1,17 JUNE 1995? Generator Shaft may limit rewind capability.
John H. Kerr	2-5	POL: U2,03/21/53; U3,11/15/52; U4,01/20/53; U5,08/21/53.
John H. Kerr	6 & 7	POL: U6,10/27/57; U7,12/05/53.
John H. Kerr	SS A & B	POL: A,09/30/52; B,09/27/52.
Jones Bluff	1-4	POL: U1,06/27/75; U2,07/15/75; U3,09/05/75; U4,10/24/75. Associated with the Robert F. Henry Lock & Dam
Jones Bluff	1-4	Rewind dates: U1,06/27/95; U2,02/16/97; U3,01/13/96; U4,07/31/96. Associated with the Robert F. Henry Lock & Dam
Keystone	1 & 2	POL: U1,05/21/68; U2,05/02/68.
Laurel	1	
Libby	1-4	Rewinds: U1 - U4.
Libby	1-5	Rewind: U5.
Little Goose	1-3	POL: U1,03/26/70; U2,10/30/70; U3,12/08/70.
Little Goose	4-6	POL: U4,01/25/78; U5,05/19/78; U6,07/05/78.
Lookout Point	1-3	
Lost Creek	1 & 2	Runner+Shaft: 38960lbs; Max. KW 1.15x24500=28175; Mech. Cap.=29657; POL: U1,07/06/77; U2,07/15/77; DT Bott. EL 1525'
Lower Granite	1-3	POL: U1,03/15/75; U2,05/08/75; U3,06/24/75.
Lower Granite	4-6	POL: U4,12/15/77; U5,02/01/78; U6,03/01/78.
Lower Monumental	1-3	POL: U1,05/28/69; U2,09/08/69; U3,01/06/70.
Lower Monumental	4-6	POL: U4,01/18/79; U5,02/03/79; U6,04/23/79.
McNary	1-12	POL: U1,11/06/53; U2,12/28/53; U3,04/10/54; U4,06/16/54; U5,09/23/54; U6,12/30/54; U7,02/28/55; U8,04/28/55; U9,07/28/55; U10,01/12/55; U12,04/05/56
McNary	13 & 14	POL: U13,08/30/56; U14,12/18/56. Gen. Mfr.: English Electric Export & Trading Co.
McNary	SS 1 & 2	
Miller's Ferry	1-3	POL: U1,04/15/70; U2,04/20/70; U3,05/27/70.
Narrows	3	POL: U3,09/11/69.
Narrows	1 & 2	POL: U1 & U2, MAY1950.
Norfolk	1 & 2	POL: U1,02/08/50; U2,07/46.
Oahe	1-7	Rewind Dates: U1,12/86; U2,12/85; U3,05/85; U4,04/84; U6,05/86; U7,06/84.
Old Hickory	1-4	
Ozark	1-5	
Phillpott	3	
Phillpott	1 & 2	POL: U1,09/14/53; U2,09/07/53.
Phillpott	SS 1	
R.D. Willis	1 & 2	Type: Horizontal Standardized Double Regulated "S" Turbine. Formally "Town Bluff Dam".
Richard B. Russell	1-4	
Richard B. Russell	5-8	Installed: 6/93; (Under going acceptance testing as of 12/94.)
Robert S. Kerr	1-4	POL: U1,07/71; U2,09/71; U3,10/71; U4,11/71.
Sam Rayburn	1 & 2	
St. Mary's Falls	10	
St. Mary's Falls	1-3	
St. Mary's Falls	3A	
St. Stephens	1-3	
Stockton	1	
Table Rock	1-4	POL: U1,05/22/59; U2,05/21/59; U3,04/21/61; U4,06/16/61.
Tenkiller Ferry	1 & 2	CL: 27' to bott. elbow of Df Tb. Rewind Over Cap: U1 & U2, 15% 23,600 KVA; 27' to bottom of draft tube.
The Dalles	1-14	Rewind Dates: U1:2005, U2:2000, U3:2005, U4:2000, U5:1992, U6:2002, U7:1997, U8:2002, U9:1996, U10:2003, U11:1998, U12:1982, U13:1988, U14:200'
The Dalles	12 Rew'd	
The Dalles	13 Rew'd	
The Dalles	15-22	
The Dalles	5 Rew'd	
The Dalles	F 1 & 2	
The Dalles	SS 1 & 2	
Walter F. George	1-4	POL: U1,03/13/63; U2,05/10/63; U3,08/20/63; U4,09/27/63. Stator rewinds on units 3&4 are TBC
Webber's Falls	1-3	POL: U1,08/73; U2,09/73; U3,11/73.
West Point	1	
West Point	2 & 3	POL: U2,04/10/75; U3,03/10/75.
Whitney	1 & 2	
Wolf Creek	1-3	POL: U1,08/20/52; U2,07/24/52; U3,03/17/52.
Wolf Creek	4-6	POL: U4,12/16/51; U5,10/31/51; U6,10/06/51.
Wolf Creek	SS	

ABB = Asea Brown Boveri

Note: Before using any dimensionsal data, consult the equipment drawings.

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